Measurement of Tact Necessary to Prevent Industrial Disputes Leading To Loss of Productivity With Reference To Industries in South Bengal

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ABSTRACT: *Industrial Disputes cause loss of productivity and decrease of profit, tending towards huge losses. It is, therefore, necessary to establish a benchmark level of tact or skill, that is required to ensure the prevention of Industrial Disputes. The benchmark level could be an empirical formula, or a set of regulatory data, that would be required to be satisfied. The procedure to be followed, requires a set of working hypothesis, a set of actual data collected from the industry, analyses of the data, and drawing of the conclusion on the basis of the analyses, and results of the statistical tests of the data. Data for the work were collected from five samples, that were located in territories within the southern districts of the state of West Bengal, India. The paper was proposed to establish an empirical relationship, or a set of data, that is regulatory in terms of benchmark levels. The paper considered two main ways of measurement of tact------frequency and time, as a vital step towards the establishing of a model of 'measurement of tact', and subsequently the set of regulatory data.*

Keywords—benchmark, empirical, model, regulatory, tact

I. INTRODUCTION

The proposed guided research is aimed to study the skills necessary for the prevention of Industrial Disputes, that are rampant in India. The main emphasis of the guided research is laid on the strategic management of tact necessary to handle situations, that lead to Industrial Disputes, involving ethical issues, resulting in go-slow programs, cease-work programs, strikes as well as lock-outs. It is, therefore, necessary to establish a benchmark level of tact, that is required to ensure the prevention of Industrial Disputes, without compromising the ethics. The benchmark level could be an empirical formula, or a set of regulatory data, that would be required to be satisfied. The procedure to be followed, requires a set of working hypothesis, a set of actual data collected from the industry, analyses of the data, and drawing the conclusion on the basis of the analyses.

Furthermore, the benchmark level is based on sound psychological theory that has a proven track record. Despite the fact, that it is theory-based, the approach is very pragmatic. Rather than dealing with the psychological causes of behavior, like attitudes and personalities, it deals with the problem directly. It is very difficult for managers to change attitudes, and even more difficult, if not impossible, for them to change someone's personality. Behavior, on the other hand, can be changed using techniques that are relatively easy to learn and apply. Unlike some of the traditional approaches, the behavioral approach does not look for deep, internal causes of behavior such as attitudes or personality. Instead, it concentrates on the behavior itself, and on ways of influencing behavior to bring about the desired charge. The process of specifying the problems of the people in the industry, in terms of behavior is not always easy. Specifying the problems in behavioral terms makes the people more amenable to solution. Behavior can be changed, personalities cannot. Some of the additional advantages of specifying problems in behavioral terms include that the employees become aware of precisely what behavior is expected of them. It may be required that employees are already aware of what behavior is required, but that is often not the case. Another advantage is that specifying problems in behavioral terms often avoids negative emotional reactions to criticism.[1]

II. HYPOTHESES

The working hypothesis of the guided research would consider the routes to resolution as:
   Conciliation: It involves independent, neutral third parties. They act as messengers and interpreters to identify the causes of the differences, the relative significance and the importance of the issues and positions

taken by both sides – from 'easily traded' to 'deal brokers' - to help develop ideas and mutually own joint decisions. Conciliators do not recommend solutions.

Mediation: It involves an independent, neutral, third party, who assists sides to resolve differences and come to an agreement. This is more proactive, as mediators may suggest their own proposals, for a resolution. However, such sides are non-binding on both or all sides.

Arbitration: It involves referral to an independent, neutral third party, with both sides agreeing beforehand to abide by decisions. The arbitrator hears the agreements of both sides and then comes to a decision. The process is often criticized for the perceived tendency of arbitrators to award decisions alternately, regardless of the merits of each case, in order to be even handed and avoid the risk of appearing to favor one side over the other.

Intervention: In an ideal world, with enough time and goodwill on both sides, disagreements could be settled and resolved without recourse to conciliation, mediation or arbitration. Hence, intervention remains the final option when both sides in a dispute, are unable to reduce their own differences. [2]

Apart from conciliation, mediation, arbitration and intervention, the guided research takes into consideration certain concepts of measurement, that assists in reaching the goal, that is, the establishing of an empirical formula, or a set of regulatory data, that measures the tact for management, necessary to prevent Industrial Disputes, leading to loss of productivity, with reference to the industries in the southern districts of the state of West Bengal.

III.   MATERIALS AND METHODS

A visit to industries was made for the purpose of the collection of data. The primary data was collected by interviews, questionnaires, conducting seminar and conferences. The secondary data was collected from annual reports, rule books and records of resolved cases, and would be used, only if found necessary.

The four elements in reflective research, which is the normal practice in such cases, are :

Systematic techniques in research procedures-----Qualitative research should follow some well-reasoned logic in interacting with the empirical material, and use rigorous techniques for the processing of the data.

Clarifications of the primacy of interpretation----Research is seen as a fundamentally interpretive activity, which in contrast to other activities, is aware of this fact. The recognition that all research work includes and is driven by an interpreter, who often interacts with other interpreters, provides the key to a qualified, and methodological view.

Awareness of the political-ideological character of research---------Management is a social phenomenon embedded in a political and ethical context. We can hardly avoid either supporting or challenging the existing social conditions.

Reflection in relation to the problem of representation and authority-- The researcher's claim to authority and the established claim to reproduce some extrinsic reality, are equally undermined : the researching subject and the researched object are both called into question. [3]

The levels of measurement refer to a set of rules that defines permissible mathematical functions, that can be performed on numbers or scores produced by a measure. The four levels of measurement used in the study are:

Nominal Level of Measurement: It is the lowest and the most simple level of measurement. When a variable is classified into several sub-classes, it is said that the variable in question is measured on a nominal level.

Ordinal Level of Measurement: When the relative position of objects or persons with respect to some characteristics are defined, measurements are possible on ordinal levels. The fundamental requirement of an ordinal level of measurement is that one be able to determine the order of positions of objects or persons in terms of characteristics under study. Ordinal level measurements are considered of higher level than nominal level, because, in addition to being mutually exclusive (feature of nominal level of measurement), the categories have a fixed order.

