

Improvement of Inspection Section of PT. ABC using 5S Method (Seiri, Seiton, Seiso, Siketsu, Shitsuke)

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Abstract. Recently, the company must have an efficient level of quality and time to produce its products. The purpose of this research is to improve the company's overall performance by maintaining order, efficiency, and discipline in the workplace. The method used to improve the performance of this company is 5S method (Seiri, Seiton, Seiso, Seiketsu, Shitsuke). 5S is a continuing improvement that utilizes the workplace by training workers' habits to improve work discipline. The result of this research is that PT. ABC has a sufficient category in the application of 5S in its working environment viewed from several findings within the company. The score of audit results by the company's internal auditor is 52 where the score is still far from 152. The total score of the current 5S program conducted by the company is 51.11%. Therefore, the proposed improvement that can be given to improve performance is to make the procedure of all activities, provide labels for each area of storage, and involve all employees in each program of the company.

Keywords: 5S, performance, workplace.

1. Introduction

It is an important current challenge for corporate leaders to ensure that the company remains on a high-competition track, a constantly changing economic environment, and scarce resources. In this condition, the company should have an efficient level of quality and time to produce its products, it is an excellent purpose for the industry, where the company can serve the needs of consumers with quality products and desired amount, on time, and the lowest cost of production [1]

Kaizen is an instrument of uniting philosophy, systems, and tools to solve problems developed in Japan for 30 years in a company to do better [2]. The purpose of Kaizen is to increase three parameters: quality, cost, and delivery or can be called as QCD (quality, cost, delivery) [3]. The purpose of the Kaizen culture reflects that continuous improvement should have an ultimate goal in its application. The 5S according to [4] is a continuing improvement that utilizes the workplace by training workers' habits to improve work discipline starting from Selecting (Seiri), Arranging (Seiton), cleaning (Seiso), Ensuring (Seiketsu), Discipline (Shitsuke) Or to have participated completely in the development of good working habits according to the rules that is established [1]. So, the aims of this research is for improving the layout of working place to increase three parameters: quality, cost, and delivery. The novelty of this research is the object different from the others research so it can be use for another researchers for the basic of their researchs.

2. Literature Review

2.1 5S Method (Seiri, Seiton, Seiso, Seiketsu, Shitsuke)

Dalam [4] 5S (seiri, seiton, seiso, seiketsu, shitsuke) is five steps of arrangement and maintenance workplace developed through intensive efforts in manufacturing sector. If it is translated into Bahasa

Indonesia, the five steps of workplace maintenance is referred to brief, tidy, clean, maintenance, and dilligent. In Indonesia it said 5R (Ringkas, Rapi, Resik, Rawat, dan Rajin) with the following understanding [3]:

1. 1. The Seiri, in [5] distinguishes between necessary and unnecessary in the work area and removes unnecessary. Create a compact workplace, which only holds the necessary items.
2. 2. Seiton, in [6] everything must be placed according to the position set so that it is ready to use when needed.
3. 3. Seiso, keeping the condition of the machine ready to use and in a clean state. Create a clean place condition and work environment. Cleaning is not merely cleanse but should be viewed as a form of examination. Cleansing is a process that considers every machine or tool essential because it has its own demands and abilities and strives to take care of it well [7].
4. 4. Seiketsu, expanding the concept of hygiene in private self and continuously practise in three previous steps. Always try to maintain a good condition through the standard. Seiketsu is intended for each individual to be able to apply continuously the three preceding principles [8]. Implementation of the Seiketsu phase will make the environment always awake continuously.
5. Shitsuke, building a self-discipline and self-familiarizing to apply 5S through working norms and standardization [9]. The emphasis is on creating a workplace with good habits and behaviours. Teaching everyone what to do and ordering each person to carry out, then bad habits will be wasted and good habits will be formed [7].

3. Research Method

Steps of this research are as follows identify the problem solving methods. This study uses the 5S method, identification process of PT. ABC Inspection section. Observation is done by observing the work area of inspection section ranging from operator activity, work environment, and layout of goods. Next is design audit checklist sheet and evaluation checklist, determination of audit sheet of Checklist, scoring on condition before repairing, recapitulation of findings, evaluation before repairing, demands of necessity, proposed improvements, and conclusions and suggestions.

4. Result and Discussion

4.1 Result of Scoring on the condition before repairing

The inquiry data checklist is given to the company specifically the inspection section which understands about the questions asked. Table 1 is the scoring result for the inspection Section [10].

