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Improved Methodology for Storage and Quick Retrieval of Hard Files using 5s Principles

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Abstract: Certain departments of large organizations have to maintain heavy amount of data in printed form. This includes project wise files, meeting reports, important project related documents etc. for each year since the inception of the company. It is a very tough task to maintain all these files, prevent them from damage over the years, avoiding filing of unimportant or obsolete information and more importantly, finding the exact file whenever it is required for reference. Similar problem was faced by the Purchasing Project Management Department of a leading vehicle manufacturing company in Pune to maintain its hard files. This paper talks about how the problem is addressed and solved by adopting a systematic approach and the resultant time savings by implementation of the 5-S principles, at the same time ensuring ergonomics and human comfort. It also talks about the time savings achieved through this new system.

Keywords: 5S Implementation, Colour coding, Hard Files, Quick retrieval, Ergonomics

I. INTRODUCTION

Whether it is a new business or an established organization running for many years, there will always be efficient time management only when the data of the office is well organized. In large organizations, employees spend 1.8 hours every day—9.3 hours per week, on average—searching and gathering information according to a survey by McKinsey [1]. The above said company is one of the leading automobile manufacturers in the world. It has around 4000 employees spread over 15 departments. This means that the amount of data generated by each department must be really huge. Large data results into large number of files, and if the right file is not found at the right location in minimum time, it will lead to a lot of wastage of time and resources and may also generate panic at times if the data in question is highly confidential. Hence it was essential to devise a system of organizing this data and setting up a process to find the required data accurately every time using a Master Directory based in Excel. Concepts of 5S have been used for the same including introduction of naming system; colour codes etc. and the improvements have been successfully quantified.

II. PROBLEM STATEMENT

The Project Management department of a leading car manufacturing company in Pune looks after all its new projects for the Indian and some international markets. Every project involves a lot of documentation and paper work which results into a large amount of files and folders, and the department has to maintain all these files for future reference. Currently the department has its data divided into more than 150 files which if not maintained properly, results into a lot of mess and occupies large space. It was first needed to study the area and prepare a plan to Sort, Set in Order, Shine and Standardize the files and then to hand it over to the team members to sustain this system. The solution to this challenge is described further in this paper.

III. LITERATURE REVIEW

Even in the age of email and the Internet, we still deal with many paper documents and files. There's a flurry of data pouring in from all directions that we need to process and store to retrieve later. We want to be able to find the information we need at the right moment, when we need it, so it can be used for further analysis or report writing, or perhaps for creating a presentation. Most of the times we waste our own time and often the time of other people searching for data that's actually sitting somewhere on our desk or in an office filing cabinet. This adds to our stress, and makes the task of putting the data to use more difficult than it ought to be. So we need to get more organized and efficient with our file management if we're going to get our work done in a timely manner [2]. Looking for an item in a file cabinet and not finding it happens quite a bit. In fact, employees spend one-fifth of their day looking for hard copies, and in only 50% of the cases do they find the information in the expected place. Labour expended for file hunting is by far the biggest expense related to paper record systems. In some cases, employees never find the document in question at all, and the staff has to repeat the work to produce it again, adding to the drain on resources. [3]. IDC data shows that “the knowledge

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worker spends about 2.5 hours per day, or roughly 30% of the workday, searching for information....60% of company executives felt that time constraints and lack of understanding of how to find information were preventing their employees from finding the information they needed [4].

The 5S technique is a structured program to systematically achieve total organization cleanliness, and standardization in the workplace. The benefit of 5S technique is improvement in productivity, quality, health and safety [5], [6].

