Application of 5s Methodology in a Small-Scale Enterprise: Case Study

Vijay Kumar Dwivedi, Anas Islam, and Aman Sharma

Abstract Small-scale industries or enterprises play a vital role in building up the economy and further enhancing the growth of any country. Likewise, there are several small-scale industries and startups that are currently active in our country. The countries like India where population holds the second place in the world small-scale enterprises are of the great importance. As far as the medium and the big industrial setups are concerned, there are always some methodologies that are adopted in order to enhance its growth and minimize the wastages. While in case of the small enterprises, there is no any as such provision for applying any lean manufacturing or management technique for enhancing the work culture and minimization of the wastages. In this regard, a very known 5s technique (lean manufacturing method) is applied in one of the small industries located in a district of Uttar Pradesh Aligarh. The name of the industry is "Reliable Tools," and it is known for manufacturing the locks and its parts. After applying this technique, the results and the final effects of this technique were analyzed based on the wastages of materials, time and other miscellaneous items. Finally, the results are concluded by comparing costs incurred before and after applying this 5s technique.

Keywords 5s methodology · Lean manufacturing · Small-scale industries

1 Introduction

The town of Aligarh has for some time been known all through the world for its lock industry. Truth be told/when the word Aligarh is stated, the unavoidable answer comes—"Gracious, the town of the lock. Also, why not? At the point when we took a gander at the present territory of Aligarh, we see that there are around 3000 units providing locks and their segments using upwards of one lakhs resident with a turnover of thirty crore for each year". The manufacturing of locks and their industrial setups is spread all over the city in small and big firms. As far as present work culture

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is concerned, only big organizations take part in adopting the lean manufacturing techniques and attain good profits.

A good management will lead the industry/startups to a new height and also minimize excessive wastages.

5S is commonly the initial phase in wiping out squander (unnecessary items). 5S is the foundation of kaizen, a technique for nonstop improvement concentrated on certain core values, which include expanded productivity, enhance safety, less wastages and lesser lead time, etc. The 5S methodology is very well suited for a place for everything and everything in its place (PEEP) [2, 10, 11]. 5S is a waste reduction and efficiency enhancing framework that maintains a methodical work environment and uses visual pieces of information like signboards and charts to achieve increasingly reliable operational outcomes [1]. The word 5S consolidates five establishments and these can be expressed as Seiri (Sort) Seiton (Set), Seiso, (Shine) Seiketsu (Sustain) and Shitsuke (Standardize).

In 5s technique, less wastages and in turn high profitability are achieved [3–5]

- Execute the implementation with the guide of posters, banners, shadow boards, gadget holders and so on.
- Without the sustain column, the accomplishments of different columns would not keep going long [6].

Themethodology introduced by Hirano states that implementation should be articulated in such a way that the less complex and important frameworks should be enforced first. Hirano explains the series by a famous flow chart known as Hirano's 5s implementation as shown in Fig. 1.

2 5s Implementation

2.1 Seiri (Sort)

Seiri expects/tends to remove everything from the workplace that is not required for current process. The implementation of Seiri is executed in the following manner:

- The workplace must be divided into various zones depending upon the work they are performing with the main goal of including each and every piece of workplace in the endeavor at the phase such that all these zones are connected together. Allocate the coordinators for every one of these zones.
- Identify a red name (red tag) holding items. Red marked things are those that are viewed as pointless in a specific working area/department. The red label keeping region is the zone ensured for use in the substitution of red names that need further assessment. Define the red tag. A red tag is a paper name with relating information:
  - What's item?
  - How much quantity?

