

Perception of Employees towards TPM implementation in Foundry Industry with Reference to Coimbatore District

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ABSTRACT

Total Productive Maintenance (TPM) is really an economical method by means it will be able to keep up with the shrub, machinery/ gear in addition to resources inside rewarding condition throughout minimum expense. Well retained machineries leads to productivity. With the companies who are into the foundry industry, the TPM quality policy is to consistently provide superior quality products and services, surpassing customer expectations on time at affordable prices. The main objective is that to study the roles of various people involved in the TPM and to identify the tangible and intangible benefits of TPM. For this a sample of 130 was collected from the respondents were analysed by descriptive statistics, regression analysis, Kruskallwallis, Rank correlation, and SEM analysis. The conclusion is that the TPM is effectively implemented with the organisation and further slight changes have to be made which leads to cost effectiveness towards the company.

Keywords: Industry 4.0, Indian Engineering Industry, Institutional Theory, Resource-Based Theory, Industry 4.0 Implementation.

1. INTRODUCTION :

Total Productive Maintenance (TPM) can be described as a procedure or even method. This technique was initially launched simply by Western within 1952. That is the expansion in order to TQM. TPM is really a clear plus structured system which in turn gets rid of the lessening due to breaking down associated with devices plus materials by simply determining in addition to fighting most factors behind accessories crack lows and even program down-time [1]. TPM is really a reasonably priced method via this method it will be able to keep up with the machinery/ products together with equipment's in a minimum price. Okay managed devices result in efficiency. There's a connection among price associated with repair plus price regarding high quality. All of us cannot believe high quality results while not high-quality advice and something from the essential insight is usually TPM. Price sustained to keep gear is usually give some thought to like an excellent price. There is a possibility of achieving quality through continuous effort by putting all the persons who are directly involving in maintenance of production while implementing TPM [2-3]. Europeans in addition to People in America thought that all manufacturing is definitely reduced standing function and even servicing offers understanding compared to development mainly because upkeep will not participate straight inside income era instead it really is handled seeing that program over head. Although Western provides established that will manufacturing repairs and maintenance offers a higher position [4]. Efficiency includes price, high quality, total, attempts, period, remodel, tidbit, functioning atmosphere together with a competition involving the business. Each construction business really wants to obtain efficiency plus TPM performs the main position inside it. This study is concerned with the assessment of TPM as a tool to improve the organization's performance [5-7].

2. STATEMENT OF THE PROBLEM :

The problem is that TPM is really a program for that group to keep up given good quality also to produce an

atmosphere by which every worker, each and every job every procedure includes a range pertaining to enhancement so when the business creates persists enhancement tradition this impact upon high quality, output plus competition of this business which is doable to attain via whole effective routine maintenance and based on the same the following are considered to be the problem towards the study,

- What do employees perceive about implementation of TPM?
- Whether age has any relation towards and behavior of employees change after TPM implementation?
- Is there any relation between experience of the employees, organization implementing TPM and problems encountered while implementing TPM?
- What are the reasons for organisations in foundry industry to have TPM with their concerns?
- What is the impact of problems faced by employees in implementation of TPM towards behavior of employees change after TPM implementation?

3. OBJECTIVES OF THE STUDY :

The major objectives of the study are :

- To evaluate the perception of employees towards TPM with their company.
- To compare the relation between age and behavior of employees change after TPM implementation.
- To compare the relation between organization implementing TPM and problems encountered while implementing TPM
- To compare the industrial experience and problems encountered while implementing TPM.
- To analyse the reason for organisation having TPM.
- To find out the impact of problems faced by employees in implementation of TPM towards behavior of employees change after TPM implementation

4. SCOPE OF THE STUDY :

This research study mainly focuses on Total Productive Maintenance and its impact on organization performance. In this study foundry industry in Coimbatore was selected in which TPM is implemented. The main scope of the study is that it will help the top management of the industry to know about the perception of employees towards maintaining productivity which may help them in the future decision making process.

5. REVIEW OF LITERATURE :

Masud, A.K.M. et al. [24] discovered that notion of TPM could be put on some sort of Bangladeshi dress manufacturing facility effectively. Throughout the contemporary extremely aggressive industry, TPM is usually typically the equipment of which stand up in between good results in addition to overall disappointment for a lot of businesses. Halim Mad Lazim [25] talked about a part of initial research obtaining concentrating on 2 primary TPM methods specifically independent servicing plus prepared upkeep inside a Malaysian SME. The outcomes recommended essential facets of independent servicing in addition to organized upkeep actions that will be added towards the enhancement within high quality and even price. Halim Mad Lazim, T. et al. [26] talked about the elements of initial research selecting concentrating on 2 major TPM methods including independent servicing plus designed upkeep inside a Malaysian SME. The end result recommended essential facets of independent servicing in addition to prepared upkeep things to do that will led towards the enhancement within top quality and even price.

One Yoon Seng, et al. [9] tried to evaluate the TPM execution in the viewpoint of the growing nation like Malaysia. It had been figured the particular magnitude associated with both human being plus procedure focused techniques would most likely result in increased TPM guidelines within the large business. Nevertheless, the particular effect associated with Human oriented Approach is deemed higher afterward Process-oriented Technique within cultivating an increased amount regarding TPM inclusion when the modifications and even playing god within the large business are even more associated with individual problems. Therefore, typically the administration needs to poise the two tactics to get the particular maximum a result of execution. There are many scholarly research papers published on the concept, review, and

implementation of TPM along with case studies in different industry sectors and some of the important results on related work are listed in Table 1 with the research area, research focus, and reference.

