

A Review on Seven S (7S) as a tool of Workplace Organization

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Abstract- The workplace organization is a foundation stone for the productivity improvement that eliminates or reduces the muda, mura and muri. Visual Management and 5S/5C are the basic tools of workplace organization. The visual management focuses on the placing an item, component or machine at specific location with proper labeling and colour coding. While, 5S continually improves the workplace by sorting & placing Gembutsu at proper location, cleaning the Gemba, standardization and sustaining the 4S by training and education to the employees. 7S is the new terminology consists of the seven phases namely Sort, Set in order, Shine, Standardize, Sustain or Self Discipline, Safety and Spirit. The paper explains the methodology, action steps, resources required and target outcomes for the implementation of 7S as a tool of organizing workplace scenario.

Keywords – 7S, 5S, Visual Management, Workplace Organization

I. INTRODUCTION

The introduction discusses the concepts of Workplace organization, Visual management and 5S/5C.

A. Workplace organization:

The workplace organization is one of the simplest means of determining an organizational approach to its business to evaluate its housekeeping and visual management. When things look right, they often are. The workplace organization consists of visual management and Gemba Kanri or 5S/5C technique. (The Lean Group).

B. Visual Management:

Visual Management is a workplace where all associates understand and manage their own work in a safe, clean, organized environment that fosters open communication, pride, and continuous improvement. The Visual Management provides real-time information on work place status by a combination of simple, effective visual information aids. These allow employees to understand their influence as well as improve the organizational performance. Visual Management implementation consists of six phases viz. Visual control board, Andon (Lantern=Signals), Footprints, Signage (Graphical display), Obeya (Innovation=Automation) and Hansei (Self reflection). (iCAM) The six phases of Visual Management is shown in figure 1.

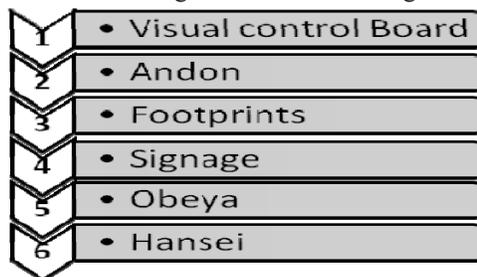


Figure 1 Phases of Visual Management

C.5S/5C or Gemba Kanri:

Gemba Kanri or 5S/5C is a systemized and methodical approach allowing teams to organize their workplace in the safest and most efficient manner. The initial stage involves removing all unnecessary items from the workplace. Leftover is then placed in a permanent location depending on the frequency of used. 5S is a process for implementing and maintaining a clean, safe and organized work area. 5S provides a way for organizations to operate efficiently and effectively. 5S/5C consists of Seiri = Sort (Clean out), Seiton = Set in order (Configure), Seiso = Shine (Clean & Check), Seiketsu = Standardize (Conformity), Shitsuke = Sustain or Self discipline (Custom & Practice) as shown in figure 2.

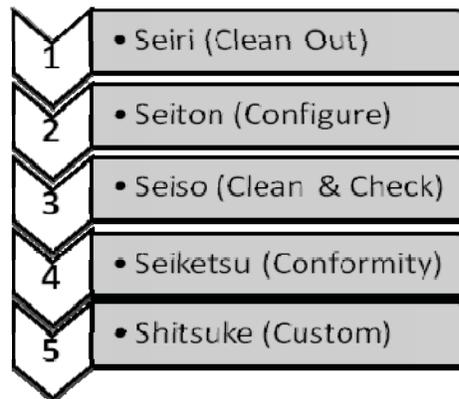


Figure 2 Phases of 5S (5C)

II. LITERATURE REVIEW

R. S. Agrahari et al (2015) explains the 5S implementation methodology and guidelines to improve performance of the small scale industries. The qualitative form of results obtained in the safety, productivity, efficiency and housekeeping practices. The results after implementation and before implementations are shown by using photographs.

S. R. Dulange (2013) implemented 5S principles in textile industries in order to improve the organization performance. The inventory cost reduction is achieved from approx. 3500 INR to approx. 3000 INR after 5S implementation in the organization.

Marion, S C et al (2010) describes the major problems faced by industries particularly of USA manufacturing industries and the indispensable tools such as Lean Manufacturing and 6S to tackle with the problems. This paper shares some success stories that motivate industries to implement these tools to achieve their set goals.

Lista International Corporation (2011) discusses the 5S implementation methodology for manufacturing industries to organize their workplaces. The importance and benefits of 5S are described in detail with the help of photographs.

K. Chandrasekar (2011) explains the role of workplace environment to motivate and encourage the employees of an organization in order to enhance the efficiency and effectiveness of employees. Paper describes the only good pay is not sufficient to motivate the employees. Interesting work, opportunity to develop special abilities, enough authority, friendly and helpful coworker, competent supervision and clearly defined responsibilities requires motivating them.