Interval Level of Measurement: Interval level, between the categories of measurement, has equal spacing, in addition to the characteristics of nominal level (mutually exclusive) and ordinal level (having fixed order). In interval measures, the positions are not only ordered either in ascending order (lower, middle and higher) or in descending order (higher, middle and lower), but the intervals of measurement are also equal.

Ratio level of Measurement: Ratio level of measurement is the highest level of measurement. It has all the characteristics of interval level of measurement, except that, the zero point is absolute in this case, rather than arbitrary, as in the interval level of measurement. This means that the ratio level of measurement contains the characteristics of nominal level of measurement (mutually exclusive), ordinal level of measurement (fixed order), and interval level of measurement (equal spacing, in addition to an absolute zero). [4]

The process of research used is illustrated in Figure-1.

IV.   DATA ANALYSIS

The industries in the southern districts of the state of West Bengal are frequently plagued by Industrial Relations problems. There are highly volatile unions of workmen, who resort to non-cooperation, go-slow movements, cease-work movements and strikes.   These activities are harmful in an otherwise stable environment. These are termed as Industrial Disputes, and are responsible for the loss of productivity and profit in the organization, leading to lock-outs and closure. As a result, several families are financially ruined and the number of suicides among the employees and the members of their families are on the rise. There is a general collapse of the work environment. In order to obtain a clear and specific understanding of the problem, data were collected and analyzed from five sample organizations and interviewing of the employees of the five sample organizations was made by the questionnaire method. The questionnaires had several sections and the responses were analyzed on the basis of the marks obtained by an employee. The responses were then analyzed with the test of significance by two-standard deviation method, parametric tests of difference, non-parametric test of association, and test for measure of association. The nature and details of samples are given in Table-1. Most of the problems originate from the fixation of wages, incentives and overtime rates, in contravention to the wishes of the workmen's unions. The subsequent interventions and negotiations by the management do not always bring about a favorable result. Not much tact is used by the management to prevent the Industrial Disputes, leading to loss of productivity.
A sample questionnaire is presented in the Annexure.

V.   RESULTS

The results of the analyses of the data are presented in a tabular form in Table-2.
5.1 Test Of Significance By Two-Standard Deviation Method
        This method is used when the data points are not dichotomous. The method is based on a presumption that if baseline is extended indefinitely, then 95 percent of the data would be less than two – standard deviation away from the baseline mean. The procedure is given as follows :
1.   We compute the arithmetic mean of the baseline score
2.   We find the standard deviation (SD) of the scores by using the

Formula $SD = \sqrt{\dfrac{\sum d^2}{N-1}}$

3.   We multiply the SD by 2
4.   Find out $X \pm 2SD$
5.   Calculate the difference between the baseline mean and intervention mean
Let us take the examples of scores obtained by a workman in the six sections of the questionnaire:

Baseline Scores (X)	Intervention Scores (Y)
54	51
56	51
56	50
58	49
59	49
60	48

Analysis of Scores:

Observation No (n)	Baseline Score(X)	Intervention Score (Y)	Deviation from mean (d) D = x – (-x)	d^2
1	54	51	54-57.2=-3.2	10.24
2	56	51	56-57.2=-1.2	1.44
3	56	50	56-57.2=-1.2	1.44
4	58	49	58-57.2=0.8	0.64
5	59	49	59-57.2=1.8	3.24
6	60	48	60-57.2=2.8	7.84

$\sum N = 6$ $\sum x = 343$ $\sum y = 298$ $\sum d^2 = 24.84$
              $\overline{X} = 343 \div 6$
                                    $\overline{Y} = 298 \div 6$
                    $= 57.17$ $= 49.67$

$$= 57.2$$

$$SD = \sqrt{\frac{\sum d^2}{n-1}}$$

$$= \sqrt{\frac{24.84}{6-1}} = \sqrt{\frac{24.84}{5}} = 4.968 \sqrt{= 2.29}$$

$$2SD = 2 \times 2.29$$
$$= 4.58$$
$$= 4.6$$
$$= \overline{X} \pm 2SD \quad (\overline{X} = \text{Mean Baseline Score})$$
$$= 57.2 \pm 4.6 = 61.8 \text{ or } 52.6$$

Inference: The principle followed in inferring whether the intervention effects are statistically different, is if the mean intervention score is at least two standard deviations away from the mean baseline score, the effects are said to be statistically significant at the 0.05 level. In this analysis, the mean intervention score is more than two standard deviations away from the mean baseline score, hence the effect is statistically significant.

Alternatively, even if at least two consecutive intervention scores go beyond two standard deviations away from the mean baseline score, the effect is considered as statistically significant at 0.05 level.

5.2 Parametric Tests of Difference

Parametric Tests are based on the assumption that the population is normally distributed. In addition, these tests use higher measurement levels, intervals and ratio.

5.2.1 *T- Tests:* There are two types of t-tests; one is called t-test for independent samples, and the other is called paired t-test. The first test is used for the scores of one group and is independent of the scores of the other group. That means there is no logical relationship between the scores that have been obtained for one group when compared with the other group. However, both the tests are used to assess the significance of difference.

5.2.1.1 *The Paired T-test:* A group of 10 workmen is randomly selected from the 5 samples. We want to list the effects of intervention to improve the self-esteem of the workmen. A rating scale before the intervention assesses the self-esteem, of the workmen. The scale has a scoring range from 5 to 15. After the intervention, we administer the same rating scales. The pre-intervention and post-intervention scores are shown below in the table :

Self-esteem scores of 10 workmen :

Workmen	Scores (X) of Pre-intervention	scores(Y) of Post-intervention	D=(Y-X)	D^2
1	9	12	3	9
2	8	10	2	4
3	15	15	0	0
4	12	14	2	4
5	8	14	6	36
6	4	11	7	49
7	6	10	4	16
8	3	8	5	25
9	3	8	5	25
10	2	8	6	36
n=10			$\sum D=40$	$D^2=204$

We establish a null hypothesis that there is no difference between pre-intervention and post-intervention scores to list whether there is a statistically significant difference. The research hypothesis is that post-intervention scores will show improvement in self-esteem over pre-intervention.

