

## ENTERPRISES ENVIRONMENT OPERATIONAL ENHANCEMENT IN SME THROUGH 5S EFFECTUATION

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**Abstract:** SME today play a crucial role in any country's economy. With the overall increase in the number of SME in the past decade, competitiveness among various SME has taken a major turn. SME now-a-days practice and implement certain methodologies to gain attraction from large scale manufactures and customers .5s is one such methodology that a manufacturing enterprise can procure to enhance operations. In this paper, the authors have conducted various surveys in SME and analysis was done on the data collected. The effectiveness of 5s implementation has been understood and better ways to conquer the daily challenges faced by SME has surfaced.

**Keywords:** 5S, Continuous improvement process, Small and Medium Enterprises, Enterprise performance, Manufacturing Enterprises.

**Introduction:** SME contribute up to 30 to 60 percent of Asia's GDP and generate employment for 40 to 80 percent of the workforce. This has made SME a popular subject, among the practitioners and academicians, as the growth cannot be neglected (Alpha Southeast Asia, 2010). The scarcity of resources has created a difficult situation for the survival of the SME, considering the current economic situation (Southiseng and Walsh, 2010).

Lean manufacturing can be implemented by all services or production industries to nullify waste in a way that is cost effective, simple, feasible and reliable. Lean manufacturing is nothing but augmenting cost to the product without adding value that the customer would pay for. (Marko Milosevic et al., 2013) The level of implementation in international and domestic production companies is also portrayed. It is understood from this that large companies pay great attention to "lean" concept as it enhances the productivity, and the satisfaction of their employees.

5s is a continuous improvement methodology which aids in increasing the overall efficiency of the process and helps to systematize the concerned operation. 5s implementation can help generate greater profit in SME as better workplace culture improves run-time efficiency.

Simplification of the work environment, lean manufacturing and efficient workplace organization are the principles of 5s (Derya et al.,2009). Quality is not the only parameter which is to be accounted in modern management, but also continuous improvement is to be given equal importance, as per the theory of total quality management (Michalska and Szewieczek., 2007). The first and foremost result of 5s implementation is employee participation and learning. (Hubbard., 1999).

To achieve the potential benefits from 5s implementation support from the management level is indispensable. (Narasimhan., 2009). (Michalska et al., 2007) 5S implementation explains the increasing safety, efficiency, quality and minimization of the

industrial waste. Training the workers about the 5s rules is very important. The subordination of work help in continuous improvement. Carrying out 5s inspections through check list and radar graph helps in the frequent inspection of the 5s rule and to understand the necessity of its implementation. Development of a universal language which can be understood by all so that the employees can communicate effectively within themselves is very important to start with the 5s implementation. (Sethi and Pal., 1995).

### **Literature Review:**

**Lean Manufacturing:** Lean manufacturing is of a higher potential in the industries which stress on the human needs and their well beings.

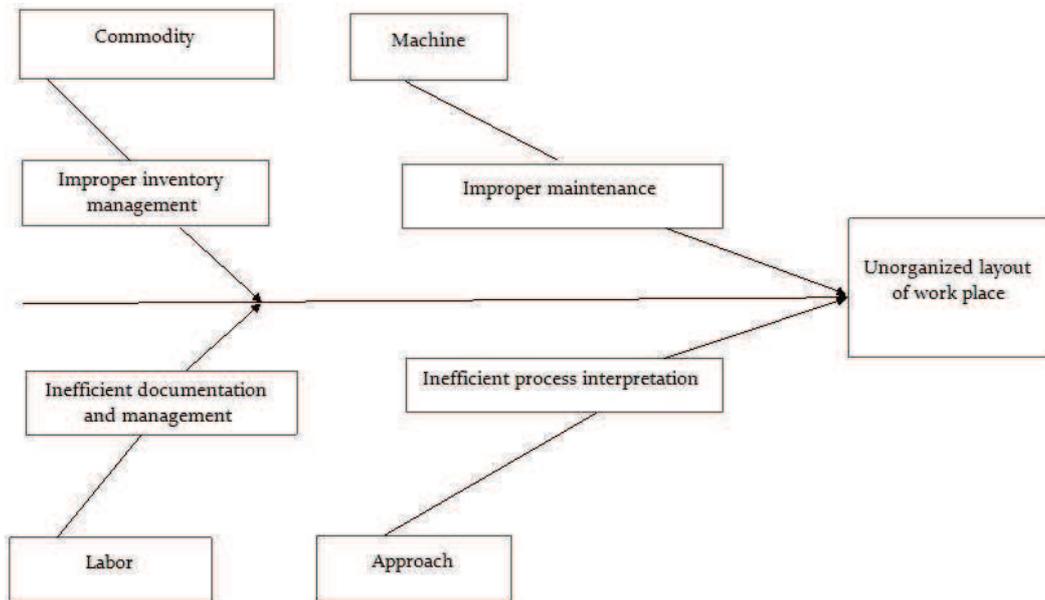
5S:

Hiroyuki Hirano was the first person to develop the 5s technique. This technique consisted of a series of identifiable steps, each building on its predecessor. These steps provided a structure for improvement programs. The purpose of 5S is to maintain an orderly workplace and to achieve consistency in operations. To improve and optimize the process structure and parameters,5S is basically the first lean method which needs to get implemented by the organizations. (Gupta and Jain., 2014) showed the application of 5s in a small-scale manufacturing organization. It was found that, by planning and implementation of 5S, there was improved morale and safety of the employees, reduction in searching time and dangerous conditions and faster processes.

**Implementation Of 5s:** The impact of 5S implementation directly acts on Industrial organization's performance. The effectiveness of 5S implementation was to be determined by evaluating the performance factors and the characteristics in the organizations. The main method used for the collection of data was by survey methodology which was done by the distribution of questionnaires among a specific number of targeted SME which run under the 5S methodology. (Gupta et al., 2014) observed the

process of implementing the 5S methodology and found that prior to the implementation of 5S, the unnecessary objects or tools were lying on the floor and could be a potential danger to the workers. But after the implementation of 5S, there were proper inventories for the respective tools and thus the

workplace was kept safe. Also, it was ensured that the worker did not have to waste a lot of time picking out the required tools from the unnecessary ones. Cause and Effect diagram of an unorganized workshop:



Schematic representation of 5S:



major pillars under the following, sort: set in order, shine, standardize and sustain.



**Objective of Study:**

- To understand the various domains of 5S.
- To understand the need for continuous process improvement.
- The role of 5S in SME.
- To analyze the data received and to derive a conclusion to give better recommendations on 5S.

**Research Conceptual Framework:** Every industry needs to have an organized system to show improvements, consistency and efficiency. The 5s methodology is one of the most effective techniques which can be used in industries to enhance the processes taking place. The 5s technique has its 5

With better process planning, the overall functioning of each department in an enterprise increases which in turn improves the performance of the enterprise.

Sort: -

Sort is the English translation of the Japanese word seiri. It basically means sorting the tools to make the process simpler. By the process of sorting the working place shall be consisting of the required tools and materials. Anything which isn't required shall be disposed from the workplace.

**Set in order:** -“Set in order” is the English translation of the Japanese word seiton. As the name suggests, set in order means setting or arranging all the necessary items in order so that they can be used when required. This technique is based on the “first in first out” concept. Thus, it makes the work smooth and easy.

**Shine:** -Shine or seiso, as it is called in Japanese, one the techniques in 5s. It imparts importance on cleanliness basically. It recommended that cleaning be inspected. The motive is to ensure that anyone, even if unfamiliar to the workplace, should be able to detect any problems, within 50 feet, in 5 seconds.

Standardize: -

Seiketsu: - (Japanese) implies the need to maintain high standards of work at all the time. Maintenance of everything in order based on the standard is a priority. Thus, the required things will be at the right place.

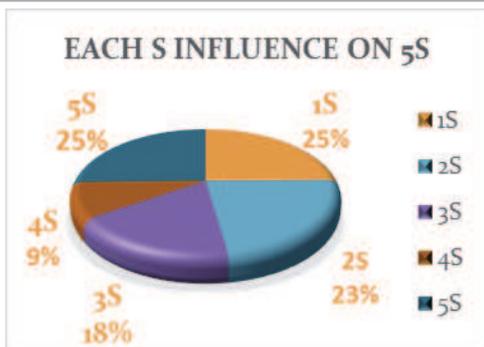
**Sustain:** -Sustain or shitsuke means that no one harms anyone. It also implies that everyone does all the work without being told. It is mandatory that everyone works with self-discipline. It is required to perform regular audits and training regularly or at least once a month. The motive is to maintain order and discipline in the workplace.

**Data Collection:** Data collection is a process of acquiring data or values to interpret and use it for analysis. In this research paper, the authors have approached around 20 manufacturing enterprises out of which 5 have responded with proper data. The designations of the people who have responded are as follows: Proprietary, Managing Director, Chief Executive Officer, Senior Manager and Managers of various organizations. The flow of approach towards the company is listed below.