Vipulkumar C. Patel et al (2014) describe the methodology of 5S implementation, components of 5S and benefits of 5S implementation. This review paper shows the improvements possible by 5S implementations such as process improvement, reduction in breakdowns, reduction in the wastages and pollution and enhance working environment.

J. Michalska et al (2007) explain the Total Quality Management (TQM) can be achieved through lean principles such as 5S. The paper discusses the 5S methodology and implementation strategies in order to enhance the quality of the product with proper training, guiding and educating the employees.

Production Automation Corporation (PAC) (2009) has published the handbook providing detailed 5S methodology with the help of illustrations and photographs. This handbook describes the action steps, resources required, target outcomes and audit form for continuous monitoring for the improvisation of 5S methodology.

Y. C. Ennin et al (2012) illustrates the 5S is the good housekeeping technique for enhancing the productivity, quality and safety at the workplace. This paper describes the meaning, methods and benefits of 5S implementation with the help of photographs and 5S checklists.

International College of Automotive (iCAM) (2010) explains the meaning, importance, principles such as safety, productivity & quality, steps for VM and benefits of the Visual Management for the development of the organization.

Conard Robertson (2002) explains the Visual Management, 5S and 5S supporting strategies with the help of illustrations. Various templates, diagrams and checklists are provided to measure, monitor, analyze, improve and maintain the workplace environment clean, safe and healthy.

III. METHODOLOGY

Seven S (7S) methodology adopted for the workplace organization by eliminating or reducing muda (Waste), Mura (Inconsistency) and Muri (Physical strain). The 7S implementation consists of seven phases shown in Figure 3 viz. Sort, Set in order, Shine, Standardize, Sustain or Self Discipline, Safety and Spirit.

Each phase continuously improves the performance of an organization by eliminating wastages of searching, waiting, transportation, motion, work in progress inventory etc. 7S also makes the working environment clean and safe that improves the morale of the employees. The improvement in the form of the morale is a qualitative form that is responsible for the reduction in the Manufacturing Lead Time (MLT). So, the 7S helps to reduce MLT in quantitative form as well as in qualitative form. The quantifiable variables are searching, move, waiting time, cycle time, lead time, production rate, productivity, quality, profit and client network and the qualitative variables are working environment, communication and morale.



Figure 3 Phases of 7S

The description of each phase of 7S implementation is as follows-

(1S) Sort:

This means distinguishing or sort out between wanted (Value Added) and unwanted (Non Value Added) items at place of work and removal of unwanted (NVA) items.

Action Steps:

- Identify a 5S-project area and take "before" pictures
- Review sorting criteria
- Create a local red tag area
- Tag, record, and move red tagged items
- Take "after" pictures

Resources required:

- Red Tags
- Red Tag Record Forms
- Camera for “before” and “after” pictures

Target Outcomes:

- Increase in floor space utilization.
- Searching time of tools, materials, and papers is reduced.
- Better flow of work.
- Inventory cost of unnecessary items is reduced.

(2S) Set in order:

Arranging and labeling items in such a manner that they are easy to find and use.

Action Steps:

- Take “before” pictures
- Implement workplace changes
- Mark locations by creating addresses and applying labeling, marking, and color-coding
- Take “after” pictures

Resources required:

- Existing plant standards for labeling, marking, and color-coding
- Labeling supplies
- Tape for creating borders on work surfaces and floors
- Paint and painting supplies

Target Outcomes:

- Take things out and keep things back easily.
- Make lesser mistakes.
- Reduce searching time.
- Work environment becomes safe

(3S) Shine:

This means removing dirt, stain, filth, soot and dust from the work area. This includes cleaning and care for equipment and facilities and also inspecting them for abnormalities. In a way it also includes primary maintenance of equipment.

Action Steps:

- Define "clean"
- Get cleaning supplies
- Take "before" pictures
- Clean the work area
- Identify contamination sources
- Fix small imperfections
- Take "after" pictures

Resources required:

- Cleaning supplies such as brooms, dust pans, rags, degreasers, and floor cleaner.

- Personal protective equipment such as gloves and eye protection.

Target Outcomes:

- Work place becomes free of dirt and stains which is the starting point for quality.
- Equipment lifespan will be prolonged and breakdowns will be less.
- Creates a pleasant environment.
- Prevents accidents.

(4S) Standardize:

This call for systematizing the above 4S practices. This means ensuring that whatever cleanliness and orderliness is achieved should be maintained. This should develop a work structure that will support the new practices and turn them into habits.

The purpose of standardization is to make sure that everyone in the company follows the same procedure, the same names of items, the same size of signalization/floor marking, shapes, colours, etc. Standardize also helps to do the right thing the right way every time.