A. Terms of 5S are Described as

- 1) *Seiri (Sort)*: The removal of all unwanted, unnecessary, and unrelated materials in the workplace.
- 2) *Seiton (Set in Order)*: This step consists of putting everything in an assigned place so that it can be accessed or retrieved quickly as well as returned in that same place quickly.
- 3) *Seiso (Shine/Clean)*: It consists of cleaning up the workplace and giving it a 'shine'.
- 4) *Seiketsu (Standardize)*: It defines the standards by which personnel must measure and maintain cleanliness.
- 5) *Shinseki (Sustain)*: This last step is about 'Discipline.' It maintains orderliness and to practice the first 4 S as a way of life the introduction of the paper should explain the nature of the problem, previous work, purpose, and the contribution of the paper. The contents of each section may be provided to understand easily about the paper. [7]

IV. METHODOLOGY

A. Implementing the First 3-S



Fig. 1: First 3-S

- 1) *Seiri (Sort)*: This is the first stage of the 5S process. All files were sorted and segregated to begin with. The scattered files were brought together for sorting and segregation purpose.
- 2) *Seiton (Set in order)*: Unimportant data was scrapped in order to free some space and reduce data size. Also duplicate files or papers were targeted and eliminated.
- 3) *Seiso (Shine and Clean)*: Grouping and Sequencing of Similar files was done according to functionalities or based on data contained inside the files. E.g. Files of different sub-departments like Steering, Implementation and Model Year changes were grouped in separate areas.

B. Defining Storage Areas Inside the Department

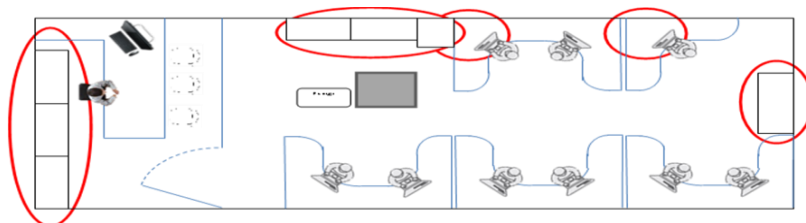


Fig. 2: Office Layout with Decided Storage Areas

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Areas were defined based on ease of use, size of area, number of files in each area etc. Also, ergonomics were considered keeping in mind the human movement and available workspace.

C. Assigning Colour Codes to Each Area

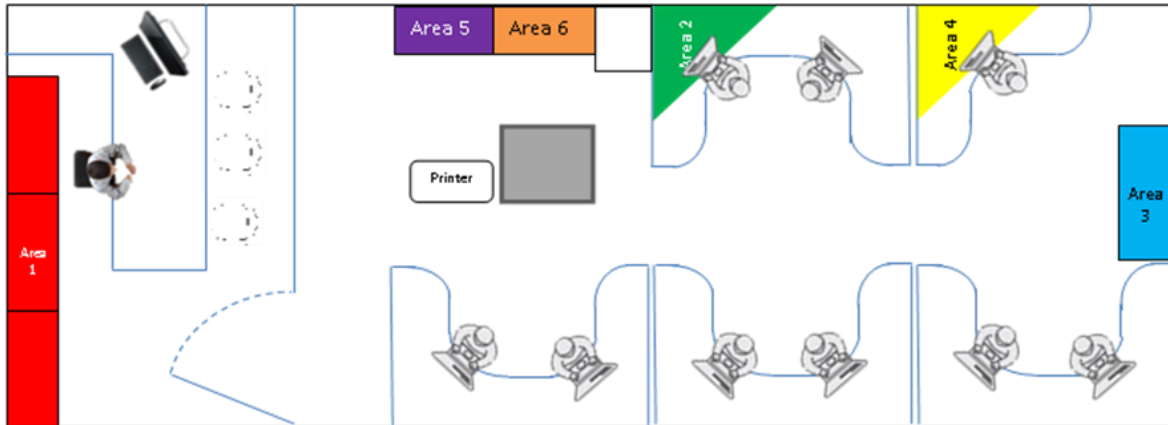


Fig. 3: List of Colour codes in Areas

Colours were assigned in the above pattern to different shortlisted areas. Each file in an area will have its particular colour code on the label.

