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Waste Reduction: A Practical Approach

KEYWORDS: TPM, 5S , Kaizen

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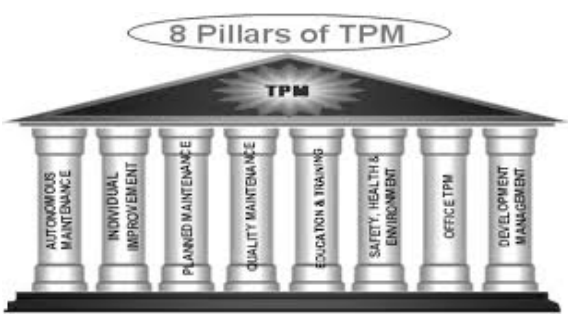
ABSTRACT *Today, with business competition at an all time high, TPM, 5s & Kaizen may be the only factor that separates success and failure & dedication will definitely bring in high return.*

TPM concentrates on productivity improvement by way of maximizing the availability of equipment.

The 5S Process is a structured program to achieve total organization, cleanliness, and standardization in the workplace. It results in a safer, more efficient, and more productive operation. It boosts the morale of the workers , promoting a pride in their work and ownership of their responsibilities.

Kaizen is based on making little changes on a regular basis always improving productivity, safety and effectiveness while reducing waste in a quickly changing economic environment.

It is used to sustain continuous improvement & optimization of administrative system. Study shows that excellence will pave the road to unparallel growth. Within a decade the company can grow by leaps & bounds.



Managerial Expertise with TPM, 5S & Kaizen Research reveals that Success depends upon implementation of TPM, 5S & Kaizen

INTRODUCTION

Today, with business competition at an all time high, TPM, 5s & Kaizen may be the only factor that separates success and failure. If everyone involved in this program works with dedication, it will definitely bring in high return.

TPM is a unique Japanese system of managerial expertise. The origin of TPM can be traced back to 1951 when preventive maintenance was introduced in Japan. However the concept of preventive maintenance was taken from USA.

Total Productive Maintenance (TPM) is a business process improvement method, developed from the perspective of maintenance management. TPM concentrates on productivity improvement, primarily by way of maximizing the availability of equipment. To do that, small multidisciplinary teams improve step-by-step the Overall Equipment Effectiveness of their machines or production lines. TPM was first applied by the Japanese company Nippondenso, a supplier to the automotive industry. Later the method was further developed by the Japan Institute for Plant Maintenance. In the European Union, Unilever is one of the biggest propagandists of TPM. This food multinational has used this improvement method for over 15 years, during which it has grown into an overarching process management system.

Figure 1 : 5S Methodology

The 5S Process (Sort, Set in place, Shine, Standardize, and Sustain.) is a structured program to achieve total organization, cleanliness, and standardization in the workplace. A well-organized workplace results in a safer, more efficient, and more productive operation. It boosts the morale of the workers, promoting a sense of pride in their work and ownership of their responsibilities.

1) Sort

Sort is the identification of the most successful physical organization of the workplace. It has been variously defined as Sort, Systematization or Simplify. It is the series of steps by which we identify things which are being held in the workplace when they shouldn't, or are being held in the wrong place.

2) Set

Setting is the series of steps by which the optimum organization identified in the first pillar, sort, and are put into place. The standard translation is orderliness, set in order, straighten and standardization. The sorting out process is essentially a continuation of that described in the Set phase. Removing items to be discarded or held in an alternative location will create space. This space will be visible and facilitate the alternative layout of the area.

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3) Shine
Shine, sweeping or cleanliness are addressed in this phase. The principle here is that we are all happier and hence more productive in clean, bright environments. There is a more practical element in that if everything is clean it is immediately ready for use.

4) Standardization
Standardization can be the thought of as the means by which we maintain the first three 5S concepts. There is a danger in any improvement activity that once the focus is removed and another top priority arises, things go back to the way they were before (the informal system). To prevent a relapse to informal pre-5S, set a schedule by which all the elements are revisited on a regular basis. Focus on controlling 5S and maintaining it continuously.

5) Sustain
The final stage of sustain is discipline. Sustain means a formal, rigorous review program to ensure that the benefits of the approach are maintained.

Kaizen
Kaizen is based on making little changes on a regular basis always improving productivity, safety and effectiveness while reducing waste in a quickly changing economic environment.

Kaizen was created in Japan following World War II. The word Kaizen means "continuous improvement". It comes from the Japanese words "kai" which means "change" or "to correct" and "zen" which means "good".

Kaizen is a system that involves every employee - from upper management to the cleaning crew. Everyone is encouraged to come up with small improvement suggestions on a regular basis. This is not a once a month or once a year activity. It is continuous. Japanese companies, such as Toyota and Canon, a total of 60 to 70 suggestions per employee per year are written down, shared and implemented.

In most cases these are not ideas for major changes. Kaizen is based on making little changes on a regular basis: always improving productivity, safety and effectiveness while reducing waste.

Suggestions are not limited to a specific area such as production or marketing. Kaizen is based on making changes anywhere that improvements can be made. Western philosophy may be summarized as, "if it ain't broke, don't fix it." The Kaizen philosophy is to "do it better, make it better, improve it even if it isn't broken, because if we don't, we can't compete with those who do."