The calculation of 't' is given below:

Step	Procedure	Application to Table
1	Find out the difference (D) between the post-intervention and pre-intervention scores	**D=Y-X=12-9=3** **10-8=2 …..**
2	Compute mean Difference (-X)	$(-X) = \dfrac{\sum D}{n} = \dfrac{40}{10} = 4$
3	Compute square of difference(D^2)	$D^2 = 3^2 = 9; 2^2 = 4….$
4	Find the sum of squares of difference	$\sum D^2 = 204$
5	Compute sum of squares (SS)	$SS = \sum D^2 - \dfrac{(\sum D)^2}{n} = 204 - \dfrac{(40)^2}{n}$ $= 204 - 160 = 44$
6	Find out degree of freedom (Df)	**Df = n-1=10-1 = 9**
7	Compute variance (S^2)	$S^2 = \dfrac{SS}{Df} = \dfrac{44}{9} = 4.89$
8	**Compute 't' by using the standard formula**	$t = \dfrac{\bar{X}}{\sqrt{S^2/n}} = \dfrac{4}{\sqrt{4.89/10}} = \dfrac{4}{\sqrt{0.489}}$ $= \dfrac{4}{0.699} = 5.7225$

Now, that the value of the paired t-test has been calculated, we have to see if the null hypothesis can be rejected. It is assured that the intervention is likely to improve the post – intervention scores. That means there is directionality in the data. Hence, we will use one-tailed test. We refer to the table of 'Critical Values of the t Distribution' and look at the 0.05 level of significance for our tailed test. At the intersection of 9 degree of freedom (df), the critical value of 't' is 1.833, that is less than the calculated value of 5.7225 of 't'. Hence the null hypothesis can be rejected, and we can say that there is statistically significant difference in the self-esteem of the workmen before intervention and post-intervention.

5.2.1.2 *The T-test for Independent Samples:* The t-test for two independent samples examines the difference between their means to see how close or apart they are. We select two groups of workmen randomly from the recognized union and the unrecognized union and administer the questionnaire. We are interested in studying whether there is significant difference among the two groups of workmen with regard to their attitude.

The scores at the interval level of measurement are presented in the Table below:

Serial No	Scores obtained by workmen of recognized union(x)	X2	Scores obtained by workmen of unrecognized union(Y)	Y2
1	8	64	12	**144**
2	11	121	9	**81**
3	9	81	6	**36**
4	12	144	5	**25**
5	16	256	8	**64**
6	10	100	12	**144**
7	7	49	11	**121**
8	16	256	10	**100**
9	6	36	10	**100**
10	5	25	7	**49**
n=10	$\sum X$=100	$\sum X^2$=1132	$\sum Y$=90	$\sum Y^2$=864

The procedure for calculating 't' is given below:

Step	Procedure	Application to Table
1	Square the scores of X and Y column to get X2 and Y2 values	8^2=64, 11^2=121 …. 12^2=144, 9^2=81 ….
2	Find the sum of column X, Y, X2 and Y2	$\sum X$ =100, $\sum Y$=90 $\sum X^2$=1132, $\sum Y^2$=864
3	Compute Mean Scores for column X and Y	$(\text{-}X) = \dfrac{100}{10} = 10$ $(\text{-}Y) = \dfrac{90}{10} = 9$
4	Compute Variance sum of squares for X and Y column (SSx) and SSy)	$SS_x = \sum X^2 - \dfrac{(\sum X)^2}{n}$ $= 1132 - \dfrac{(100)^2}{10} = 1132 - 1000$ $= 132$ $SS_y = \sum Y^2 - \dfrac{(\sum Y)^2}{n}$ $= 864 - \dfrac{(90)^2}{10} = 864 - 810$ $= 54$
5	Find out the sum of squares	$SS_c = SS_x + SS_y = 132 + 54 = 186$
6	Find out the combined SSc degrees of freedom for two sets of data (Df$_c$)	$Df_{x} = n - 1 = 10 - 1 = 9$ $Df_y = n\text{-}1 = 10\text{-}1 = 9$ $Df_c = Df_x + Df_y = 9 + 9 = 18$
7	Compute combined variances S_c^2	$S_c^2 = \dfrac{SS_c}{Df_c} = \dfrac{186}{18} = 10.33$
8	**Compute 't' by using the standard** $\overline{x} - \overline{y}$	

formula : t = $\dfrac{\text{-----------------------}}{\sqrt{S_c{}^2\left(\dfrac{1}{n_x}+\dfrac{1}{n_y}\right)}}$	$T = \dfrac{10\text{-}9}{\sqrt{10.33\,(1/10 + 1/10)}}$ $= \dfrac{1}{\sqrt{10.33 \times 0.2}} = \dfrac{1}{\sqrt{2.066}}$ $= 1/1.43 \quad = 0.699$

Before we take the decision we have to check whether the scores of the two groups show any directionality. Since there is no indication that either set of scores has influence over the other, this is non-directional hypothesis. We shall have to look for the critical value of 't' for two-tailed tests at 0.05 level of significance for 18 degree of freedom. Referring to the table of 'Critical Values of the t Distribution', we find that the corresponding critical value of 't' is equal to 2.101.

Since our calculated value 0.699 is not larger than the critical value of 2.101, the null hypothesis cannot be rejected. That means there is no significant difference between the attitudes of the workmen of recognized union and unrecognized union.

5.3 Non-Parametric Test Of Association

A very important and powerful, non-parametric statistic is observed from the Mann-Whitney U test. Let us hypothesize that the workmen of the recognized unions will be more empathetic towards overtime victims than the workmen of the unrecognized union. In order to test the research hypothesis, we would establish the null hypothesis, that, there is no difference in attitude among the recognized unions' workmen and the unrecognized unions' workmen towards overtime victims.

The first step is to order the attitudinal scores for both the groups, and select the scores on a random basis, in proportion to their presence. The scores are ordered from high to low and then assigned ranks, in the two subsequent tables.

