Implementing the office TPM
“office TPM” program: a library case study

Nihar Kanta Patra
Librarian, Indian Institute for Production Management, Kansbahal, India

Jayanta Kumar Tripathy
Assistant Librarian, Entrepreneurship Development Institute of India, Ahmedabad, India

Dr B. K. Choudhary
Reader and Head, Department of Library and Information Science, Sambalpur University, India

Abstract
Purpose – This paper discusses the implementation of office TPM in Indian Institute for Production Management (iiPM) library situated at Kansbahal, Orissa, India. It describes very briefly the reasons for and benefits of implementing office TPM and explains the policies, objectives, roadmap and methodology used at the iiPM Library. It also elaborates the Japanese terms, which are known as 5S.

Design/methodology/approach – An exposition of the principles of office TPM and a brief case study account of their application.

Findings – The goal of a TPM program is to increase production and improve employees’ moral and job satisfaction. This case study did demonstrate these benefits, but there are training issues that need to be addressed for such success to be achieved, and similarly a full commitment of senior management to the program is also essential.

Practical implications – This paper offers advice to assist practitioners in the development of a successful office TPM program.

Originality/value – The application of a broad management tool specifically to the library context is original and valuable.

Keywords Continuous improvement, Management activities, Libraries, India

Paper type General review

Introduction
The global marketplace has become increasingly competitive in recent times and organizations are faced with the challenge of effecting continuous improvement in services for sustained user satisfaction. This calls for improved performance by focusing on cost cutting, increasing productivity levels, quality and timely deliveries. The ability of an organization to achieve “World Class” status depends largely on whether it can get all of these various functions to work together – simultaneously rather than sequentially. And it also depends on removing the divisions between its departments and functions, because these divisions cause mistrust, rivalry and dysfunction, which in turn leads to waste, efficiency and chaos.

The authors are grateful to the editor, Nicholas Joint, and the anonymous reviewer(s) of Library Review whose generous comments greatly improved the quality of the paper.
Therefore, in today's turbulent and market driven economy it is vital for organizations to adopt those practices, programs or methods which help facilitate continuous improvement in services. One of the keys to staying competitive today is the ability to implement significant improvements throughout the organization and supply network. Such improvement may come through occasional breakthroughs – this is “innovation-based” improvement. Or it may come through incremental improvement – so-called “continuous” improvement.

With innovation-based improvement, change in the organization and its performance are sudden and significant and invariably expensive. This type of improvement is instigated by a few people who are directly involved with the problem. On the other hand continuous improvement seeks smaller incremental changes, attaining pervasive quality enhancement in the services delivered. In continuous improvement it is not the rate that is important but the momentum that matters. This means that it does not matter how small matter is that organizations are, what matter is that organization brings some kind of improvement in existing operations.

Total productive maintenance (TPM) is a new philosophy of continuous improvement and teamwork that focuses on delivering these objectives. It is a program for the fundamental improvement of maintenance functions in an organization, which involves its entire human resources. TPM was originally developed by the Japanese from the preventive maintenance strategies used in the United State over 30 years ago. It is implemented through eight core activities known as pillars.

Office TPM is the sixth pillar of TPM. It is carried out in order to improve productivity, increase efficiency in administrative and technical functions, and to identify and eliminate losses. This includes analyzing processes and procedures with the aim of increasing office automation.

**What is total productive maintenance?**

Before studying office TPM, we should know what total productive maintenance (TPM) is. TPM is a new approach to equipment and facility management. TPM is a maintenance program which involves a newly defined concept for maintaining plant, equipment and facilities (Venkatesh, 2003). Here, the library can be considered as plant; journals/magazines display racks, book stacks, computers, printers, scanners, catalogue boxes, xerox machines, binding machines (and so forth) can be considered as equipment; and different types of services provided to users can be considered as facilities.

The three-letter acronym TPM means:

- **Total**: Signifies involvement of all functions and people at all levels of hierarchies.
- **Productive**: Emphasises efficient and effective utilization of all resources.
- **Maintenance**: Means keeping man-machine-material systems in optimal condition.

TPM is thus a method for bringing about change. It is a set of standard activities that can lead to improved management of plant assets when properly performed by individuals and teams (Robinson and Ginder, 1995).

Philosophically, TPM resembles total quality management (TQM) in several aspects, such as

- Total commitment to the program by upper level management is required,
- Employees must be empowered to initiate corrective action, and
• A long-range outlook must be accepted as TPM may take a year or more to implement and is an on-going process. Changes in employee mind-set toward their job responsibilities must take place as well. Total productive maintenance (TPM) is the systematic execution of maintenance by all employees through small group activities (Venkatesh, 2003).

The two main goals of TPM are to develop optimal conditions for the workshop as a human machine system and to improve the overall quality of the workshop environment.