Table 1 : Related research work on Total Productive Maintenance (TPM) in different Organizations

S. No.	Research Area	Research focus	Reference
1	TPM Concept	Introduction to TPM	Venkatesh, J. (2007). [1]
2	TPM Concept	TPM in support processes: an enabler for operation excellence	Andersson, R. et al. (2015). [2]
3	TPM Concept	Relationship between TPM and performanc	Brah, S. A. et al. (2004). [3]
4	TPM Concept	World class manufacturing framework by using six- igma TPM and Lean	Okhovat, M. A. et al. (2012). [4]
5	Literature Review on TPM	Total productive maintenance	Ahuja, I. P. S. et al. (2008). [5]
6	Literature Review on TPM	Analysis of Barriers and Enablers for Effective Implementation TPM	Gupta, A. et al. (2019). [6]
7	Literature Review on TPM	Failure mode effect analysis & TPM	Waghmare, S. N. et al (2014). [7]
8	Literature Review on TPM	Integration of TPM elements with ISO 9001 standard	Sivaram, N. M. et al. (2012). [8]
9	Literature Review on TPM	Investigation of human aspect in TPM	One Yoon Seng et al. (2010). [9]
10	Literature Review on TPM	Investigation of human aspect in TPM	Kulkarni, A. et al. (2013). [10]
11	TPM implementation	TPM implementation practice	Jain, A. et al. (2014). [11]
12	TPM implementation	TPM implementation in a manufacturing organisation	Ahuja, I. P. S. et al. (2008). [12]
13	TPM implementation	To enhance the overall equipment effectiveness in medium scale industrie	Nallusamy, S. et al. (2018). [13]
14	TPM implementation	In the manufacturing companies: a system dynamics approach	Shahanaghi, K. et al. (2009). [14]
15	TPM implementation	TPM Implementation methodology	Kedaria, V. D. et al. (2014). [15]
16	TPM implementation	implementation in manufacturing environment	Kocher, G. et al. (2012). [16]
17	TPM implementation	In pharmaceutical manufacturing	Friedli, T. et al. (2010). [17]
18	TPM implementation	An ISM approach for modelling the enablers	Attri, R. et al. (2013). [18]
19	TPM implementation	A graph theoretic approach to evaluate the intensity of barrier	Attri, R. et al. (2014). [19]
20	TPM implementation	In Medium Scale Manufacturing Industry	Punna Rao et al. (2020). [20]
21	TPM implementation	TPM & overall equipment effectiveness evaluation	Kathleen E. et al. (1999). [21]

22	Case Studies on TPM	Chemical manufacturing company	Mwanza, B. G. et al. (2015). [22]
23	Case Studies on TPM	Implementation of TPM	Chan, F. T. S. et al. (2005). [23]
24	Case Studies on TPM	Burlingtons limited, Bangladesh	Masud, A. K. M. et al. (2007). [24]
25	Case Studies on TPM	Malaysian SME experience	Halim Mad Lazim (2016). [25]
26	Case Studies on TPM	Malaysian SME experience	Halim Mad Lazim, T. et al. (2008). [26]
27	Case Studies on TPM	SWOT analysis	Mishra, R. P. et al. (2008). [27]
28	Case Studies on TPM	Enhancement of Overall Equipment Effectiveness in a Manufacturing Industry	Nallusamy, S. et al. (2017). [28]
29	TPM implementation in a machine shop	A case study	Singh, R. et al. (2013). [29]
30	TPM implementation in a machine shop	Automated foundry lines	Kukla, S. (2009). [30]
31	TPM implementation in a machine shop	Analysis Foundry Defects for Quality Improvement of Green Sand Casting	Vora, M. J. (2020). [31]
32	TPM implementation in a lean tool	To reduce lead time-A case study	Ramkrishnan, V. (2017). [32]
33	TPM in precision tube mills	A Case study	Ahuja, I. P. S. et al. (2009). [33]
34	Study on lean tools implementation	In Indian small and medium scale manufacturing industrie	Ramkrishnan, V. et al. (2018). [34]
35	TPM implementation approach in steel manufacturing industry	A case study of equipment wise breakdown analysis	Kumar, S., et al. (2017). [35]
36	Sand mould casting companies	Benchmarking of cleaner production	da Silva, H. G., et al. (2020). [36]
37	Implementing lean paradigm in an Indian foundry facility	A Case study	Tiwari, S. K., et al. (2020). [37]
38	TPM in Steel industry	Productivity improvement through identifying hazardous condition	Bernard, E. et al. (2020). [38]

6. HYPOTHESIS OF THE STUDY :

Ho1: Organization implementing TPM does not have any impact towards problems encountered while implementing TPM

Ho2: Age don't have any relation towards behavior of employees change after TPM implementation

7. RESEARCH METHODOLOGY :

Type of Research: The study was descriptive in nature.

Data and sources of data

Primary data: The primary data was collected through survey method were scaling point was used for the study were Poor was given 1 and Very good-5

Secondary data: Secondary data was used to collect information about TPM and its implementation using

journals and websites.

Population & Sample Size

130 employees working in foundry industry in Coimbatore was taken as sample size of the study.

Sampling Technique: Simple random sampling was used as type of sample for the study.

Statistical tools used: Descriptive statistics, Kruskal–Wallis test, One-way Anova, Linear regression model Rank correlation and SEM analysis.