Scores on an Attitudinal Scale Given to two Groups of Workmen to assess the Workmen's Empathetic Feelings towards Overtime Victims (% scores):

Group 1 (Recognized Union)			Group 2 (Unrecognized union)		
4	18	34	3		16
6	22	35	5		29
7	23	38	6		20
9	25	40	8		21
15	28	41	10		24
17	29	42	11		26
	30			12	27
	32		13		
			14		n2 =16
		n1 =20			

Combined Empathy Scores and their Ranks for two groups of Workmen from Two Different Union categories:

Score	Rank	Score	Rank
41	1	19	20
40	2	19	21
38	3	17	22
35	4	16	23
34	6	15	24
32	7	14	25
30	8	13	26
29	9	12	27
28	10	11	28
27	11	10	29
26	12	9	30
25	13	8	31

24	14	8	31
23	15	7	32
22	16	6	33
21	17	5	34
20	18	4	35
19	19	3	36

Next step is to place the scores back into their original groups with its assigned rank. The ranked scores of group 1 are listed under the column of rank 1. We do not need to rank the score of group 2. The table below shows the groups as they were originally constituted with group 1 ranks.

The scores for Group 1 and Group 2, with the Ranked Values for the Scores in Group 1:

Scores for Group 1	Rank 1		Scores for Group 2
4	35		3
6	33		5
7		32	6
9	30		8
15	24		10
17	22		11
18	21		12
22	17		13
23	16		14
25	14		16
28	11		19
29	10		20
30	9		21
32	8		24
34	7		26
35	6		27
38	4		
40	3		
41	2		
42	1		
	$\sum R = 305$		
$n_1 = 20$			$n_2 = 16$

From the table, we obtain the sum of all the rank values. The sum of ranked values for group 1 is 305. We have now three values, $n_{1=20,}$ $\sum R = 305$, and $n_2 = 16$.

The Mann – Whitney U formula is :

$$U = n_1 n_2 + \frac{n_1(n_1 + 1)}{2} - \sum R$$

Where, n_1 = number of scores in the first group

n_2 = number of scores in the second group, and

$\sum R$ = the sum of the ranks for group 1.

Putting the values into the formula we get,

$$U = [(20 \times 16) + \frac{20(20+1)}{2}] - 305$$

$$= [320 + \frac{420}{2}] - 305 = 320 + 210 - 305$$

$$= 225$$

Now we need to have the critical value to see if the null hypothesis can be rejected.

The null hypothesis is that there is no difference between the attitude scores of the workmen of the recognized unions and the workmen of the unrecognized unions, as far as overtime victims are concerned.

We suppose that we wish to test the null hypothesis at 0.05 level of significance. We then refer to the table of 'Critical Values for the Mann – Whitney U when Alpha is 0.05 on a one-tailed test and 0.10 on a two-tailed test'. In our test, the largest n is 20, so we go down the nL column to 20. Then, we go across nS (smaller number) row to the n for the smaller group, which is 16. The intersect gives a critical value of 107.

Following the principle that if our calculated value is equal to or smaller than the critical value, the null hypothesis is rejected. Since the calculated value is 225 and the critical value is 107, the null hypothesis cannot be rejected. Hence we infer that there was no statistically significant difference at the 0.05 level, between the attitudes of the workmen of the recognized union and the workmen of the unrecognized union as far as overtime victims are concerned.

5.4 Measure of Association

In management research, we often wish to know the relationship among different variables in the data with one another. The most frequently used measure of estimating association among variables is the coefficient of correlation 'r'. Coefficient of correlation is calculated to identify the extent or degree of correlation between two variables. It does not mean that their relationship is functional or constant. In other words, correlation in two sets of data need not always be the result of mutual interdependence. Changes in one set of data may be the cause of changes in the other set of data and there may be a cause and effect relationship between the two sets. But, it is also equally possible that the changes in the two sets of data are the effects of some third factor, which affects both these sets of data. As such, the study of correlation, particularly in management, has an extremely limited field of operation.

5.4.1 *Rank-Difference Method of Correlation* : Where the direct qualitative measurement of the phenomenon under study is not possible, for example, efficiency, intelligence etc., rank-difference method of correlation is applied for finding out the degree of correlation. The formula for computing rank correlation is :

$$R = 1 - \frac{6 \sum D^2}{N(N^2 - 1)}$$

Where R denotes coefficient of rank correlation between paired ranks, D denotes the difference between the paired ranks and N stands for the number of pairs.

Ranking of workmen according to their efficiency by Two Different Personal Managers:

Workman	Ranking of Manager A	Ranking by Manager B
A	3	4
B	9	7
C	6	6
D	5	8
E	1	1
F	2	3
G	4	2
H	7	5
I	8	10
J	10	9

Workman	Ranking by Manager A (R_1)	Ranking by Manager B (R_2)	D (R_1-R_2)	D^2
A	3	4	-1	1
B	9	7	+2	4
C	6	6	0	0
D	5	8	-3	9
E	1	1	0	0
F	2	3	-1	1
G	4	2	+2	4
H	7	5	+2	4
I	8	10	-2	4

J N = 10	10	9	+1	1 $\sum D^2$ = 28

$$R = 1 - \frac{6\sum D^2}{N(N^2 - 1)}$$

$$= 1 - \frac{6 \times 28}{10(10^2-1)}$$

$$= 1 - \frac{168}{10(100-1)}$$

$$= 1 - \frac{168}{10 \times 99}$$

$$= 1 - \frac{168}{990}$$

$= 1 - 0.1696969$

$= 0.83$

5.4.2 *Calculation of the coefficient of correlation by Rank Differences (spearman's Rho 'P'):* If there is more than one item with the same value, a common rank is given to such items. This rank is the average of the ranks, which these items would have got, had there been a slight difference in their values. Thus the coefficient of rank correlation needs some correction, because the formula is based on the presumption that the ranks of various items are different.

Where there is more than one item with the same value, a correction factor $1/12 (t^3 - t)$ is added to the value of '$\sum d^2$', where t stands for number of items whose ranks are common. This correction factor is added as many times as the number of items with common ranks.