TPM development
Generally speaking, in every organization we can see that there are two chief areas: maintenance and production areas. In maintenance areas, the already well-developed activities are preventive maintenance and productive maintenance. Similarly, in production areas, the already developed parts are quality and total quality management. But in a fully developed implementation of TPM as envisaged by the Japanese, we bridge the divide between both areas, that is, between maintenance and production (Figure 1).

Steps in the introduction of TPM in an organization
The core activities of TPM are organized as “Pillars”. Depending on the author, the naming and number of the pillars may differ slightly. However, TPM is generally implemented through the following eight core activities (Nakajima, 1988) (Figure 2).

Among the eight pillars of TPM, office TPM is a six pillar. It should be started after activating the other five pillars of TPM.

What is office TPM?
It is a systematic approach to improving organizational administration and management of support departments by strengthening their basic capabilities and creating a system capable of responding to change while still adhering to fundamental principles. This leads to increased work efficiency through focused improvement, autonomous maintenance, the so-called “5S approach”, quality maintenance, education
and training. Office TPM focuses on identifying and eliminating losses in administrative activities.

**Why office TPM?**
Due to the rapid development of Information and Communication Technology all kinds of information is now circulated instantaneously throughout the world on a real time basis. This has accelerated the diversification of user needs, which forces organizations to establish a new structure that can help them survive in this competitive environment.

Secondly, to improve productivity and efficiency in administrative and technical functions, it is essential to identify and eliminate losses. This leads to both more efficient processing, and also (hopefully) to foolproof communication by identification of “abnormality” and better man management.

**How to implement office TPM**
The basic aim of office TPM is to reduce losses, engender a better work culture and environment, and a sense of ownership of the jobs that people do. Generally there are four basic steps in the implementing of office TPM, which are:

- Improving the workplace environment through implementation of 5S.
- Identification of “abnormality”.
- Awareness-raising by education and training.
- Creating a sense of ownership by Autonomous maintenance.
Implementing the office TPM

The principle of 5S
The 5S model lists prerequisites for any improvement program. As waste is potential gain, so eliminating waste is a gain. The 5S philosophy focuses on effective work place organization, simplification of the work environment, and reduction of waste while improving quality and safety.

The letters in the five S model stand for the five first letters of the following Japanese words (Willmott, 1994).

Seiri—Sorting out; Seiton—Systematic arrangement; Seiso—Spick and span; Seiketsu—Standardizing; Shitsuke—Self-discipline.

Seiri. This means sorting and organizing the items in the following terms: critical; important; frequently used items; useless; or items that are not need as of now. Unwanted items can be still be salvaged. Critical items should be kept for use nearby, and items that are not (or which are to be used in the near future), should be stored in some appropriate place. For this step, the worth of the item should be decided based on utility and not cost. As a result of this step, search time is reduced.

Seiton. The concept here is that “each item has a place and only one place”. The items should be placed back after usage at the same place. Every item should be marked.

Seiso. After the first thorough cleaning when implementing 5S, daily follow-up cleaning is necessary in order to sustain this improvement. Cleanliness is also helpful to notice damage on equipment. A good, neat and clean working place provides motivation for effective functioning.

Seiketsu. Once the first three S principles have been implemented, it should be standard to keep these good practices current in the work area. Without it, the situation will deteriorate until you are right back to old habits. Have an easy-to follow standard and develop a structure to support it. Allow employees to participate in the development of such standards. This helps in synchronizing the activities of Seiri, Seiton, and Seiso.

Shitsuke. Considering 5S as a way of life brings about self-discipline among the employees of the organization. It is right to keep practising Seiri, Seiton, Seiso, and Seiketsu activities until they become habitual. If the task of bringing change is made into an act of teamwork, it will be found to be easier. There are two reasons for this. Firstly, if we do something as a team, instead of as an individual, it becomes enjoyable and not work that is to be disliked. Secondly, if the job is difficult, sharing the burden through teamworking makes it easier.

The principles of 5S are for everybody – it is hopeless to expect subordinates to follow 5S if managers do not comply also. The 5S model shows efficiency in time, transforming the physical environment of the work area and boosting spirits at all employee levels.

Diagrammatically the above 5S model is represented in Figure 3.

The identification of “abnormality”
This step is absolutely vital for proper improvement of productivity. Employees have the ability to “detect abnormality” with regard to services and equipment, based on a feeling that “there is something wrong” on our work. This is a continuous cycle in which we use tags for abnormality identification. Say for instance, when the computer system, xerox machine, binding machine, CD-server (or similar) fail, then we will not able to provide services in time for our users. And so, to reduce this we should find what are the reasons which can lead to failure. That is “abnormality identification”.

The 5S model lists prerequisites for any improvement program. As waste is potential gain, so eliminating waste is a gain. The 5S philosophy focuses on effective work place organization, simplification of the work environment, and reduction of waste while improving quality and safety.