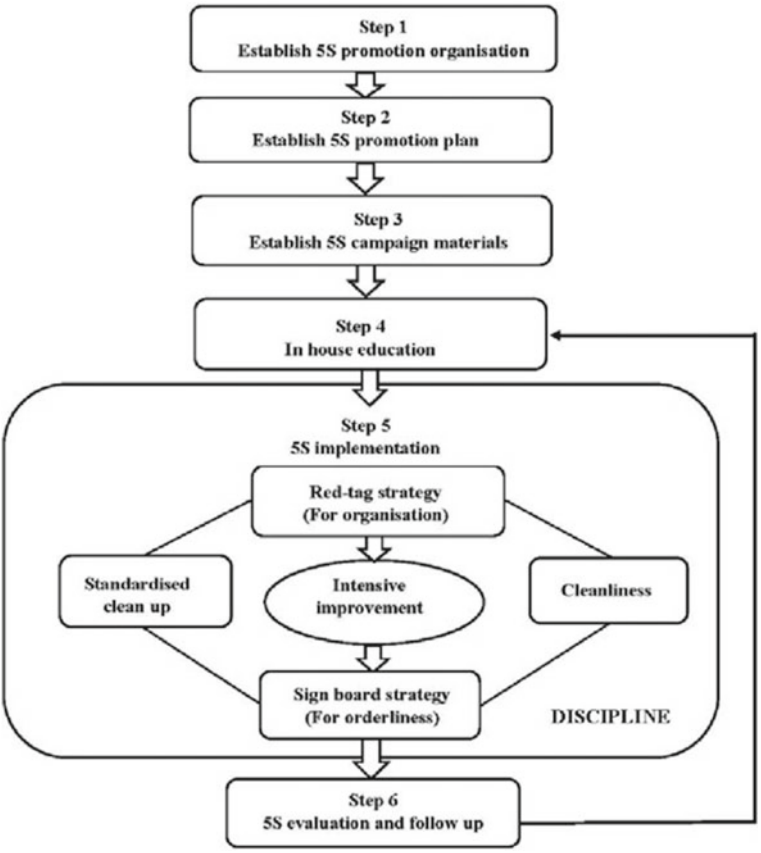

Fig. 1 Practical approach to incorporate 5s in an Industry [4]

- Why are they expelled (hurt, over a boundings, etc.)?
- What is the estimated cost?
- The area from which the thing is removed?
- Establish the repeat of red label checking; an example of red tag is shown in Fig. 2.

2.2 Seiton (Set)

It is indeed important to place the essential products in good alignment such that these could be quickly grabbed to be used. It is a performance analysis. It is indeed a matter as to how fast you could get the items you want as well as how efficiently you could get them back. Ensure that every single superfluous thing is killed from the working environment [7–9].

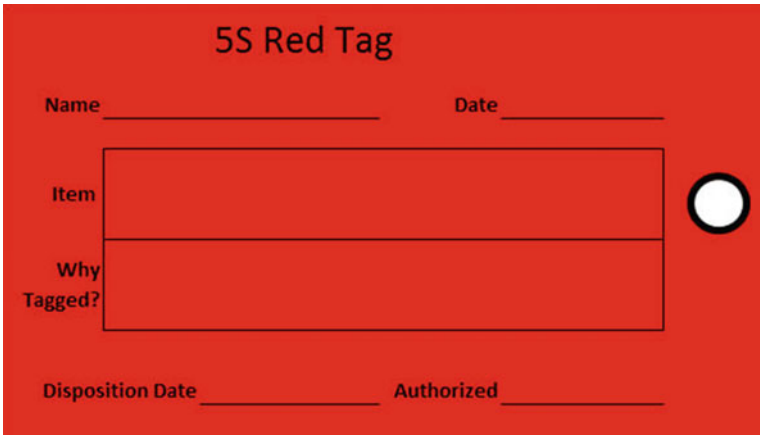

Fig. 2 Example of red tag

Seiri stands for filtering, dividing and dismissing (and keeping). Seiton is about planning and getting things ready. When we just concentrate on putting stuff aside, it could lose track as to why we put stuff away that is to be able to bring stuff back easily when we really need it. Seiton implies to decide when and where objects are required and also to position items in such a manner that enables productive management. The staff does not get to search for appropriate equipment or step to some other location to reach commonly used objects.

Seiton has successfully implemented at reliable tools Aligarh and has been compared in Figs. 3 and 4.

Fig. 3 Before Seito implementation

Fig. 4 After Seito implementation

Fig. 5 Seiso the workplace is looking uncluttered

2.3 Seiso (Shine)

It implies clean environment, which ought to be priority of everyone in the organization. Cleaning is necessary by almost everyone in organization, starting with "upper management to bottom." Cleaning should be done not merely for the purpose of sanitation, however, for a reason. To maintain a healthy portrait of neatness, everyone should be personally concerned for cleanup. The workforce must be assigned zone-wise assignments. Regular cleaning is indeed useful for detecting equipment failure. In order to work efficiently, a healthy, tidy and tidy area provides focus.