Action Steps:

- Brainstorm ideas for making the 5S changes standard operating procedure
- Update documentation to reflect changes
- Make sure all stakeholders are aware of the new standards - inform and educate

Resources required:

- Support from those who can create documentation, job aids, and visual aids
- Information and approval from those responsible for maintaining company procedures
- Poster-making supplies for posting new standards in work areas

Target Outcomes:

- Activities will be simplified.
- Consistency in the work practices.
- Avoid mistakes.
- Better visual and transparency management work efficiency will improve.

(5S) Sustain or Self Discipline:

Sustain also means 'Discipline'. It denotes commitment to maintain orderliness and to practice first 3S as a way of life.

Action Steps:

- Monitor processes established during S4 -Standardize
- Expand 5S efforts to other work areas
- Evaluate 5S effectiveness and continuously improve
- Recognize and reward strong efforts

Resources required:

- Management audit forms
- Resources for communication and recognizing successes (newsletters, displays, awards)

- Presentation tools for sharing best practices with other work areas
- Management commitment and focus on maintaining the new standards

Target Outcomes:

- Promotes habit for complying with workplace rules and procedures.
- Creates healthy atmosphere and a good work place.
- Helps you to develop team work.
- Provides you with data for improving 5S.

(6S) Safety:

Safety is the condition of being protected against physical, social, spiritual, financial, political, emotional, occupational, psychological, educational, or other types or consequences of failure, damage, error, accident, harm, or any other event that could be considered non-desirable.

Action Steps:

- Error Proofing (Poka-yoke)
- Safety related instructions & symbols
- Alert, Warning, Hazard area identification and labeling with proper symbols
- Safety trainings to employees

Resources required:

- Safety related instruction and Symbols
- Personal Protective Equipments (PPE)
- Safety Trainer or Expert

Target Outcomes:

- Avoid errors or mistakes
- Reduces accidents
- Safer working environment

(7S) Spirit (Team Spirit):

Team spirit is a willingness to cooperate as part of a team.

Action Steps:

- Formation of 7S team with a team leader
- Regular meetings to set benchmark and strategies for achievement
- Motivational and co-operational speeches or trainings for each 7S team on regular basis

Resources required:

- 7S team manual for the conclusion or solutions obtained after brainstorming session or meetings
- Leader with knowledge, abilities, experience, good understanding and cooperating skills
- Questionnaire survey at regular basis for measuring and analyzing the team spirit
- 7S Audit form for checking overall performance

Target Outcomes:

- Better communication
- Higher confidence to do work

- Better Understanding & Analysis on problems
- Creates healthy working environment
- Reduces boredom approach toward the job

IV. DISCUSSION

The general concept of the 7S is that they are intended to eliminate Muda (waste). The Lean Manufacturing (LM) focuses on the reduction of the wastages and the foundation tool of LM is Workplace organization. Working in disorder is neither productive, nor safe. 7S is a simple and practical method to build a quality culture at the work place. It is relatively easy to undertake, and requires minimal additional resources. The first and small investment made in time and effort pays off in a much bigger manner when the results are realized and maintained.

Only implementation of the 7S or Workplace organization is not sufficient. Continuous monitoring and controlling the all 7S activities is also important and it can be monitored by conducting the questionnaire survey at regular interval. If the responses by the respondents are poor then it reflects the degradation of the workplace organization.

Benefits of implementing 7S are as follows-

- Workplace becomes cleaner, safer, well-organized and more pleasant;
- Floor space utilization is improved;
- Workflow becomes smoother and more systematic and non-value added activities are reduced;
- Time for searching tools, materials and document is minimized;
- Machine breakdowns are reduced since clean and well-maintained equipment breaks down less frequently and it also becomes easier to diagnose and repair before breakdowns occur, therefore extending equipment life;
- Errors are minimized leading to making defect-free products;
- Consumables and material wastage are minimized;
- Morale and satisfaction of employees improve;
- Productivity of the organization improves together with the quality of products and services.

V. CONCLUSION

Workplace Organization is a simple and basic tool to organize the Gemba (workplace) in systematic manner so that each and every item is at proper place or location provided with labeling and colour coding. Visual Management and 5S methodologies implemented for the improvisation of workplace. 7S is the extension of 5S with additional 2S i.e. Safety and Spirit (Team Spirit). Safety practices and safety trainings are helpful for the reduction of accidents in the industry. Team spirit encourages and motivates the team members to work in better way. So, it increases the efficiency of the production operations or process.

The 7s activities should continuously monitored using questionnaire survey and improved if degrades. The 7S improves organizations performance in terms of higher productivity, better quality, less accidents, clean, safe and healthier working environment.

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