



# A STUDY ON IMPLEMENTING EFFECTIVE WORKPLACE WITH 5S METHODOLOGY WITH SPECIAL REFERENCE TO TIDEL PARK COIMBATORE CITY (SOUTH)

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## ABSTRACT

The implementation of effective workplace organization is a critical factor for enhancing operational efficiency, reducing waste, and improving employee morale. This study explores the application of the 5S methodology as a tool for achieving an organized, productive, and safe work environment. The 5S framework, originating from Japan, is centered around five core principles: Sort, Set in order, Shine, Standardize, and Sustain. By systematically eliminating inefficiencies and promoting a culture of continuous improvement, 5S aims to foster workplaces that are optimized for both individual and collective performance. This research investigates the practical implementation of 5S in various organizational contexts, examining its impact on productivity, safety, and overall workplace satisfaction. Data collected from IT sectors that have adopted 5S practices shows significant improvements in work process efficiency, reduction in waste, better utilization of space, and enhanced employee engagement. Furthermore, challenges in sustaining long-term success with 5S are identified, and strategies to overcome resistance to change and maintain consistent practices are discussed. The findings highlight that while 5S is a powerful tool for fostering a lean and organized workplace, its success depends on active leadership, employee involvement, and a commitment to continuous improvement. The study concludes that the 5S methodology, when effectively implemented and maintained, can lead to sustainable improvements in workplace productivity, safety, and quality, thus contributing to the overall success of an organization. This paper provides valuable insights for organizations considering the adoption of 5S, offering practical recommendations for a successful implementation and long-term sustainability.

**Keywords:** Improvements in work process efficiency, reduction in waste, better utilization of space, and enhanced employee engagement.

## I. INTRODUCTION

5S is one of the first tools that can be applied in a company that is starting down the path of a continuous improvement culture. A 5S implementation helps to define the first rules to eliminate waste and maintain an efficient, safe, and clean work environment. It was first popularized by Taiichi Ohno, who designed the Toyota Production System, and Shigeo Shingo, who also put forward the concept of poka-yoke. The 5S methodology is easy for everyone to start using. It doesn't require any technical analysis and can be implemented globally in all types of companies, ranging from manufacturing plants to offices, small businesses to large multinational organizations - and in both private and public sectors as well as IT sectors. Its simplicity, practical applicability, and visual nature make it an engaging aid for operators, directors, and customers alike.

### 1.1. OBJECTIVES OF THE STUDY

- Productivity improvement by saving time, space etc
- A clean and neat environment
- Provide the environment for continuous improvement

### 1.2. STATEMENT OF THE PROBLEM

In the IT sector, companies often struggle with inefficient workflows, cluttered digital and physical spaces, disorganized project management, and a lack of standardization in processes. These issues negatively impact productivity, lead to increased errors, and result in wasted time and resources

**Digital Clutter:** Overloaded data storage, unsystematic file management, and lack of digital housekeeping lead to difficulties in locating and managing critical information.

**Inconsistent Workspaces:** Disorganized physical work environments, including poor workstation setups, equipment storage, and insufficient maintenance, cause distractions and inefficiencies.

**Lack of Standard Operating Procedures (SOPs):** Without standardization, teams face confusion regarding processes, leading to inconsistencies in output and frequent errors.

**Resistance to Change:** Employees may be resistant to adopt new organizational practices, especially in an environment that is already fast-paced and constantly evolving.

**Time Management Issues:** Inefficient time allocation and disorganized task management contribute to delays in project timelines and poor team collaboration.

### 1.3. SCOPE OF THE STUDY

The study may focus on specific departments or processes, limiting the generalizability of the findings across the entire organization.

### 1.4. LIMITATIONS OF THE STUDY

#### **Resistance to Change:**

- Employees may resist adopting new practices and organizational changes, particularly in fast-paced IT environments where flexibility and innovation are prioritized. Overcoming this resistance can be difficult and time-consuming, impacting the success of the 5S implementation.

**Digital Environment Challenges:**

- The 5S methodology was originally designed for physical spaces, but in the IT sector, it must be adapted for digital environments (such as file management, cloud storage, and virtual workspaces). Implementing 5S effectively in a digital context may be more complex and less straightforward than in traditional manufacturing or office settings.