The letters in the five S model stand for the five first letters of the following Japanese words (Willmott, 1994).

Seiri—Sorting out; Seiton—Systematic arrangement; Seiso—Spick and span; Seiketsu—Standardizing; Shitsuke—Self-discipline.

Seiri. This means sorting and organizing the items in the following terms: critical; important; frequently used items; useless; or items that are not need as of now. Unwanted items can be still be salvaged. Critical items should be kept for use nearby, and items that are not (or which are to be used in the near future), should be stored in some appropriate place. For this step, the worth of the item should be decided based on utility and not cost. As a result of this step, search time is reduced.

Seiton. The concept here is that “each item has a place and only one place”. The items should be placed back after usage at the same place. Every item should be marked.

Seiso. After the first thorough cleaning when implementing 5S, daily follow-up cleaning is necessary in order to sustain this improvement. Cleanliness is also helpful to notice damage on equipment. A good, neat and clean working place provides motivation for effective functioning.

Seiketsu. Once the first three S principles have been implemented, it should be standard to keep these good practices current in the work area. Without it, the situation will deteriorate until you are right back to old habits. Have an easy-to follow standard and develop a structure to support it. Allow employees to participate in the development of such standards. This helps in synchronizing the activities of Seiri, Seiton, and Seiso.

Shitsuke. Considering 5S as a way of life brings about self-discipline among the employees of the organization. It is right to keep practising Seiri, Seiton, Seiso, and Seiketsu activities until they become habitual. If the task of bringing change is made into an act of teamwork, it will be found to be easier. There are two reasons for this. Firstly, if we do something as a team, instead of as an individual, it becomes enjoyable and not work that is to be disliked. Secondly, if the job is difficult, sharing the burden through teamworking makes it easier.

The principles of 5S are for everybody – it is hopeless to expect subordinates to follow 5S if managers do not comply also. The 5S model shows efficiency in time, transforming the physical environment of the work area and boosting spirits at all employee levels.

Diagrammatically the above 5S model is represented in Figure 3.

The identification of “abnormality”
This step is absolutely vital for proper improvement of productivity. Employees have the ability to “detect abnormality” with regard to services and equipment, based on a feeling that “there is something wrong” on our work. This is a continuous cycle in which we use tags for abnormality identification. Say for instance, when the computer system, xerox machine, binding machine, CD-server (or similar) fail, then we will not able to provide services in time for our users. And so, to reduce this we should find what are the reasons which can lead to failure. That is “abnormality identification”.
In that case the respective staff in charge of that particular area should put that abnormality onto the abnormality notice board and take that point into the TPM meeting in order to overcome the problem.

**Awareness raising by education and training**

Successful implementation of an office TPM program depends on effective training at all levels of personnel. The aim is to have multi-skilled, revitalized employees whose morale is high and who are eager to come to work and perform all required functions effectively and independently. For TPM to be an effective tool, an awareness program to win over staff should be carried out. This program may consist of a single point lesson, based on the “Kaizen” concept (the Japanese idea in which we look for small improvement on a continuous basis).

**Creating a sense of ownership by Autonomous maintenance**

Autonomous maintenance is the cornerstone of office TPM activities. Owning and maintaining is both desirable and healthy, a state of affairs that increases the life span of the machine(s)/equipment(s), so providing better services to end users. If we own something we look towards it as truly ours and try to preserve it. Hence for this we must have Autonomous maintenance, where time is fixed, and at this fixed time the owner gets the equipment or machine and works on it. In this way, cleaning also becomes inspection. In the library context, for example, it is very important to know that one person in the library should have overall responsibility for the one “subsystem”, which is commonly called the library system.

In this sense therefore, Autonomous maintenance is the process by which equipment operators accept and share responsibility (with maintenance) for the performance and health of their equipment (Robinson and Ginder, 1995 p. 57).
Benefits of office TPM
Office TPM is the key in getting all people together to focus on better performance and increasing motivation levels of both owner and employees. After implementing office TPM, organization/administration benefits in many areas emerge, such as:

- A better utilized work place; a clean and pleasant work environment after 5S implementation.
- Reduced repetitive work.
- Better organized and more systematic methods; better filing practice leading to reduce retrieval time, improved productivity and efficiency.
- Information sharing and communication, fostering greater trust and cooperation amongst colleagues and users.

Implementation of office TPM at iiPM (Indian Institute for Production Management) library
Office TPM policy at iiPM library
We at the Indian Institute for Production Management (iiPM) library adopted “office TPM” over the last two years as a means of involving all employees in systems and process improvement through teamwork. We wished to create a lively and energetic work place through the implementation of 5S, pursuing efficient systems in each department and accomplishing the highest possible customer satisfaction in terms of quality, cost and delivery. Maximizing overall effectiveness in all areas of the library gave us the aim of “Zero delay”, “Zero Error”, and “Zero waste” through everyone’s participation.