8. ANALYSIS AND INTEPRETATION :

Table 2: Demographic and socio graphic variables taken for the study

Demographic and socio graphic variables taken for the study	Particulars	Frequency	Percent
Age	20-25	45	34.6
	26-30	54	41.6
	35-40	31	23.8
	Total	130	100
Industrial experience	Less than one year	30	23.1
	1 3 years	11	8.4
	3 5 years	89	68.5
	Total	130	100
Classification of the organization	Top	36	27.7
	Middl	34	26.1
	Lower	60	46.2
	Total	130	100
Basis of goods manufactured	Make to stock	43	33.1
	Assemble to orde	24	18.5
	Make to orde	11	8.4
	Engineer to orde	17	13.1
	Other	35	26.9
	Total	130	100
Methodology adopted by the company	Intermittent job manufacturing	89	68.5
	Intermittent batch manufacturing Intermittent	21	16.1
	Project manufacturing	20	15.4
	Total	130	100
Products sold with the market	Local/domesti	94	72.3
	National	20	15.4
	International	16	12.3
	Total	130	100

Out of 130 respondents 34.6% are from the age group between 20-25, 41.5% are from the age group between 26-30, and 23.8% are from the age group between 35-40. 23.1% are having less than one year of industrial experience, 8.5% are having experience between 1- 3 years and 68.5% are having experience between 3-5 years. It shows that most of the respondents are having experience between 3-5 years. 27.7% are from top

level management, 26.2% are from middle level management, and 46.2% are from lower level management. 33.1% said that the company is manufacturing to make stock, 18.5% said that the company is manufacturing to assemble to order, 8.5% said as make to order, 13.1% said as engineer to order and 26.9% said as other factors. 68.5% said that the company has adopted intermittent job manufacturing with the department, 16.2% said as intermittent batch manufacturing intermittent and 15.4% said as project manufacturing. 72.3% said that the products are sold with local markets, 15.4% said as national markets and 12.3% said as international markets (Table 2).

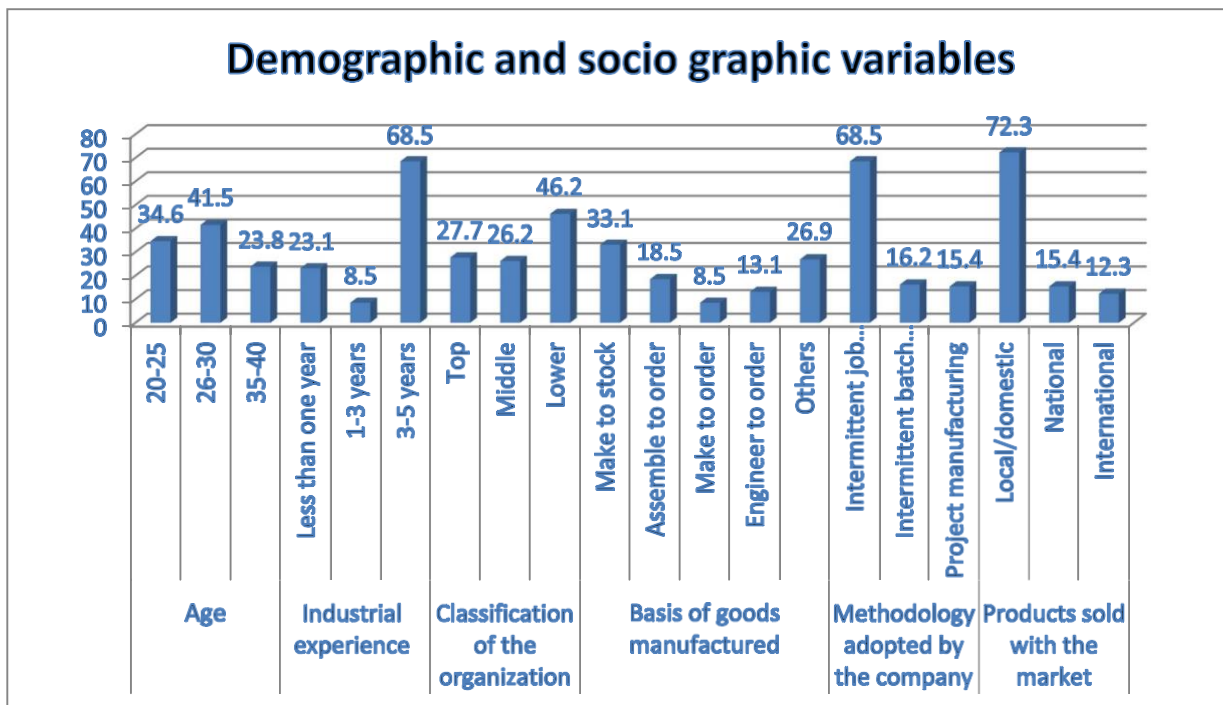


Chart 1 : Demographic and socio graphic variables taken for the study

Table 3: Organization implementing TPM

Particulars	Frequency	Percent
Ye	111	85.4
No	19	14.6
Total	130	100.0

85.4% said that the company have implemented TPM in their department and 14.6% said that the company have not implemented TPM in their department.