D. The File Type that Each Area will Contain was also Decided and Files were Sorted Accordingly

- 1) Area 1: Confidential Administration related files
- 2) Area 2: Implementation and Working files of PPM head
- 3) Area 3: Steering Activity related files
- 4) Area 4: Finance Controlling files
- 5) Area 5: General Department Files
- 6) Area 6: Technical Change Management files

E. Preparing File labels for each Area: (The 4th-S)

PPM PURCHASE	PPM PURCHASE	PPM PURCHASE	PPM PURCHASE	PPM PURCHASE	PPM PURCHASE
●	●	●	●	●	●
100	200	300	400	500	600
Sign Off Licenses and Tracking Plan	AcA Backup File - Red Items	Economy Car	Year End 2015	Global Assessm+ Supplier Study	EA 211 Engine Projects No: 02
2011-12	2016-17	2016	2015	2015	2016

Fig. 4: File Labels

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F. SEIKETSU: (Standardize)

The most extensive phase of this activity was Standardizing Label formats and Preparing labels for each file according to Number Code and Color Code. Master list was prepared which is the key tool for using this new system.

G. Implementation Phase

Files in each area were given new labels. This improved the appearance of the files and also made file retrieval very easy. Also, any file lying outside the area can now be quickly differentiated from the rest of the files due to its label color and returned to its original location.

Following is the change implemented in the department files



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Fig. 5: Transformation of Files in All Areas

H. Preparing Master List of Files

Master List of all files was prepared with filters so that any name can be entered in the search function of the filter to find the desired file. Sample as shown:

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TABLE I SAMPLE OF MASTER LIST OF FILES

Master List of Files maintained by PPM								
File No.	File Name	File Location	Sequence Number	Location Color	Year	Responsibility	Internal/External Meetings	Updation Frequency
1	...	Area 1 - C2	101		2011	...	Internal	Needbased
2	...	Area 1 - C2	102		2011	...	Internal	Needbased
24	...	Area 2	201		2016-17	...	Internal	Needbased
25	...	Area 2	202		2016-17	...	Internal	Needbased
36	...	Area 3	300		2009-11	...	Internal	Needbased
37	...	Area 3	301		2015	...	Internal	Needbased
52	...	Area 4	401		2012	...	Internal	Needbased
53	...	Area 4	402		2013	...	Internal	Needbased
72	...	Cupboard 1	501		2015	...	Internal	Needbased
73	...	Cupboard 1	502		2015	...	Internal	Needbased
100	...	Cupboard 2	601		2016	...	Internal	Needbased
101	...	Cupboard 2	602		2016	...	Internal	Needbased

V. RESULTS

To measure the effectiveness of the 5S system, files names were picked out at random and team members were voluntarily asked to search for these files. Time required for searching these files was recorded. In the next step, same number of other files were searched by team members using the Master excel list and the files were retrieved based on the File number and color. Time was again recorded for this activity. The comparative timings were listed down and analysed.

A. The Results are as Follows

TABLE II TIME MEASUREMENTS FOR OLD AND NEW SYSTEM

Time Measurement using Old System			Time Measurement using New System		
No	File Name	Time Required (in Min)	No	File Name	Time Required (in Min)
File 1	...	1:05	File 1	...	0:15
File 2	...	0:54	File 2	...	0:12
File 3	...	1:08	File 3	...	0:08
File 4	...	0:48	File 4	...	0:09
Total		3:55	Total		0:44

B. Calculations

Average (Old) = $235 \div 4 = 58.75$ sec

*(3:55min = 235sec)

Average (New) = $44 \div 4 = 11$ sec

Thus,

Total time saved = $((58.75 - 11) \div 58.75) \times 100 = 81.27\%$

VI. CONCLUSION

This new file maintenance and retrieval system is very efficient and easy to use. Tests have showed that this system can save more than 81% time in searching any hard file. This saved time can be used by employees for other productive tasks and thus it results in efficient utilization of manpower in office. Due to strategically positioned storage areas of the files, the work ergonomics have been improved upto certain extent. The overall appearance of files has also improved in the work area due to systematic labelling and color coding. As the new system saves manual efforts, this change is welcomed by all team members. The last 'S' of the 5S system

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which refers to sustaining the new system is very important and this is where most 5S systems fail. This task has been assigned to one of the team members who will look after maintenance and sustenance of the file retrieval system. Thus it can be concluded that the newly introduced 5S system is a success in many aspects.



VII. ACKNOWLEDGMENT

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