Table 1. Result of Scoring before repairing

Category	Criteria	Audit Period				
		0	1	2	3	4
Seiri	Distinguishing between required and unneeded					
	There is a written procedure for elimination or disposal of unused items					
	There are the unneeded tools					
	There are unneeded items on the wall/bulletin board					
	Alley, Ladder, free angle item					
	WIP or parts in the work area					
	All machines and/or equipment are in regular condition					
	All unused items are easily identified					
Seiton	A place for everything and everything is					

	in its place					
	All items have a specific location					
	The work surface, and the storage area are clearly labeled and well organized					
	All items placed in the right location					
	There are labels/markings indicating storage area					
	All work locations and parts are clearly identified using the label/mark					
	There is a clear indicator of the minimum and maximum quality status of inventory					
	The tool storage place is clearly identified and easily retrieved/returned					
Seiso	Routine discipline keeps the workplace clean and well organized					
	Equipment, computers, work surfaces, and storage must be clean					
	Garbage and recycling are collected and disposed properly					
	Shared areas are cleaned and maintained regularly					
	All floors are always clean and shiny					
	All the machines are always clean and shiny					
	Cleaning is always done based on checklist activity					
	There is a rotation of cleaning responsibilities within the specified working area					
	A clean and orderly workplace has become a habit of all employees					
Seiketsu	Standardizing the practice of 3S (Seiri, Seiton, Seiso)					
	Staff trained and fully understand the 5S procedure					
	Standard 5S is clearly displayed					
	Visual Management tools Identify if the job is finished					
	Clean air and odorless					
	Location and illumination intensity is sufficient					
	Used work clothes are not dirty and tidy					
	There is a clear effort in avoiding impurities					
	There are systems and written procedures about 5S in working areas					

Shitsuke	Sticking to the rules (self-discipline)					
	Everyone is involved improvement activity					
	Cleaning and standard working procedure are followed					
	5S Documentation and current instructions					
	The 5S audit occurs regularly					
	The written procedure is implemented and communicated by every employee in the organization					
	Everyone is present and actively involved in meetings for the success of their work area					
	There are rules and written procedures of 5S understood by all employees					
	Rules and procedures written about 5S are valued/acknowledged and followed by all employees					
Score	0	1X4=4	2x7	3x6=	4x4=16	
Total	0+4+14+18+16 = 52					

4.2 Findings

In table 1 of the scoring results before repairing [11], it can be seen that the total value is still below 152. According to [12] the findings in the inspection section that cause the irregular work area can be seen in table 2.

Table 2, Findings

Seiri		
No	Distinguishing between required and unneeded	Findings Note
1	There is a written procedure for elimination or disposal of unused items	There is no a written procedure for elimination or disposal of unused items
2	There are the unneeded tools	There are the unneeded tools, they are glass, drinking bottle, magazine, and mask.
3	There are unneeded items on the wall/bulletin board	There are no unneeded items on the wall/bulletin board
4	Alley, Ladder, free angle item	There is box in the alley
5	WIP or parts in the work area	There are 5 WIP or parts in the work area

6	All machines and/or equipment are in regular condition	All machines and/or equipment are in regular condition
7	All unused items are easily identified	The unused items are drinking bottles
Seiton		
No	A place for everything and everything is in its place	Findings Note
8	All items have a specific location	Items that have no specific location are box and Parts results that have been tested
9	The work surface, and the storage area are clearly labeled and well organized	The work surface, and the storage area are not clearly labeled and well organized, such as box
10	All items placed in the right location	Box is put on the working floor
11	There are labels/markings indicating storage area	There are no labels/markings indicating storage area
12	All work locations and parts are clearly identified using the label/mark	All work locations and parts are not clearly identified using the label/mark
13	There is a clear indicator of the minimum and maximum quality status of inventory	There is no a clear indicator of the minimum and maximum quality status of inventory
14	The tool storage place is clearly identified and easily retrieved/returned	The tool storage place is not clearly identified and easily retrieved/returned
Seiso		
No	Routine discipline keeps the workplace clean and well organized	Findings Note
15	Equipment, computers, work surfaces, and storage must be clean	Equipment, computers, work surfaces, and storage are clean
16	Garbage and recycling are collected and disposed properly	Garbage and recycling are collected and disposed properly
17	Shared areas are cleaned and maintained regularly	Shared areas are cleaned and maintained regularly
18	All floors are always clean and shiny	All floors are always clean and shiny
19	All the machines are always clean and shiny	All the machines are always clean and shiny
20	Cleaning is always done based on checklist activity	Cleaning is always done based on checklist activity