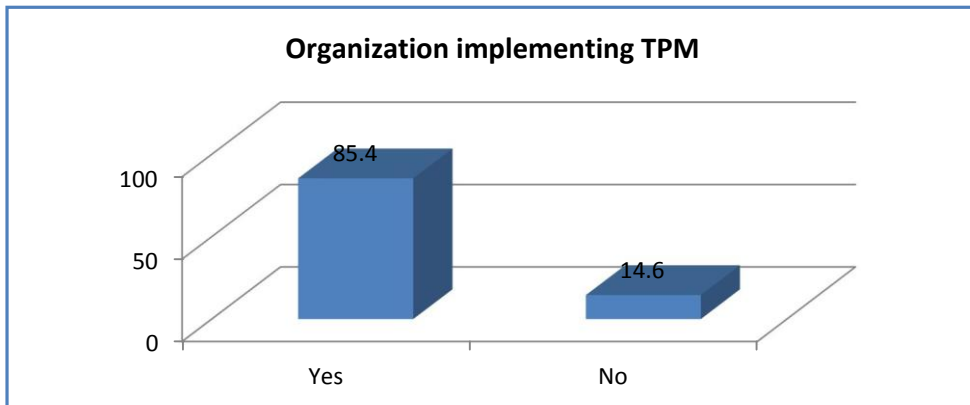


Chart 2: Organization implementing TPM

Table 4: Duration of organization implementing TPM

Particulars	Frequency	Percent
1 year before	33	29.8
1 2 years before	14	12.6
3 5 years before	14	12.6
10 years before	50	45.0
Total	111	100.0

29.8% said that their department have implements TPM before one year, 12.6% said as 2 years, 12.6% said as 3-5 years and 45% said as more than 10 years.

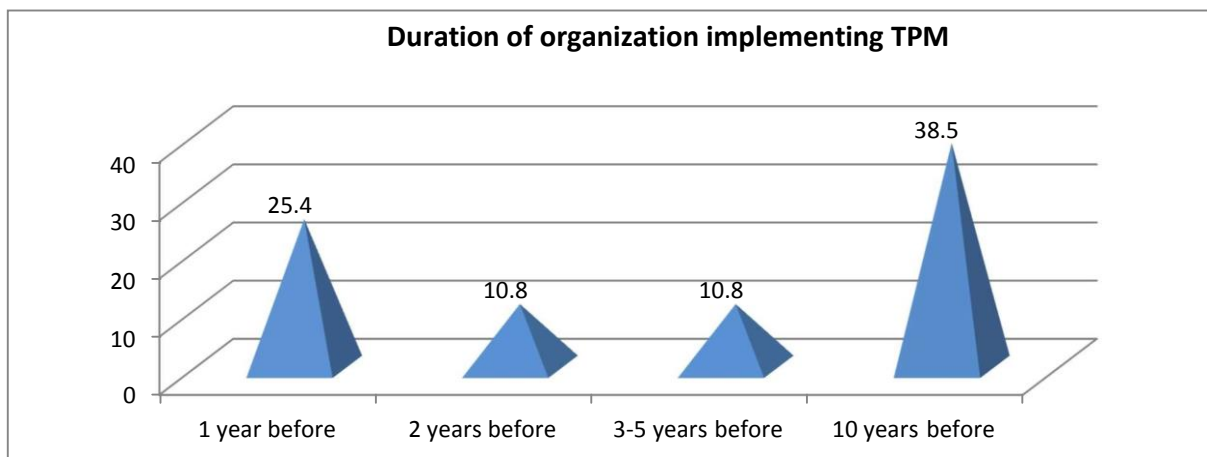


Chart 3: Duration of organization implementing TPM

Table 5: Company having separate TPM office

Particular	Frequency	Percent
Ye	106	81.5
No	24	18.5
Total	130	100.0

81.5% said the company is having separate TPM office and 18.5% said that the company is not having TPM office.

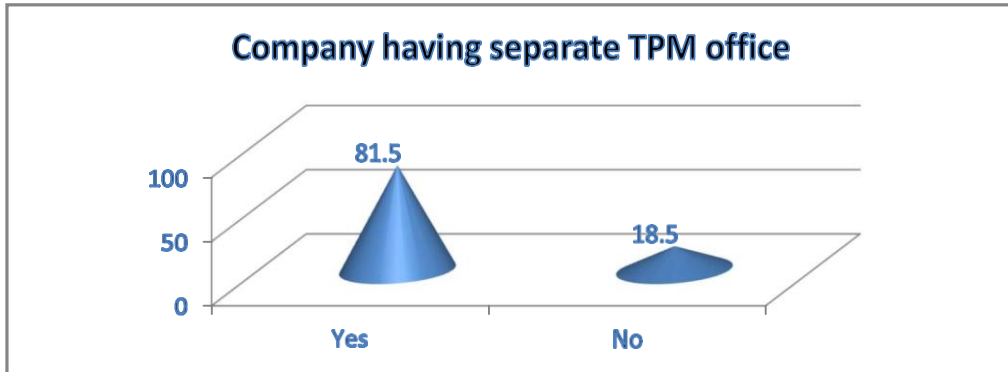


Chart 4: Company having separate TPM office

Table 6: Roles played during TPM implementation as being production executive

Particular	Frequency	Percent
Motivator	35	26.9
Communicator	23	17.7
Leader	17	13.1
Facilitator	21	16.2
Invigilator	34	26.2
Total	130	100.0

26.9% said that they are playing motivator role, 17.7% are playing as communicator, 13.1% are playing as leader, 16.2% are playing as facilitator and 26.2% are playing as investigator.