We calculate the coefficient of rank correlation from the following data of marks of workmen before and after the intervention, on attitude :

Workmen	Marks obtained before Intervention (X) (%)	Rank (R1)	Marks obtained after Intervention(Y) (%)	Rank (R2)	R1-R2 (d)	(d²) D²
1	50	9	60	6	3	9
2	60	5	65	4	1	1
3	60	5	66	3	2	4
4	60	5	70	1.5	3.5	12.25
5	75	1	58	7	-6	36
6	55	7	48	10	-3	9
7	68	2.5	62	5	-2.5	6.25
8	68	2.5	70	1.5	1	1
9	48	10	52	9	1	1
10	52	8	56	8	0	0
N=10						$\sum d^2$=79.50

From the above, it is observed that in the X series, figure 60 occurs thrice. The rank of all the three items is 5, which is the average of 4, 5 and 6, the ranks which these items would have got had they differed slightly from each other. Other figures 68 and 70 in the X-series and the Y-series respectively, have occurred twice. Their ranks are respectively 2.5 and 1.5. Thus,

t1 =3, for 60 correction factor would be 1/12 (cube of 3 – 3)
t2 = 2, for 68 correction factor would be 1/12 (cube of 2 – 2)
t3 =2, for 70 correction factor would be 1/12 (cube of 2 - 2)

The modified formula for coefficient of rank correlation would be :

$$P = 1 - \frac{6\left[\left(\sum D^2\right) + 1/12\ (t^3_1 - t_1) + \dots\dots\ 1/12\ (t_n^3 - t_n)\right]}{N\ (N^2 - 1)}$$

Where n stands for the number of items repeated, so, for the above data, the formula would be :

$$P = 1 - \frac{6\left[\left(\sum D^2\right) + 1/12\ (t^3 - t) + 1/12\ (t^3 - t) + 1/12\ (t^3 - t)\right]}{N\ (N^2 - 1)}$$

$$= 1 - \frac{6\left[(79.5 + 1/12\ (3^3 - 3) + 1/12\ (2^3 - 2) + 1/12\ (2^3 - 2)\right]}{10\ (10^2 - 1)}$$

$$= 1 - \frac{6\left[(79.5 + 1/12\ (24) + 1/12\ (6) + 1/12\ (6)\right]}{10\ (99)}$$

$$= 1 - \frac{6[79.5 + 2 + \frac{1}{2} + \frac{1}{2}]}{990}$$

$$= 1 - \frac{495}{990} = 1 - 0.5 = 0.5$$

The statistical convention decrees that the coefficient of correlation ranging from 1 to 0.7 ($\pm$) is an indication of 'high' correlation, that ranging from 0.7 to 0.4 ($\pm$) as substantial, 0.4 to 0.2 ($\pm$) as low, and that below 0.2 as negligible.

VI.   DISCUSSION

6.1 Measurement of Tact:

It has been observed that the responses of the managers in the organization, are, from time to time, delayed, to the notices or the demands of the workmen's unions. This leads to the aggravation of the problem – the unions intensify their demands and build up a psychological war–zone in the organization. As a result, the productivity begins to be affected. As more and more people start taking interest in the treatment being meted out to the leaders of the unions, the more is the downward trend of the productivity.

Duration, as its name suggests, is a measure of how long a behavior lasts, namely, the exercising of tact. If the objective is to increase the contributions a manager makes, in the 'union–management' meetings, a measure of how many contributions (frequency) are made, may not tell the whole story. It is possible that the manager makes five 'contributions' during the course of the meeting, but these are merely 'yes' or 'no' responses to questions. Of more interest may be the duration of these contributions i.e. the total length of time, during which, the individual   was contributing. Duration will, in these circumstances, be a better measure. The degree of accuracy required, will determine how the duration is measured. It may be possible, to measure the length of time for which the tact is exercised, with a stopwatch, or use a tick-list, for five-minute blocks. [5]

Whereas, duration concentrates on how long the tact is exercised, latency is a measure of the delay between the instant of time when the tact should occur and when it actually occurs. The graph, depicting the responses to the demands or the notices served by the union leaders, is illustrated in Figure-2.

6.2 Intervention *as a Tool to Gain Cooperation:*

Human beings tend to become competitive in situations, where they feel threatened. Competition leads to low trust and by definition, low cooperation. For example, there is often rivalry and low trust between shifts and between shop floor and management. In most situations, this leads to lowered effectiveness. It will certainly lead to a less than smooth introduction of change. The situation will be made worse if there is suspicion concerning the activities of any consultant involved. It is important, therefore, to be aware of any

sign of competition and to know how to deal with it, or better still, know how to avoid it in the first place. There are a number of factors which determine how well people work together. Three such factors are of particular importance:

1)   The extent to which people trust each other – the level of trust can vary from very   high to very low.
2)   How open people or groups are with each other – the level of openness can be high or low.
3)   Whether there is cooperation or competition – there can be high cooperation or high competition.

All three of these factors can have significance for the relationship between the participants and whoever is implementing the scheme. They are also important aspects of the relationship between managers and subordinates in the organization. Depending on past experience of consultants, there may be low trust in outside experts. It is also not uncommon for levels of trust between managers and workers on the shop floor to be low. The issue is not only how much people believe what is said but also how much confidence they have that others will deliver what they have promised. [6]
In case it is assumed that we are advocating a trend of 'love and trust' for all ills, it is worth pointing out that we are not saying that openness and trust are appropriate in all situations and that one should always go for cooperation. Whether cooperation or competition is most appropriate, depends on the type of situation – whether it is zero sum or non-zero sum. [7]
A zero sum situation is one where one person's losses are the other person's winnings and vice-versa.

A non-zero sum situation is one where there is some outside influence, which can add to, or subtract from, the total gains available. In zero sum situations, competition can be appropriate. In non-zero sum situations, competition will always lead to both sides losing (lose-lose). Cooperation will lead to both sides winning (win-win). Most 'real life' situation are non-zero sum. If people cooperate, both sides gain. This applies to everything from war to trade union negotiations. In almost every industrial dispute that has reached the stage of strike action, both sides have lost more than was gained by the strike. In the final settlement, the strikers rarely recoup their losses in terms of lost pay or if they do, it takes a considerable time. Management also loses heavily in lost production and subsequent lost profits. If they could have cooperated and reached a quick agreement, both sides could have gained. Similar considerations apply to change initiatives . If a spirit of cooperation can be maintained, a successful conclusion can be reached quickly and with minimum cost. If low trust and competition develop, time is wasted, and the whole process can be jeopardized.

Most real life zero-sum situations are relatively trivial. In these situations, competition is appropriate . There is, in fact, little point in doing otherwise. However, it is better not to get involved unless we are better at the game than the other person, otherwise we would surely lose. We are unaware of any such situation within the work of an organization.