**Time and Resource Constraints:**

- Implementing 5S in the IT sector requires time and effort from employees and management to organize, categorize, and maintain both physical and digital workspaces. These tasks may divert attention from core IT work, resulting in resource allocation conflicts and potential delays.

**Complexity of IT Systems:**

- IT infrastructures, such as networks, databases, and coding systems, can be highly complex. The standardization and organization advocated by 5S may be difficult to apply uniformly across various departments or systems due to the technical intricacies of IT environments.

**Limited Applicability:**

- In some cases, certain aspects of the 5S methodology may not be as applicable to IT projects as they are in manufacturing settings. For example, "Sorting" and "Shining" may not apply directly to software development, where digital tools and code structures are constantly evolving and do not require the same physical cleanliness or organization.

**II.REVIEW OF LITERATURE**

Ahuja, I. P. S., & Khamba, J. S. (2008). Total productive maintenance: literature review and directions. *International Journal of Quality & Reliability Management*, 25(7), 709-756.

Ahmed, S., & Hassan, M. (2003). Survey and case investigations on application of quality management tools and techniques in SMIs. *International Journal of Quality & Reliability Management*, 20(7), 795-826.

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Anon, (2007). 5S Management. [http://vdb.gib.govtr/edirnevdb/sunumlar/5S\\_Sunum/5Sy.html](http://vdb.gib.govtr/edirnevdb/sunumlar/5S_Sunum/5Sy.html). Bayo-Moriones, A., Bello-Pintado, A., & De Cerio, J. M. D. (2010). 5S use in manufacturing plants: contextual factors and impact on operating performance. *International Journal of Quality & Reliability Management*, 27(2), 217-230.

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### III. RESEARCH METHODOLOGY

Sampling unit, sampling size and sampling proceeds are given under the sampling plan. The selected for the study was 202 employees. First step to adopt for the study is approaching employee's and gave them a well-planned questionnaire and later on passing them between professionals.

#### 3.1. STATISTICAL TOOL

- Correlation
- Chi square

#### 3.2. CHI SQUARE

Chi-square is a statistical test commonly used to compare observed data with data one would expect to obtain according to specific hypothesis. The chi-square test is always testing what scientists call the null hypothesis, between the expected and observed states that there is no significant difference result.

The formula for calculating chi-square  $= \sum (O-E)^2/E$

#### 3.3. CORRELATION

Correlation is computed into what is known as the correlation coefficient, which ranges between -1 and +1, if the correlation is 0, the movements of the securities are said to have no correlation, they are completely random.

$$R = \frac{[n \sum xy - (\sum x)(\sum y)]}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$

### ANALYSIS & INTERPRETATION:

#### CORRELATION ANALYSIS BETWEEN RESPONDENTS AGE AND RESPONDENTS' INCOME

		Age of Nurses	Monthly Income
Age	person	1	0.418
Correlation		202	202
N			
Income	person	0.418	1
Correlation		202	202
N			

**CONCLUSION:** There is a significant **Negative correlation** between the respondents age and monthly income related factors (**r=0.418**)

#### 4.1.CHI-SQUARE ANALYSIS BETWEEN AGE AND 'SORT' PHASE, IS IT IMPORTANT TO IDENTIFY UNNECESSARY ITEMS

**Null hypothesis(H<sub>0</sub>):**

There is no association between age and 'Sort' phase, is it important to identify unnecessary items

**Alternative hypothesis(H<sub>1</sub>):**

There is an association between age and 'Sort' phase, is it important to identify unnecessary items.

	Value	df	Asymptotic significance
Pearson Chi-Square	20.204 <sup>a</sup>	12	0.063
Likelihood Ratio	23.578	12	0.023
Linear-by-Linear Association	2.148	1	0.143
N of Valid Cases	202		

**CONCLUSION:** Chi square shows the person chi square significant value is 0.063. when we compare with p value (0.05), our calculated value is greater than the p value  $0.063 > 0.05$ . therefore, we have to accept our null hypothesis H<sub>0</sub> and rejecting alternative hypothesis H<sub>1</sub>. Hence there is no association between age and 'Sort' phase, is it important to identify unnecessary items.