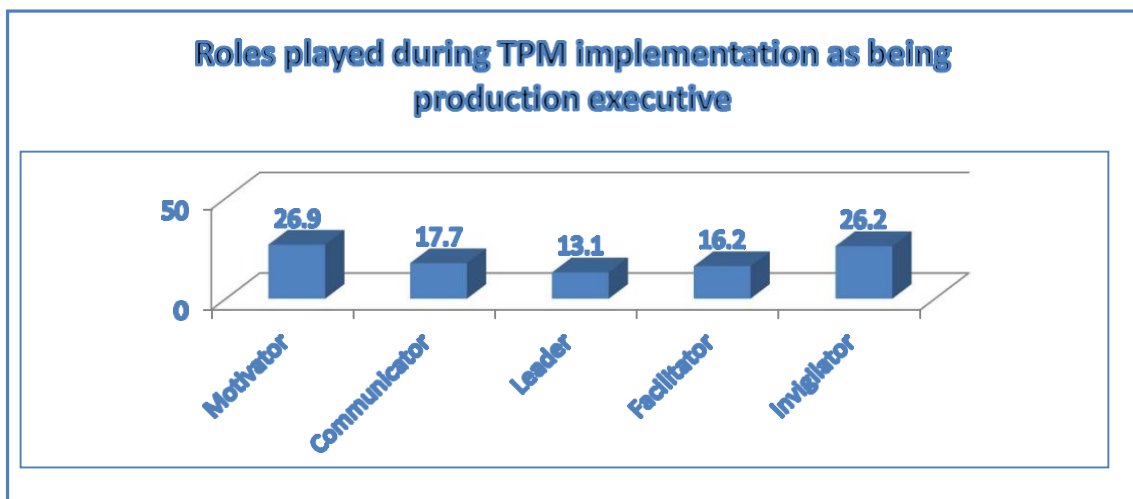


Chart 5: Roles played during TPM implementation as being production executive

Table 7: Status of TPM in the organization

Particulars	Frequency	Percent
Excellent	33	25.4
Good	16	12.3
Fair	18	13.8
Poor	23	17.7
Failure	40	30.8
Total	130	100.0

25.4% said as excellent, 12.3% said as good, 13.8% said as fair, 17.7% said as poor and 30.8% said as failure.

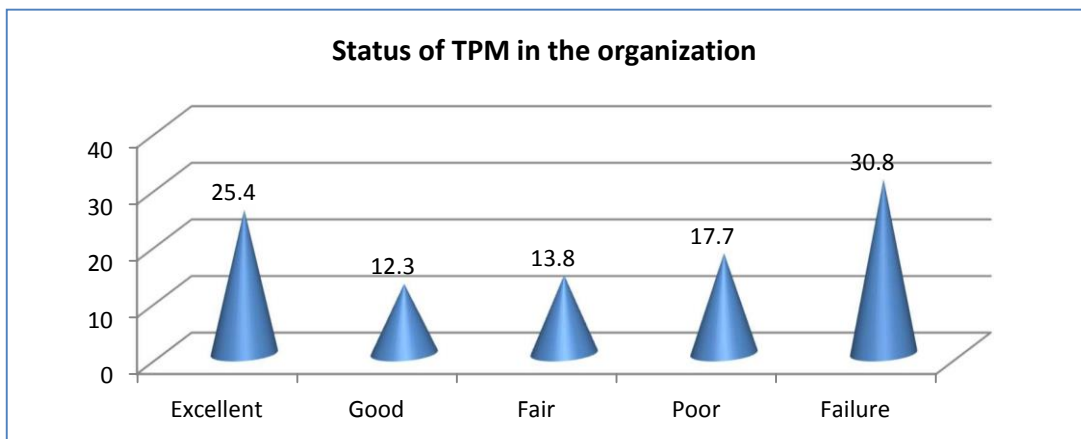


Chart 6: Status of TPM in the organization

Table 8: Time taken by the organization for full implementation of TPM

Particulars	Frequency	Percent
Less than 3 months	37	28.5
Between 3 to 6 month	55	42.3
Between 6 to 12 months	17	13.1
Between 1 to 3 year	21	16.1
Total	130	100.0

28.5% are taking less than 3 months, 42.3% are taking between 3 to 6 months, 13.1% are taking between 6 to 12 months and 16.2% are taking between 1 to 3 years.