6.3 The *Model of 'Tact':*
The model of 'Tact' is illustrated in Figure-3.

We have to observe that the solution point Q of the demand varies as a continuous function of the threat point N. Also, there is a helpful geometrical characterization of the way Q depends on N. The solution point Q is the contact point with B of a hyperbola (α β) whose asymptotes are the vertical and horizontal lines through N. Let T be the tangent at Q to this hyperbola. 'P' is a point where there is a continuous function 'h' of an individual 'i'.

If linear transformations are applied to the utility functions, N can be made the origin and Q the point (1, 1). Now T will have slope -1 and the line NQ will have slope +1. The essential point is that, slope T = minus (-) slope NQ, because this is a property that is not destroyed by the linear transformation of the utilities. T will be a support line for the set B (that is, a line, such that all points of B are either on the lower left side of T or are on T itself).

We can state that the criterion is that if NQ has a positive slope and a support line T, for B passes through Q with a slope equal but opposite to the slope of NQ, then Q is the solution point for the threat point N. If NQ is horizontal or vertical, and is itself a support line for B, and if Q is the rightmost or uppermost of the points common to B and NQ, then again Q is the solution point for N, and one of these cases must hold if Q is the solution point of N.   This criterion is a necessary and sufficient one to prevent the loss of productivity.

Any support line of B with a contact point Q on the   upper-right boundary of B, determines a complimentary line through Q, with equal but opposite slope. All points on the line segment, in which this complimentary line intersects B, are points, which, as threat points, would have Q as corresponding solution point. The class of all these line segments is a ruling of B by line segments which intersect, if at all, only on the upper-right boundary of B. Given a threat point N, its solution point is the upper-right end of the segment passing through it (unless N is on more than one ruling and hence is on the upper-right boundary and is its own solution point).

VII.   FINDINGS AND CONTRIBUTIONS

We now need to derive the model of 'Optimum Tact', after considering the various social divisions. These social divisions are illustrated in Figure-4.

We can now analyze the strategic management of threat, the threat formed by the first move and with pay-off function determined by the solution of the demand. This pay-off is determined by the location of N, specifically by the ruling on which N falls.

Now, if there are threats from two individuals, one individual's threat is held fixed, say, individual one's at t_1, then the position of N is a function of the other individual's threat, t_2. The co-ordinates of N, p_1 (t_1, t_2) and p_2 (t_1, t_2) are linear functions of t_2. Hence, the transformation (t_2 goes to N), defined by this situation, is a linear transformation of the space S_2 of individual two's threats to B. That part of the image of S_2 that falls on the most favorable (for individual two) ruling, will contain the image of the threats that would be best as replies, to individual one's fixed threat t_1. This set of best replies must be a convex, compact subset of S_2 because of the linearity and the continuity of the transformation of S_2 into B.

The continuity of N as a function of t_1 and t_2, and the continuity of Q as a function of N, ensure that the pay-off function, defined for the threat by solving the demand, is a continuous function of the threats. This is sufficient to make each individual's set of best replies, an upper semi-continuous function of the threat being replied to. Now, let us consider any pair of threats (t_1, t_2) . For each threat of the pair, the other individual has a set of best replies. Let R (t_1, t_2) be the set of all pairs which contains one threat from each of the two sets of replies. R will be an upper semi-continuous function of (t_1, t_2) in the space of opposed pairs of threats and R (t_1, t_2) will always be a convex set in the space, S_1 x S_2.

The Kakutani Fixed Point Theorem tells us that there is some pair (t_{10}, t_{20}) that is contained in its set R (t_{10}, t_{20}), which amounts to saying that each threat is a best reply to the other. Thus we have obtained an equilibrium point in the management of tact. It is noted that this equilibrium point is formed by pure strategies in the tact, as a mixed strategy could involve randomization over several threats.

The pair (t_{10}, t_{20}) also has minimum and maximum properties. Since the final pay-off is determined by the position of Q on the upper-right boundary of B, which is a negatively sloping curve, each individual's pay-off is a monotone decreasing function of the other. So, if individual one sticks to t_{10}, individual two cannot make one worse off than he does by using t_{20}, without improving his own position and he cannot do this because (t_{10}, t_{20}) is an equilibrium point. Thus t_{10} assures individual one of the equilibrium pay-off and t_{20} accomplishes the same for individual two.

The model of 'Optimum Tact' is now established very much like a zero-sum situation, and one can readily see that if one individual were to choose his threat first and inform the other, rather than simultaneously choosing threats, this would not make any difference, because there is a 'saddle-point' in pure strategies. It is however different with the demand. The right to make the first demand would be quite valuable, so the simultaneity here is essential. The model of 'Optimum Tact' is illustrated in Figure-5.

To summarize, we have now derived the model of 'Optimum Tact', found the values of the threat to the two individuals, and shown that there are optimal threats and optimal demands (the optimal demands are the values).

From the detailed analyses of the data, and the results of the several tests on the answers of the questionnaires, we find that the exercising of 'Optimum Tact' mainly comprises of three skills, with a set of sub-skills, that have been utilized to resolve the crises, as mentioned in Table-2. [8] These are :

a)   own effectiveness --- time management, assertiveness, and being realistic
b)   interactive skills --- nonverbal communication, influencing skills, and handling feelings
c)   intervention skills --- being systematic, decision making, and promoting healing and recovery

It is therefore established that these three skills, along with their sub-skills, are the considerable parameters for the exercising of 'Optimum Tact', necessary to prevent any industrial dispute, with reference to the industries in the southern districts of the state of West Bengal.

When the samples tend to consider that their problem is unique, it will be helpful to bring them back to reality, by projecting that the other samples are facing the same problem. By universalizing the problem in this way, the anxiety may be reduced in intensity. The ultimate goal of this research is the generalizability of the findings of the study. In this research, findings which are generalizable to a considerably large number of situations and cases, can only contribute to the knowledge base of management practice. The generalizability of findings is achieved here through the repetition of the study by taking more measurements. [9]

We now establish the following six steps, that need to be taken for the exercising of 'Optimum Tact', necessary to prevent any industrial dispute and loss of productivity :

7.1   *Measure of Reading:* For theory to be used to the best effect, it is important that we break down the barriers by challenging the assumption that reading is for students only or staff in training and not for full-fledged professionals. Some may argue that they do not have enough time to read. However, there are two points that need to be made in response to this. First, time spent on reading is an investment of time and can, by enhancing our practice, save time in the long run. Second, reading can increase our levels of intelligence and job satisfaction by giving us a broader perspective and greater insights into the Industrial Disputes.