21	There is a rotation of cleaning responsibilities within the specified working area	There is a rotation of cleaning responsibilities within the specified working area
22	A clean and orderly workplace has become a habit of all employees	A clean and orderly workplace has become a habit of all employees
Seiketsu		
No	Standardizing the practice of 3S (Seiri, Seiton, Seiso)	Findings Note
23	Staff trained and fully understand the 5S procedure	Staff trained, but they do not fully understand the 5S procedure
24	Standard 5S is clearly displayed	There is no clearly displayed standard of 5S
25	Visual Management tools Identify if the job is finished	There is no visual Management tools Identify if the job is finished
26	Clean air and odorless	Clean air and odorless
27	Location and illumination intensity is sufficient	Location and illumination intensity is sufficient
28	Used work clothes are not dirty and tidy	Used work clothes are not dirty and tidy
29	There is a clear effort in avoiding impurities	There is a clear effort in avoiding impurities
30	There are systems and written procedures about 5S in working areas	There are no systems and written procedures about 5S in working areas
Shitsuke		
No	Sticking to the rules (self-discipline)	Findings Note
31	Everyone is involved improvement activity	Everyone is involved improvement activity
32	Cleaning and standard working procedure are followed	Cleaning and standard working procedure are followed
33	5S Documentation and current instructions	There are no 5S Documentation and current instructions
34	The 5S audit occurs regularly	The 5S audit occurs regularly
35	The written procedure is implemented and communicated by every employee in the organizationi	The written procedure is not implemented and communicated by every employee in the organizationi

36	Everyone is present and actively involved in meetings for the success of their work area	Everyone is not fully present and actively involved in meetings for the success of their work areas
37	There are rules and written procedures of 5S understood by all employees	The rules and written procedures are not displayed
38	Rules and procedures written about 5S are valued/acknowledged and followed by all employees	Rules and procedures are not written

4.3 Results of evaluation of working environment before the 5S implementation

The 5S program is a simple program that can be done at any time for improvement in the workspace [13]. Table 3 shows the results of the evaluation of the working environment condition of the inspection prior to the 5S implementation [14].

Table 3. Working environment conditions before the 5S implementation

Scoring for each statement based on the application: 0 - 20% = score 1 , 21% - 40% = score 2 , 41% - 60% = score 3 , 61% - 80% = score 4 , 81% - 100% = score 5		Score				
No.	Statements	1	2	3	4	5
1	Everyone has contributed to the process of red tagging to get rid of unnecessary items					
2	Everyone has followed the procedure to do the 3S process					
3	All machines and equipment are placed or stored in a designated place. There have been formal personnel designation from management to responsibly maintain machinery, equipment, and workplace					
4	All machines, appliances, and workplaces look clean and well maintained and regularly					
5	There are a Visual Board 5S, posters, and other visual forms that allow everyone to know and understand 5S in their organization.					
6	There are work procedures and instructions on the 5S that are periodically updated					
7	All employees and management have received formal training on 5S in order to understand about the 5S principles					
8	There is a formal award and recognition system as a motivating tool in the 5S implementation					
9	There is a regular 5S audit system. The audit score is communicated visually through the visual board of 5S. There are personnel or parts of the 5S audit that formally responsible for organization					
TOTAL SCORE		23				
Maximum total score = 45						
Program Score of 5S (persen) = $(23/45) \times 100 = 51,11\%$		SKOR 5S				
Criteria of 5S Program Evaluation(Score 5S) : 0 - 20% =		Fair				

very bad 21% - 40% = bad , 41% - 60% = fair , 61% - 80% = good , 81% - 100% = very good
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4.4 Demands of Necessity

The result of the evaluation of the working environment indicates that the condition of the working area in the inspection section is still insufficient [15]. Therefore, it is necessary to advance the repairs by identifying the demands of the needs based on the findings. The required needs in the inspection section are [16]:

1. The procedure of the unused disposal item
2. Location for each item.
3. Label for storage area.
4. Written indicators about quality status.
5. Procedures, work instructions, posters and documentation of 5S
6. Visual management equipment
7. Employee's rewards

4.5 Proposed Improvement

Design of improvements can be made based on required needs that have been identified [17]. So, the proposed improvements that can be conducted are as follows:

1. Create a procedure regarding unused items.
2. Create a place/location for each item.
3. Provide labels for each storage area
4. Create a written indicator of quality status.
5. Create the procedures, work instructions, posters, and documentation about 5S.
6. Hold visual management tools.
7. Involve all employees in each program and give rewards.

5. Conclusion

Conclusions of this research are as follows:

1. The evaluation result of the current working environment at PT ABC is 51.11% and in the category of sufficient.
2. Things that can be done to improve the evaluation result of 5S is to make procedures for all activities, provide labels for each area of storage, and involve all employees in each program run by the company.

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