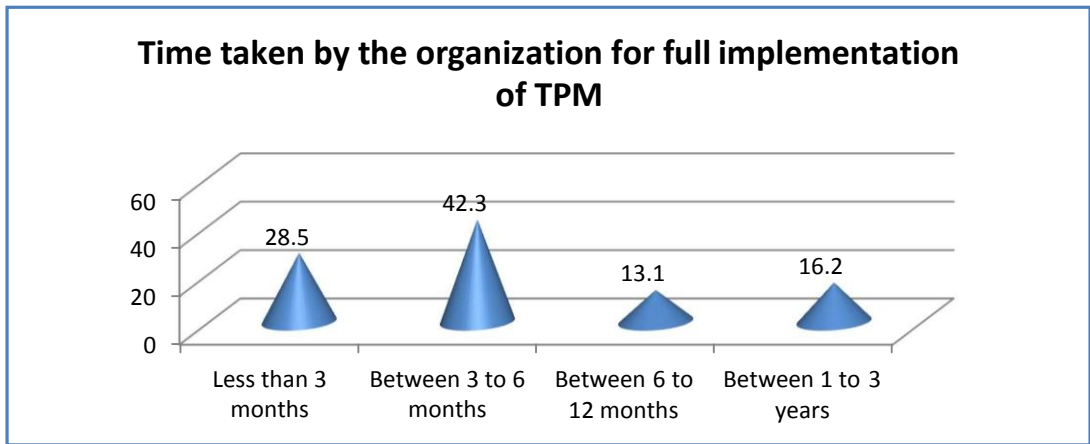


Chart 7: Time taken by the organization for full implementation of TPM

Table 9: Strategies used for successful implementation of TPM

Particulars	Frequency	Percent
Creating awareness	28	21.5
Proper Communication	13	10.0
Motivation	14	10.8
Training	19	14.6
Availability of required tools	34	26.2
Delegation of Authority	10	7.7
Assigning ownership	12	9.2
Total	130	100.0

21.5% said that the company is creating awareness for successful implementation of TPM, 10% said as proper communication, 10.8% said as motivation, 14.6% said as training, 26.2% said as availability of required tools, 7.7% said as delegation of authority and 9.2% said as assigning ownership.

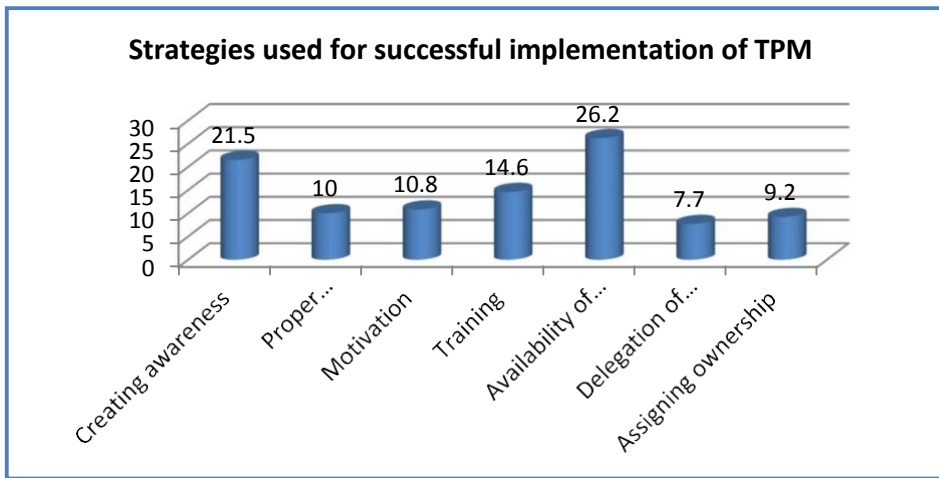


Chart 8: Strategies used for successful implementation of TPM

Table 10: Successfulness towards strategies implemented with TPM

Particulars	Frequency	Percent
Very Successful	32	24.6
Successful	20	15.4
Neither Successful Nor Unsuccessful	22	16.9
Unsuccessful	21	16.2
Very Unsuccessful	35	26.9
Total	130	100.0

24.6% said as very successful, 15.4% said as successful, 16.9% said as neither successful nor unsuccessful, 16.2% said as unsuccessful and 26.9% said as very unsuccessful.

H01: Age have a significant difference towards behavior of employees change after TPM implementation.

Table 11: Comparison between age and behavior of employees change after TPM implementation

Particulars	Age	N	Mean	Std. Deviation	F	Sig
Changes towards morale and attitude of the employee after implementation of TPM	20-25	45	3.16	1.580	0.133	0.875
	26-30	54	3.22	1.562		
	35-40	31	3.03	1.816		
	Total	130	3.15	1.621		
Changes towards creativity of the employee after implementation of TPM	20-25	45	2.87	1.660	1.139	0.024
	26-30	54	2.91	1.605		
	35-40	31	3.39	1.542		
	Total	130	3.01	1.611		
Changes towards initiative of the employee after implementation of TPM	20-25	45	3.24	1.640	0.173	0.842
	26-30	54	3.06	1.676		
	35-40	31	3.19	1.621		
	Total	130	3.15	1.640		
Changes towards belonging and commitment of the employee after implementation of TPM	20-25	45	2.98	1.588	0.738	0.480
	26-30	54	2.81	1.415		
	35-40	31	3.23	1.521		
	Total	130	2.97	1.499		
Changes towards problem solving nature of the employee after implementation of TPM	20-25	45	3.09	1.769	1.150	0.020
	26-30	54	3.20	1.583		
	35-40	31	3.65	1.473		
	Total	130	3.27	1.627		
Changes towards Co-operation & Co-ordination of the employee after implementation of TPM	20-25	45	3.33	1.581	2.096	0.127
	26-30	54	2.72	1.485		
	35-40	31	2.94	1.340		
	Total	130	2.98	1.499		