<b>Industrial Visit</b>
<b>Analysis of Industry Status</b>
<b>Problem Detection</b>
<b>Implementation Action Plan</b>
<b>5S Implementation</b>
<b>Proper Control panel</b>
<b>Findings and Result</b>

**Data Auditing and Analysis:** Data auditing process was done to examine the collected data to identify the authenticity of the data. The most popular scale of rating used to measure the attitude of people towards a topic is Likert scale. The authors have done auditing in SME and given a range of values in the order of 1 to 5 (Likert Scale).

5S	Items	Check Points	Mean Value
1S	Unnecessary Items	At the Workplace	3
		Tools at workstations	3
		Items in and around the machine	4
	Red Tag	Red Tag Area conditioned	3
2S	Storage Area	Check for neat material storage	3
		Other items in designated places only	3
		Check for material identification	2
	Office and File Documentation	Office equipment's are stored neatly	3
		All racks and files are properly aligned labeled and checked for index no. availability in each rack	4
3S	Clean	Shop floor cleanliness	3
		Oil free floor	2
		Aisle markings (yellow guidelines)	2
4S	Visual management	Check for SOP	3
		Check for display boards and control charts	2
		Machine working conditions (3 types)	3
5S	Control	Periodic audits	3
		Control measures implemented	3
		Continuous improvement - Action plan	4



The above table describes the various attributes in each S and value is given based on the auditing done. Every company has been sectioned into various zones for better understanding and awarding values. The allotment of each zone and its description is stated below.

Zone	Description
Zone 1	Inventory/Storage Zone
Zone 2	Pressing Zone
Zone 3	Other Process Zone
Zone 4	Office Zone
Zone 5	Quality Inspection Zone
Zone 6	Storage and Export Zone

Through the value obtained from auditing, it is evident that 4S has a lower value when compared to others and that the manufacturing enterprise should focus on taking steps to improve it. The

**References:**

1. Derya Sevim Korkut, Nevzat Cakıcıer, E. Seda Erdinler, Göksel Ulay and Ahmet Muhlis Dogan, "5S activities and its application at a sample company", African Journal of Biotechnology April 2009, Vol. 8 (8), 1720-1728.
2. Gupta, S. and Jain, S.K. (2014), "The 5S and kaizen concept for overall improvement of the organization: a case study", International Journal of Lean Enterprise Research, Vol. 1, No. 1.
3. Hubbard, R. (1999), "Case study on the 5S program: the five pillars of the visual workplace", Hospital Material Management Quarterly, Vol. 20 No. 4, pp. 24-28.
4. J. Michalska, D. Szewieczek, "The 5S methodology as a tool for improving the organisation", Journal of Achievements in Materials and Manufacturing Engineering, October 2007, Vol. 24(2), 211-214.
5. J. Michalska, D. Szewieczek, The improvement of the quality management by the activity-based costing, Journal of Achievements in Materials and Manufacturing Engineering 21/1(2007) 91-94.
6. Marko Milosevic, Ivan Macuzic, Petar Todorovic, Marko Djapan, Evanthia Giagloglou, jordje

recommendation table is formulated to help the SME better understand which 5S must be more focused on.

**Recommendations After Audit:**

1S	Proper Waste Management and removal of unnecessary items
2S	Tags and labels to help sorting, arrange items so that they are easy to use find and put away
3S	Clean working environment
4S	Create systematic working standards and procedures
5S	Motivation by Award and Reward System and Update knowledge on 5S to working class

**Findings and Conclusion:** After this research process, the authors gained knowledge on 5S practice, its implementation and its benefits for industrial organizations, the results showed that the technique is highly useful, beneficial and applicable in everyday scenarios. But it also shows that some enterprises implement 5s in small fractions and not as whole strategy/ policy since employee don't recognize the importance and benefits of 5s tool. The authors conclude that 5S is a useful quality management tool helps to improve employee performance in an enterprise without any limitation on services and enterprises need to consider it as a part of their strategy.

7. Narasimhan, G. (2009), "Strategic handling to changes in small manufacturing organizations in India", International Journal of Business and Management, Vol. 4 No. 1, pp. 141-148.
8. Sethi, G. and Pal, P. (1995), Energy Efficiency in Small Scale Industry - An Indian Perspective, TERI (Tata Energy Research Institute).Southeast Asia, April, available at: [www.alphasoutheastasia.com/article.php?id¼41456&page¼4&topic¼Transactional%20Banking](http://www.alphasoutheastasia.com/article.php?id¼41456&page¼4&topic¼Transactional%20Banking) (accessed 10 December 2010).
9. Southiseng, N. and Walsh, J. (2010), "Competition and management issues of SME entrepreneurs in Laos: Evidence from empirical studies in Vientiane municipality, Savannakhet and Luang Prabang", Asian Journal of Business, Vol. 2 No. 3, pp. 57-72.

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