



---

## International Journal of Intellectual Advancements and Research in Engineering Computations

---

### **An organisational study and a study on awareness of total productive maintenance and its impact on organisational performance with special reference to Sakthi Sugar Pvt. Ltd**

**Prof. N. Devaraj, Mugunthakumar. A. G**

Associate Professor /MBA, Nandha Engineering College (Autonomous)  
2<sup>nd</sup> MBA Nandha Engineering College

---

#### **ABSTRACT**

Total Productive Maintenance (TPM) is a process that maximizes the productivity of equipment for its entire life. It fosters an environment where improvement efforts in safety, quality, cost, delivery, and creativity are encouraged through the participation of all employees. TPM is not simply a preventive maintenance program. Rather, it is a strategic management initiative to increase capacity and end the vicious cycle of 'breakdown' or reactive repairs through the use of autonomous and predictive maintenance, as well as equipment modifications to facilitate optimum machine availability, quality, and performance. The TPM presentation focuses on a results oriented implementation methodology designed to minimize the 6 major equipment losses. Overall Equipment Effectiveness (OEE), an equipment performance assessment or measurement, is introduced. By understanding and implementing TPM, companies can use it as a foundation and fundamental discipline to facilitate Condition Based Maintenance (CBM) effectively.

---

#### **INTRODUCTION**

Total Productive Maintenance (TPM) is a process or technique. This technique was first introduced by Japanese in 1952. This is an extension to TQM. TPM is a well-defined and organized program which eliminates the losses caused by break-down of machines and equipment's by identifying and attacking all causes of equipment break downs and system down time. TPM is a cost-effective technique through this technique it is possible to maintain the plant, machinery/equipment and tools in productive state in least cost. Well maintained machines lead to productivity. In a competitive environment, organization requires a significant competitive advantage. Implementation of quality system is used to get competitive edge. The basic concept of TPM is zero loss concept means zero breakdown, zero defects and zero accidents. TPM is also known as totally painted machine. It is the

philosophy through which organization can go into continuous improvement mode in all the activities. [1-3]

#### **STATEMENT OF THE PROBLEM**

For total quality management to be successful, there has to be management commitment to it. Most of the companies that practice total quality management pursued their total quality management efforts for 10 years before seeing returns. This may be due to pressures faced by management to set priorities that will help to maintain or improve company's performance. Total quality management application requires that management dedicate time, money, labour and other resources, since this is the case, total quality management often conflicts with higher priorities or initiatives.

---

**Author for correspondence:**

Department of Management Studies, Nandha Engineering College, Perundurai – 638052

### Objective of study

- ❖ To identify the Demographic Profile of Respondents.
- ❖ To rank the reason for implementing TPM concept in organization.

### Scope of study

- ❖ This study will help for organization to identify the impact of TPM.
- ❖ This study will helpful for the employees to understand the various difficulties faced by the organization due to TPM.
- ❖ This study will helpful for the future research in suggesting suitable measures to reduce the impact of TPM.

### Limitations of the study

- ❖ Lack of response among employee because the survey was taken in their working hours.
- ❖ Due to short span of time the collection sample became tedious.

### LITERATURE REVIEW

- ❖ PerumalPuvanasvaran, Y.S.Teoh, C.C.Tay (2013), "Consideration of demand rate in overall equipment effectiveness (OEE) on equipment with constant process time". Journal of industrial Engineering management 6(2), 507-524 introducing new concept in defining the overall equipment effectiveness with the consideration of both machine utilization and consumer demand requested.
- ❖ Ponce-Hernandez, M.M., Gonzalez-Angeles A, Navararrow-Gonzalez C.R. &Cabrera- Cordova E,(2013), "Overall Equipment Effectiveness (OEE) Diagnosis and improving in a small business as an essential tool for business competitiveness "Research journal of recent science,Vol.2(6),58-65. The main motivation for improving productivity is to develop and implement manufacturing methods and concepts that provide stable, flexible and low cost production with high quality levels.
- ❖ Prof.A.Bangar,Hemlata Sahu,Jagmohan batham ,(2013),"Improving Overall equipment effectiveness by implementing Total Productive Maintenance in Auto industry", International Journal of emerging technology

and advanced engineering,Vol.3

- ❖ ,Issue 6. Today's global world competition market every industry needs to minimize its operating cost and produce world class products. Maintenance practice is considered as an important function to increase the productivity by minimizing the overall equipment effectiveness.

### RESEARCH METHODOLOGY

#### Research design

A Master plan that specifies the method and procedures for collecting and analysing needed information.

#### Descriptive research

Descriptive research design is used for the study; it is a fact finding investigation with adequate interpretation.

#### Sample design

Sampling is the process of selecting a sufficient number of elements from the population. A Sample Design is a definite plan for obtaining a sample from the sampling frame. It refers to the technique or the procedure the researcher would adopt in selecting some sampling units from which inferences about the population is drawn.

#### Probability sampling

Probability sampling is a sampling technique where the samples are gathered in a process that will have all the individuals in the population of getting equal chances of being selected.

#### Simple random method

A simple random sample is a subset of a statistical population in which each member of the subset has an equal probability of being chosen. An example of a simple random sample would be the names of 50 employees being chosen out of a hat from a company of 556 employees.

#### Size of the sampling

The sample size is 100

## DATA COLLECTION METHOD

### Primary data

These are data which are collected for the first time directly by the Researcher for the Specific study undertaken by researcher. In this research primary data are collected directly from the Respondent by using Questionnaire cum Enumeration Method.