7.2   *Measure of Asking:* 'Asking' can apply in two ways. First, in relation to reading, much of the literature of industrial relations, are written in a jargonistic academic style, that makes it difficult to understand. It can be helpful, then, to ask other people about such issues so that we can get past this barrier. There is much to be gained from creating an open, enquiring, mutually supportive atmosphere in which all professionals, not just students, can learn from each other**.**

7.3   *Measure of Watching:* There is much to be learned from developing an enhanced level of awareness in terms of observational skills. Much of the time, we may miss significant issues because we treat situations as routine and commonplace. We need to remember that every situation is unique in some ways and so we need to be attuned to what is happening and not make blanket assumptions. Theoretical knowledge can help us understand and explain our experience, but if our experience is closed by a failure to be sensitive to what is happening, then we shall not notice that there is anything to be explained. Exercising tact relies on developing a sensitivity to what is happening around us.

7.4   *Measure of Feeling:* The emotional dimension of profession, as we have seen, is a very important one. Our emotional responses, can, at times, be painful and difficult to deal with. At the other extreme, using theory can, sometimes, be seen as cold and technical. However, this does not mean that the two – thinking and feeling – cannot be reconciled. Thought can help us understand, and, therefore, deal with feeling and feelings can help bring theory to life, turn concepts into working tools, and thereby develop the skill of tact.

7.5   *Measure of Talking:* Sharing views about work situations, and how these can be dealt with, encourages a broad perspective. It provides the opportunity for people to learn from each other's experience, to find a common ground and identify differences of approach. Constructive dialogues about the methods of work, reasons for taking particular courses of action, and, so on, can be an excellent way of broadening horizons, deepening understanding and enhancing skills. Such dialogues also help to create an open and supportive working environment, and this, in itself, can be an important springboard, for the practice of the skill of tact.

7.6   *Measure of Thinking:* There are two main barriers to a thoughtful approach to practice. These are routines and pressure. A routine approach amounts to working 'on automatic pilot' and is clearly a dangerous way of dealing with the sensitive issues. Pressure can also stand in the way of thinking about our practice. If we are very busy, we have to be wary of allowing ourselves to be pressurized into not thinking about what we are doing. We need to remain in control of our workload so that we are able to think about our actions. Thinking time should be seen as an essential part of the development of the skill of tact, rather than a luxury that has to be dispensed with, when pressure is on.

VIII.   CONCLUSION

The model of 'Optimum Tact' offers the use of a theory base to help us understand the common themes, and a focus on creativity to help us deal with the unique aspects of each situation we encounter. The steps mentioned herein, are not the only ones that can be taken for the strategic management of tact, but they should provide a good 'launch pad' for working out patterns of practice, for further development of the process.

The future challenges of research include the examination of the concepts and implications of core self-evaluations for self-regulatory processes [10]; testing of the validity of goal-setting theory and in particular, the dynamics of goal setting and goal revision in field settings [11]; comparing and contrasting the concept of a learning goal with a performance goal, in terms of the mechanisms involved; integrating different theories and models of motivation with a view to developing a more coherent theoretical framework [12]; theoretically integrating considerations of identity, commitment and psychological contract, investigating processes of psychological contracting, and investigating two-party relationships within a psychological contract framework.