#### 4.2.CHI-SQUARE ANALYSIS BETWEEN GENDER AND 'SHINE' PRIMARILY INVOLVE CLEANING AND INSPECTING WORK

**Null hypothesis(H<sub>0</sub>):**

There is no association between gender and 'Shine' primarily involve cleaning and inspecting work areas.

**Alternative hypothesis(H<sub>1</sub>):**

There is an association between gender and the 'Shine' primarily involve cleaning and inspecting work areas.

	Value	df	Asymptotic significance
Pearson Chi-Square	8.076 <sup>a</sup>	4	0.089
Likelihood Ratio	7.350	4	0.119
Linear-by-Linear Association	3.041	1	0.081
N of Valid Cases	202		

**CONCLUSION:** Chi square shows the person chi square significant value is 0.089. when we compare with p value (0.05), our calculated value is greater than the p value  $0.089 > 0.05$ . therefore, we have to accept our null hypothesis  $H_0$  and rejecting alternative hypothesis  $H_1$ . Hence there is no association between gender and the 'Shine' primarily involve cleaning and inspecting work areas.

#### 4.3.CHI-SQUARE ANALYSIS BETWEEN GENDER AND ONGOING TRAINING IMPORTANT FOR SUSTAINING THE RESULTS ACHIEVED THROUGH THE 5S METHODOLOGY

##### Null hypothesis( $H_0$ ):

$H_0$ : There is no association between gender and Ongoing training important for sustaining the results achieved through the 5S methodology.

##### Alternative hypothesis( $H_1$ ):

$H_1$ : There is an association between gender and Ongoing training important for sustaining the results achieved through the 5S methodology.

	Value	df	Asymptotic significance
Pearson Chi-Square	8.009 <sup>a</sup>	4	0.091
Likelihood Ratio	7.853	4	0.097
Linear-by-Linear Association	3.163	1	0.075
N of Valid Cases	202		

**CONCLUSION:** Chi square shows the person chi square significant value is 0.091. when we compare with p value (0.05), our calculated value is greater than the p value  $0.091 > 0.05$ . therefore, we have to accept our null hypothesis  $H_0$  and rejecting alternative hypothesis  $H_1$ . Hence there is no association between gender and Ongoing training important for sustaining the results achieved through the 5S methodology.

#### 4.4. FINDINGS:

Chi square shows the person chi square significant value is 0.063. when we compare with p value (0.05), our calculated value is greater than the p value  $0.063 > 0.05$ . therefore, we have to accept our null hypothesis  $H_0$  and rejecting alternative hypothesis  $H_1$ . Hence there is no association between age and 'Sort' phase, is it important to identify unnecessary items.

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There is a significant negative correlation between the respondents age and monthly income related factors ( $r=0.418$ )

#### V. CONCLUSION:

The most important barrier for implementation of 5S effectively is poor communication. Techniques of communication and their efficiency are seldom evaluated and communication faults rarely addressed in an industrial workplace. Poor communication can cause wasting resources, time and money, and lowering moral amongst employees. The results of evolving communication systems in an uncontrolled fashion in industries or business could be confusing and complex. There must be an applicable way for using 5S as an improvement tool for communication system. The surveys indicate that there are difficulties in the effective 5S implementation. Another significant barrier is the space between managerial level and shop floor employees and the poor training and awareness of 5S. Since some critical decisions of 5S activities, including time and budget performance must approve and support by management, therefore more cooperation is recommended during implementation period (Gapp et al., 2008). It is concluded that 5S key of success is training. 5S implementation is not possible without proper training and employees are not capable to actively standardize the 5S (Ho, S.K.M; 1999). Organization should pay attention to this fact that resistance to change is one issue, which will be occurring during 5S implementation. Therefore, it is believed that continuous training is the key applying to change the organization culture, and assessment should focus on improvement and progress regarding all input from the organization until complete establishment of 5S system (Nilipour & Jamshidian, 2005). It is obvious that the target

of 5S application is vast and diverse and when effectively implemented, the business improvement can be surprising. However, the total benefits of 5S cannot be imagined in industries and business, until the barriers associated, fully understood, addressed and removed.

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