- Determine Shine targets—To make target-based shine procedure regularly as per the sorted items of the red Tag
- Storage space, equipment or empty space
- Determine shine assignments
- Divide work reliant on the zone of cleaning
- Start to shine
- Clean completely.

Implementation of Seiso is shown as in Fig. 5.

2.4 Seiketsu (Standardizing)

It basically makes the very first 3s a common procedure by adding simple practise for "Sorting, Straightening and Scrubbing." Daily audits of 5s should be performed with rankings which should be shown for every S.

It is important to promote displaying via images. The attention will be on effective communication and standardization for 5s. Seiketsu is applied at reliable tools Aligarh. Reliable tools effectively actualized Seiketsu. Figures 6 and 7 show the course of action of records before execution of Seiketsu and after the usage. In the

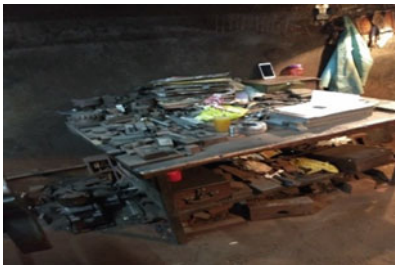

Fig. 6 Condition of workplace before Seiketsu

Fig. 7 Condition of workplace after Seiteksu

primary course of action, there are potential outcomes of missing documents. In any case, in the second case, it is a lot simpler not to turn out badly while setting and recovering the records.

2.5 Shitsuke (Sustain)

In the sustain, it implies supporting, networking and training to guarantee that it is a component of the organization. It is appropriate to continue to practice four behaviors till they become natural. This may involve appointing a group to really be accountable to monitoring the implementation of the 5s. The ideals of 5s are for all. If executives do not obey, it is pointless to ask subordinates to adopt 5s as well. This mechanism encourages individuals to be organized. Everybody in the working environment should treat it they would their own home.

- Occasional office the board association is required to watch that the initial four S's are actualized splendidly.
- Representatives must make it a piece of their everyday work and not an activity constrained upon them.
- Commitment, duty, dedication and genuineness are required in usage of 5S on regular routine.
- Senior the executives should start a festival for the absolute 5S usage and be a functioning part in the all-out procedure in starting and conveying forward the program.

- Senior the executives ought to do an occasional survey of the status of 5S.
- Assessments of initial three S's ought to be done and the outcomes showed on 5S board routinely.
- Single point exercises ought to be utilized to impart the norms for how 5S work ought to be finished.
- Proprietors lead 5S Kaizen exercises and archive results. Proprietors (administrators) complete everyday check sheets to control factors that quicken weakening of hardware and to keep clean working environments that help construct pride.

3 Conclusions

Constant overhauls have gotten especially noteworthy in the Indian circumstance in the earlier decade. The reason for this is the low availability of records, and the need to achieve overall quality measures inside the open resources. To achieve these, various associations are grasping the methodology of lean manufacturing.

The 5S the structure is an average starting stage for all improvement tries meaning to drive out waste from the collecting technique and in the long run improving an association's primary concern age by improving things and organizations and cutting down expenses. The final product of a 5S execution is a critical decrease in space required for existing activities. Laborers improve their workspaces by cleaning and sorting out them. Devices and materials are named and put away in composed stockpiling areas. Racking and racks advance the capacity of things in a littler impression, improving the request picking process by taking out the need to look for things. Once completely actualized, the 5S framework raises profitability, makes positive brand encounters and improves proficiency and association.

Implementation of 5s has successfully done in that industry keeping the point of view of its sustenance in future by giving proper training to the employs laborers. Not exclusively will representatives feel good about where they work, yet the consequences for nonstop improvement will add to less duplication, better quality and shorter lead times. 5S is not just a housekeeping technique; it is an imaginative answer for expanding productivity. 5S is an entire culture that expands generation, improves quality, lessens costs, conveys on schedule, improves wellbeing and improves profound quality.

Future road map for this implementation would be to ensure that all the pillars of are properly defined and sustained throughout the project and afterward.

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