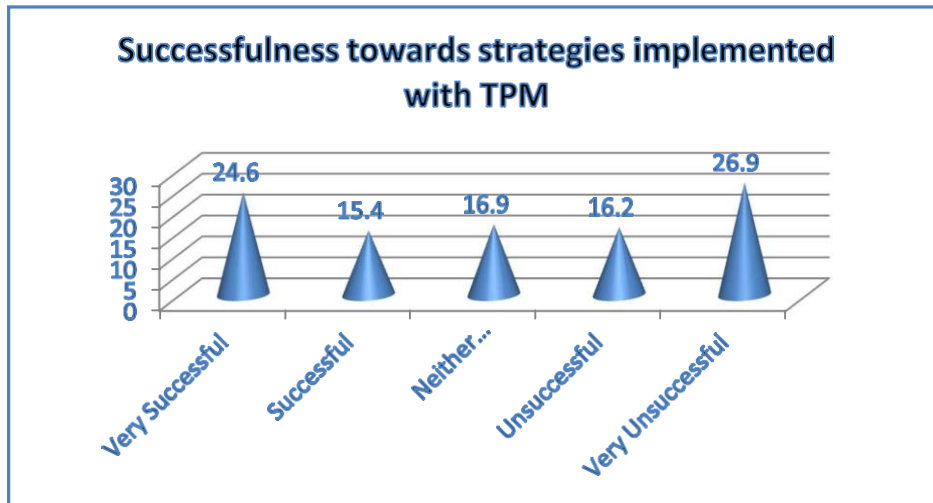


Chart 9: Successfulness towards strategies implemented with TPM

Table 12: Comparison between organization implementing TPM and problems encountered while implementing TPM

Problems	Organization implementing TPM	N	Mean Rank	Chi-Square	Sig
Problem with resistance to change	Ye	111	68.85	.185	.667
	No	19	45.92		
	Total	130			
Problem with top management support	Ye	111	63.09	.002	.963
	No	19	79.61		
	Total	130			
Problem with lack of funds	Ye	111	67.33	.458	.499
	No	19	54.79		
	Total	130			
Problem with lack of experience and awareness	Ye	111	64.98	1.863	.172
	No	19	68.53		
	Total	130			
Problem with lack of proper training	Ye	111	65.55	.044	.834
	No	19	65.21		
	Total	130			
Problem with lack of Leadership	Yes	111	70.56	.091	.762
	No	19	35.95		
	Total	130			

There is no relationship between age and changes towards morale (0.875), initiative of the employee after implementation of TPM (0.842), belonging and commitment of the employee after implementation (0.480)

and Co-operation and Co-ordination of the employee after implementation of TPM (0.127). There is a relationship between age and changes towards creativity of the employee after implementation of TPM (0.024) and problem solving nature of the employee after implementation of TPM (0.020).

Ho2: No relationship exists between organization implementing TPM and problems encountered while implementing TPM

No relationship between organization implementing TPM and all the problems encountered while implementing TPM.

Table 13: Industrial experience and problems encountered while implementing TPM

Coefficient						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.352	.491		4.794	.000
	Problem with resistance to chang	.016	.120	.013	.135	893
	Problem with top management support	.094	.109	-.079	- 862	391
	Problem with lack of funds	.133	.109	-.111	1.218	226
	Problem with lack of experience and awarenes	.000	.105	.000	.004	.997
	Problem with lack of proper training	.102	.113	.083	.897	371
	Problem with lack of Leadership	.170	.113	.140	1.504	135
a. Dependent Variable: Industrial experienc						
R		.696 ^a				
R Squar		.538				

There is a moderate relationship (53.8%) between the compared variables as the R square value (0.538) is between 0.3 to 0.7. It reveals that the problems related with resistance to change (.016), problems related to lack of proper training (.102) and problems based on lack of leadership (.170) have a positive relation towards Industrial experience who are in to Total Productivity Maintenance. Meanwhile, problems related with top management support based on TPM implementation (-.094) and lack funds towards implementing TPM (-.094) doesn't have any impact on the employees industrial experience.

RANK CORRELATION

Table 14: Reason for organisation having a separate TPM office by the management

S.NO	Particulars	X	Y	R
1	Awareness on TPM	18	36	0.94
2	For Involvement and productivity of people in support functions	15	34	
3	To reduce administrative costs	8	31	
4	To reduce inventory carrying cost	11	28	
5	To reduce number of file	13	36	
6	To reduce manpower	12	34	

The correlation is at 0.94 which shows a high relationship between the ranks given. Based on the ranks the priority was given to awareness provided towards all supporting teams as the factor was given first rank.

Table 15: Reason for organisation not having a separate TPM office by the management

S. NO	Particulars	X	Y	R
1	Lack of awareness & importance of TPM	15	15	0.67
2	Lack of fund	16	10	
3	Lack of facilities available in the company	85	10	
4	Lack of manpower	25	45	
5	Lack of skill employee	62	64	

The correlation is at 0.67 which shows a moderate relationship between the ranks given. Based on the ranks the priority was given to lack of facilities available in the company as the factor was given first rank.

Table 16: Reason for the organization to choose TPM method instead of other maintenance methods

S. NO	Particulars	X	Y	R
1	Easy to implement	81	21	0.77
2	Employees' involvement	33	90	
3	Elimination of production losse	25	26	
4	Maximization of equipment utilization	6	25	
5	Avoid wastag	22	10	
6	Increase employees' morale and job satisfaction	4	27	

The correlation is at 0.77 which shows a high relationship between the ranks given. Based on the ranks the priority was given to easy implementation as the factor was given first rank.

SEM analysis

Impact of problems faced by employees in implementation of TPM towards behavior of employees change after TPM implementation

Table 17: Model fit

Model	CMIN	GFI	AGFI	CFI	RMSEA	P value
Default model	41.029	.835	.820	770	.076	000

It reveals that the GFI value (.835) and AGFI value (.820) are less than .89 and also the RMSEA value (.076) is less than .08 which shows that model can be proceeded for further analysis.