Objectives and methodology
The objectives of the implementation of office TPM at iiPM library were:

- To avoid non-availability of files/documents at any time.
- To adopt a systematic approach for conducting meetings with staff members.
- To provide a clean and healthy environment in the work place.
- To achieve optimum utilization of office space.
- To ensure effective storage of files and documents.
- To create visuals for filing systems, including putting identification tags when files are removed, for example.
- To ensure visual identification of each item.
- To provide better satisfaction to patrons on the basis of cleanliness, speedy retrieval of information, accuracy and timeliness.

To carry forward the implementation of Office TPM at iiPM Library, the following features of the methodology were adopted.

- 5S implementation.
- Computerization of office work.
- Speedy communication system.
- Abnormality identification tag.
Road map
The next step was to announce that office TPM was being put into practice at iiPM library. After this, the selection of a site champion and TPM secretary was started. The main function of the site champion was to conduct an office TPM meeting once a week where staff from all levels of hierarchy could meet. The TPM secretary was selected for back office support. Teams/team leaders were formulated for each department, including classification, cataloguing, accessioning, processing, binding, computerization, among others.

To accomplish our objectives, auditors were selected to audit each department once a week as per the audit's parameters indicated in the audit sheet (see appendix below). Also we followed guidelines by fixing office TPM activity times, when it is mandatory that every team member whosoever is present in the library will participate in the relevant activities, such as filing papers, cleaning their equipment, and putting an “abnormality tag”, if identified, on the abnormality notice board. The TPM secretary compiles the audit sheets submitted by auditors after an audit of each department, and the summary of the report is discussed and communicated in groups and by notice on the notice board. The best team was rewarded with silver coins (or some such gift) a year.

Findings, conclusions and suggestions
After implementing office TPM, iiPM library did achieve significant improvements in filing systems, such as the successful promotion of filing in an identical manner. This was done by successfully locating a unified list of files in one place – that is, on a single server for easy retrieval by each staff member. Office automation was thus increased, in turn increasing productivity (providing better services to users). “Abnormalities” were effectively removed, promoting one-step speedy communication with both colleagues and also with users. As a result, iiPM library came to embody the principle of “ONE” in its campaign for improved effectiveness: one location for keeping files (on a single server/Local Area Network (LAN)), one day processing, one copy filing (rather than many copies), one hour meeting (not open-ended meetings), one minute phone calls, and so forth.

Our conclusion was that proper understanding, commitment and active involvement of top management is needed for the effective implementation of office TPM. Senior management should initially receive awareness programmes, after which a broader announcement should be made to all. Training should be done based on need. Some need intensive training, while others need just some awareness-raising.

Office TPM includes improvement, Autonomous maintenance, and quality maintenance of various administrative and technical functions and services of the library. When committees are set up they should note the following:

• The employees should be appropriately and adequately trained in the relevant disciplines such as Classification, Cataloguing, Indexing, Filing of documents, and Reference services.

• If they are not, there will be a need to improve the technical skills of employees and to use inspection manuals correctly before implementing any Office TPM programme effectively.

• Staff have to acquire the high level of computer skills needed to carry out the library automation activities and effective information-searching through online and CD-ROM databases which are central to the program.
• After acquiring any such new knowledge, employees should share this with others. There can be structured program such as a KIP (Knowledge Integration Programme) in every fortnightly or monthly TPM meeting.

Today, with the explosion of information and emergence of new technologies, office TPM can be a great tool for ensuring high quality library services and high user satisfaction. There is real evidence that it is a program that works. However, library staff must be educated and convinced that office TPM is not just another “program of the month” but it is a way of life. And similarly, management should be totally committed to the program and the extended time frame necessary for its full implementation.

References


Appendix

Format of Audit Sheet

Audit sheet for implementation of 5S in office Area.  Month: Year:

Team Name:

Team Leader:

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Parameters</th>
<th>Maximum score</th>
<th>Obtained Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No dust &amp; dirt present in the office.</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Identified place is marked for every thing.</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>All files are included in Master file and placed on LAN</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Involvement of team in TPM</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Storage period is marked in master file.</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Files are tagged in identical manner (with decided Id no)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Retrieval of files in a minute.</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Papers are put in chronological order in file or in the standard method followed by each department</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>All team members are wearing Identity card.</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Unnecessary light is minimized; Air conditioning is in off condition and all cables and other items are laid properly dressed etc.</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>== -----------------------</td>
</tr>
<tr>
<td>Shift</td>
<td>+/- -----------------------</td>
</tr>
</tbody>
</table>

Suggestions for improvement:

1
2
3
4

Figure A1.

Auditors Signature :  Signature of Team leader :
Auditors Name : Name of Team leader :