Kaizen in Japan is a system of improvement that includes both home and business life. Kaizen even includes social activities. It is a concept that is applied in every aspect of a person's life.

In business Kaizen encompasses many of the components of Japanese businesses that have been seen as a part of their success. Quality circles, automation, suggestion systems, just-in-time delivery, Kanban and 5S are all included within the Kaizen system of running a business.

Kaizen involves setting standards and then continually improving those standards. To support the higher standards Kaizen also involves providing the training, materials and supervision that is needed for employees to achieve the higher standards and maintain their ability to meet those standards on an on-going basis.

OBJECTIVES
1. To study the importance of continuous improvement.
2. To study the recent trends in TPM
3. To study the concept of lean manufacturing.
4. To ensure high satisfaction level and reduce percentage of complaints of customers & waste reduction after implementing TPM,5S & Kaizen.
5. To estimate the future growth with TPM.

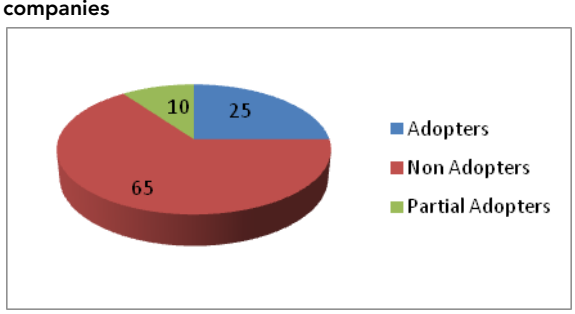
Data collection
Data was collected from two sources-primary and secondary sources.

1. Primary data collection- The primary data was collected by means of survey through questionnaire.
2. Secondary data collection-This data was collected from Internet, Company's websites & Magazines.

SAMPLE SIZE
The research was conducted in India with a sample of 500 Large, Medium & Small enterprises in metros & non metros.

DATA ANALYSIS & INTERPRETATION
It was found that only 35% companies are using this concept & rest of them are not aware of it. The companies were divided into three groups

Table 1 : Percentage of adoption of TPM,5S & Kaizen by companies



25% are successful adopters, 65% are non adopters & 10% companies are Partial adopters.

It was found in the survey that in today's industrial scenario huge losses/wastage occurs in the manufacturing shop floor. This waste is due to operators, maintenance personal, process, tooling problems and non-availability of components in time etc. Other forms of waste includes idle machines, idle manpower, break down machine, rejected parts etc are all examples of waste. The quality related waste are of significant importance as they matter the company in terms of time, material and the hard earned reputation of the company. Respondents said that there are also other invisible wastes like operating the machines below the rated speed start up loss, break down of the machines and bottle necks in process. Zero oriented concepts such as zero tolerance for waste, defects, break down and zero accidents are becoming a pre-requisite in the manufacturing and assembly industry. In this situation, a revolutionary concept of TPM, 5S & Kaizen has been adopted in 25% industries to address the above said problems.

The number of companies, who are adopting this concept, is growing each day. These companies have reported 50% or greater reduction in downtime, reduced spare parts inventory and increased on-time deliveries, 80% increased production in some areas, increase in profits & achieved highest Standard of Health, Safety and Environmental Protection.

65 % companies have not introduced this concept (Non adopters), are making profits but at a slower pace. These companies have not understood the importance of these key factors in elevating customer satisfaction. The managers & CEO's should get the insight in to this area for becoming more successful in all parameters & stand ahead of the competition. Each & every employee of the organization should

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be involved in this process.

10 % companies are partial adopters of this concept means not executed properly because of non involvement of the entire team of the orgnisation.Periodical audits should be conducted to see where we are moving.They have not understood the benefits of implementing this concept which requires dedication and patience.

CONCLUSION

Study shows following Benefits to the organizations after Implementing TPM. 95 % of the adopters opined that

- Net Productivity up by 2 times.
- Process defect rate reduced by 90 %.
- Customer returns reduced by 70 %.
- Production cost reduced by 30 %.
- Equipment failures reduced by 88 %
- Maintenance costs reduced by 30 %.
- Return on Investment improved by 250 - 300 %.
- Defects reduced by 90 %.
- Warranty claims reduced by 30 %.
- Elimination of shut down accidents.
- Elimination of pollution incidents.

The study explored that almost all the business benefit from implementing this program. Manufacturing plants realized the large scale benefits. However, business from a retail store to a power plant - from hospitals, Pharmaceutical companies to television stations - all types of businesses, and all areas within a business, are bound to reap benefits from implementing this program.

It is used as to help implementation of vision, to sustain continuous improvement & continual optimization of administrative system. Study shows that excellence will pave the road to unparallel growth. Within a decade the company can grow by leaps & bounds.

These findings have dramatic implications on businesses. The future of organizations will be dependent upon this. Industries should strive to excel by the Creativity, Innovation and Technical knowledge.It is a solid foundation to build continuous improvement. It is usually a part of, and the key component of establishing a Visual Workplace, a system of continual improvement - which is a component of lean manufacturing.

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