The Chart 10 describes that the employees who face problems related to resistance of change while implementing TPM agree towards creativity and Initiative after implementing TPM with their company. The employees who face problems with top management while implementing TPM agree towards morale and attitude & creativity after implementing TPM. The organisations who face of problems related to lack of funds agree towards attitude & morale, creativity and belonging and commitment after implementing TPM with the company. The employees who face problems related to lack of experience and awareness while implementing TPM agree towards change in behaviour based on Lack of experience and awareness,

Creativity of implementing TPM, Belonging and commitment after implementation and problem solving nature of TPM.

9. FINDINGS :

Demographic and socio graphic variables taken for the study

Most of the respondents are from the age group between 26-30. Maximum of the respondents are having experience between 3- 5 years. Most of the respondents are from lower level management. Maximum of the respondents said as make stock for basis of goods manufactured by the companies. Most of the respondents said that the company has adopted intermittent job manufacturing with the department. Maximum of the respondents said that the company products are sold with local markets.

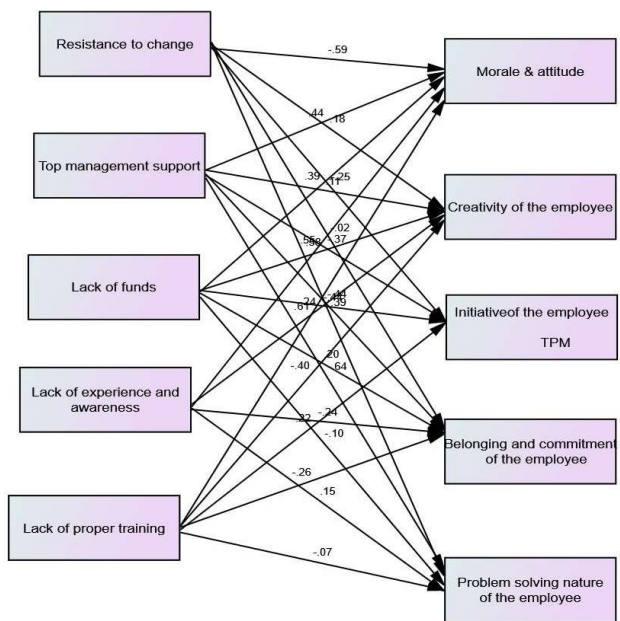


Chart 10: Results towards the model framed

Perception of employees towards TPM with their company.

Most of the respondents strongly agree towards believing in TPM technology and said that the company have implemented TPM in their department before 10 years. Most of the respondents said that the company is having separate TPM office were the same has been researched by Rodrigues, M et.al., (2006) [39] who analysed about TPM office—efficiency—involvement of the administration in TPM program and maximum are playing as motivator during TPM implementation as being production executive and the same has been analysed by Cooke, F. L. (2000) [40] and found that no unmotivated workers were there at the time of TPM implementation. But with the present study, most of them said as failure towards status of TPM in the organization and maximum of the respondents strongly disagree towards organization having a clear TPM implementation (master) plan as the same has been researched by Kumar, J et.al., [41] and he found out that it is not easy to implement TPM in an organisation. It also reveals that most are taking time between 3 to 6 months for full implementation of TPM as the same has been found out by Jonathan David Morales Méndez et.al., (2017) [42] as he said that it takes 6 months to implement TPM and maximum said that availability of required tools for successful implementation of TPM.

Maximum of the respondents said as very unsuccessful for strategies implemented with TPM with the organisation as the same has been analysed by Hansson, J., et.al. (2003) [43] and maximum are taking assistance from private consultancy for implementation of TPM. Most of them said as very effective for efficacy of external agencies assistance and maximum of the respondents strongly disagree towards organization providing training before TPM implementation. Most of the respondents strongly disagree towards satisfaction with the training provided by the organization.

Comparison between age and behavior of employees change after TPM implementation :

The respondents from the age group between 35-40 have higher impact towards creativity of the employee after implementation of TPM. Meanwhile, the respondents from the age group between 20-25 have higher impact towards changes towards problem solving nature of the employee after implementation of TPM and the same has been discussed by F.T.S. Chan et.al., (2005) [44] and found that tangible and intangible benefits given to employees may reduce the problems related to age of the employees which has an effect to TPM implementation.

Comparison between organization implementing TPM and problems encountered while implementing TPM :

No relationship between organization implementing TPM and all the problems encountered while implementing TPM.

Comparison between industrial experience and problems encountered while implementing TPM :

The factors Problem with resistance to change, Problem with lack of funds, Problem with lack of experience and awareness, Problem with lack of proper training, Problem with lack of Leadership are directly proportional towards industrial experience.

Reason for organisation having TPM

- Awareness provided towards all supporting teams was the major reason for organisation having a separate TPM office by the management.
- Lack of facilities available in the company was the major reason for organization for not having a separate TPM office by the management.
- Easy implementation was the reason to choose TPM method instead of other maintenance methods.

10. SUGGESTIONS :

- Top administration requires in order to produce a good atmosphere which will help the particular intro associated with TPM. With no assistance associated with administration, skepticism plus level of resistance will certainly destroy the particular effort.
- The organization may release an official schooling system. This particular system will certainly notify in addition to teach everybody within the business regarding TPM actions, advantages, and even the particular significance of factor through everybody.

11. CONCLUSION :

The conclusion is that the TPM is effectively implemented with the organisation and further slight changes has to be made which leads to cost effectiveness towards the company.

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