### Secondary data

These are data which are already collected and used by someone preciously. The data are collected from journals, magazines and websites.

### Formula

$$\text{Percentage analysis} = \frac{\text{Number of respondents}}{\text{Total number of respondents}} \times 100$$

### Henry garret ranking method

Garrett's ranking technique to find out the most significant factor which influences the respondents; Garrett's ranking technique was used. As per this method, respondents have been asked to assign the rank for all factors and the outcomes of such ranking have been converted into score value with the help of the following formula: Percent Position =  $100 (R_{ij} - 0.5) / N_j$  Where  $R_{ij}$  = Rank given for

### Statistical tools used

To analyse and interpret collected data the following simple percentage and ranking were used.

### Simple percentage analysis

To analyse and interpret collected data the following simple percentage and ranking were used.

the  $i^{\text{th}}$  variable by  $j^{\text{th}}$  respondents  $N_j$  = Number of variable ranked by  $j^{\text{th}}$  respondents

## DATA ANALYSIS

The Respondents participated in the research are from diversified background with age, gender, marital status, educational qualification, monthly income, year of the service, and implementation of TPM time.

**Table no 1: Demographic profile of the respondents**

Details of the respondents		No. of the respondents	Percent age
Age	Below 25	21	21
	25-35	35	35
	35-45	25	25
	Above 45	19	19
	<b>Total</b>	<b>100</b>	<b>100</b>
Gender	Male	100	100
	Female	0	0
	<b>Total</b>	<b>100</b>	<b>100</b>
Marital status	Married	57	57
	Unmarried	43	43

	<b>Total</b>	<b>100</b>	<b>100</b>
Education qualification	Illiterate	10	10
	Below 12 <sup>th</sup>	36	36
	Graduate	38	38
	Post-graduate	16	16
	<b>Total</b>	<b>100</b>	<b>100</b>
Monthly income	Less than 5000	05	05
	5000-10000	24	24
	10000-20000	48	48
	20000-30000	21	21
	Above 30000	02	02
	<b>Total</b>	<b>100</b>	<b>100</b>
	Below 1 year	07	07
	1-5 year	43	43

Year of the service	6-10 years	25	25
	Above 10 years	25	25
	<b>Total</b>	<b>100</b>	<b>100</b>
Implementation of TPM time	Less than 3 months	23	23
	Between 3-6 months	35	35
	Between 6-12 months	26	26
	Between 1-3 years	16	16
	<b>Total</b>	<b>100</b>	<b>100</b>

**Source: Primary Data**

### Interpretation

From this study it is evident that age group of the 35% of the respondents fall under the category of 25 – 35 years, 100% of the respondents fall under the category of male gender, 57% of the respondents fall under the category of Married,

38% of the respondents' academic qualification is Under Graduate, 43% of the respondents fall under the category of 1-5 years in year of service, 35% of the respondents fall under the category of between 3-6 months in implementation of TPM time.

**Table no 2: Rank the reason for implementing tpm concept in organization**

S.No	Problems	Mean score	Total Score	Rank
1.	Providing awareness about TPM to all departments	370	3330	2
2.	Involvement level of maintenance	427	3416	1
3.	To reduce administrative costs	450	3150	3
4.	To reduce inventory carrying cost	489	2934	4
5.	To reduce number of files	535	2140	6
6.	To reduce manpower	479	2395	5
7.	Elimination of production losses	581	1162	8
8.	Maximization of equipment utilization	603	603	9
9.	Avoid wastage	555	1665	7

### Interpretation

From this study, it is found that from the table it is evident that, Involvement Level of Maintenance is ranked as no.1 with the total score of 3416, Providing Awareness About TPM to All Departments is ranked as no.2 with the total score of 3330, To Reduce Administrative Costs is ranked as no.3 with the total score of 3150.

### FINDINGS

- ❖ Involvement Level of Maintenance is ranked as no.1 with the total score of 3416,
- ❖ Providing Awareness About TPM to All

Departments is ranked as no.2 with the total score of 3330,

- ❖ To Reduce Administrative Costs is ranked as no.3 with the total score of 3150.

### SUGGESTIONS

- ❖ The management should give technical education, training, and knowledge will not give you the skills you need to effectively manage a team of maintenance professionals.
- ❖ Getting operations involved in maintaining their own equipment and emphasizing proactive and preventive maintenance will lay

a foundation for improved production

- ❖ The management should limit travel and entertainment expenses, refinance debt and eliminate subscriptions, memberships

## CONCLUSION

The main aims of this paper understand TPM methodology and tools of TPM. Implementation

of TPM is not overnight. It is day-to-day activity with involvement of all employees. It needs to top management commitment. Managers make decisions from this correct evaluation. Therefore, appropriate measurement is necessary. The accuracy of global performance evaluation is essential to improve and succeed in business goal.

## REFERENCES

- [1]. Mr.Ranjeet M.Jadhav, Mr.Morosin Alessandro, Pro.S.H.Sawant,"Total Productive Maintenance aspect : A journey towards manufacturing excellence",International Journal of mechanical and civil engineering ,ISSN: 2278- 1684, 2012, 51-59
- [2]. Sivakumar,S.M.Sapuan,N.IsamailandM.Y.Ismail,"Application of Total Productive Maintenance to reduce non stick pad problem in IC Packging"International journal of Engineering and science", 3, 2012, 2086-3799
- [3]. GoyalRavikumar,MaheshwariKapil, Maintenance :From Total Productive to world class maintenance". International Journal of scientific research and reviews, 2(1), 2013.