IX.   Figures And Tables
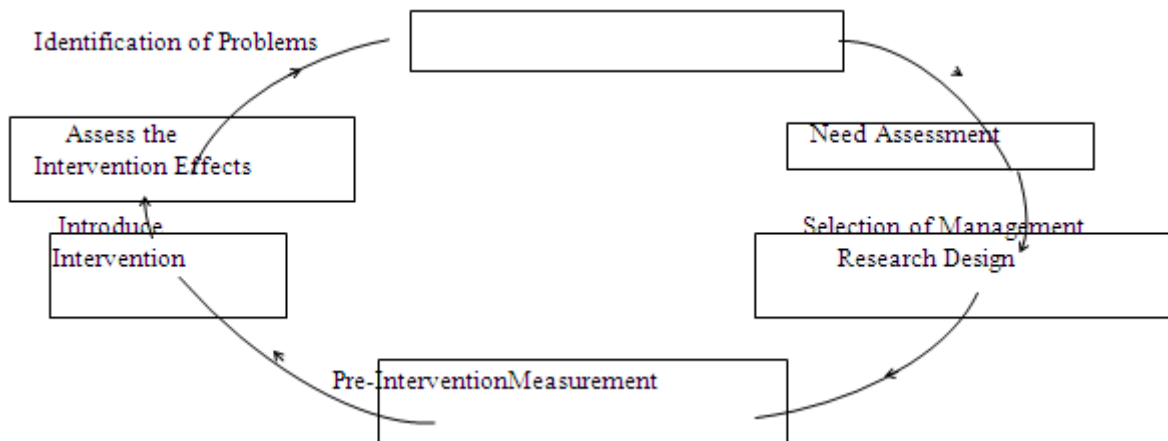
Figure 1: The Process of Research
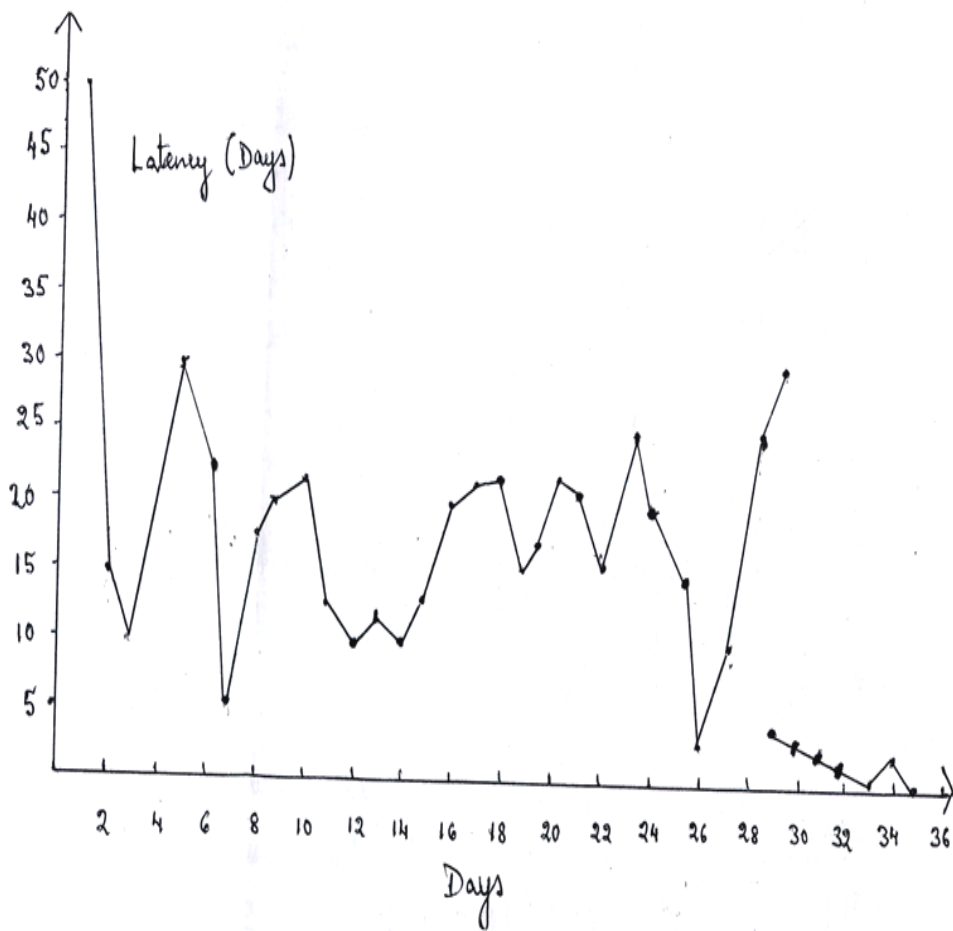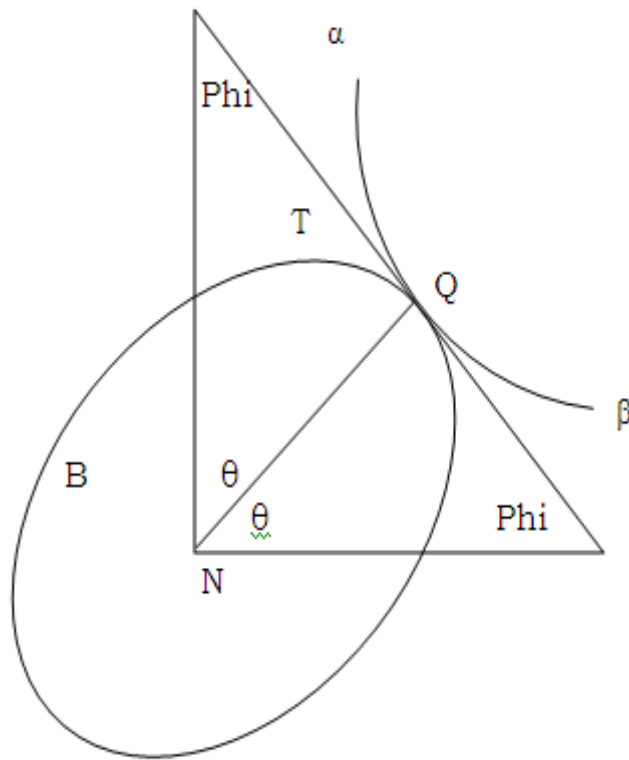

Figure 2: The Measurement of Tact
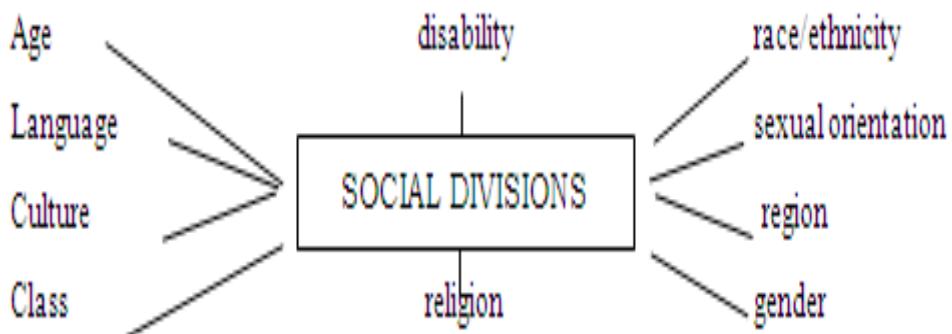
Figure-3: The Model of 'Tact'
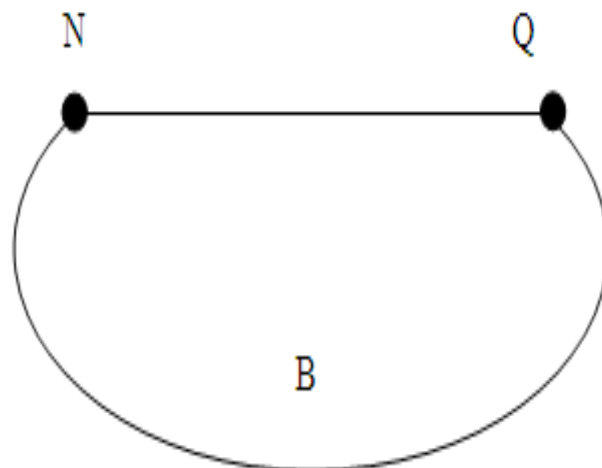

Figure-4: The Social Divisions

Figure-5: The Model of 'Optimum Tact'

Table-1
The Nature And Details Of Samples

Serial Number	Details of Sample	Nature of Industry
Sample 1	Indian Oil Corporation Limited (MD), Eastern Region Lube Blending Plant, Kolkata P – 68, Karl Marx Sarani, Paharpur, Kolkata-700043	Petroleum
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Sample 2	Bhargab Engineering Works P – 292, Benaras Road, District : Howrah, West Bengal, 711108	Steel
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Sample 3	--- -----------------	---------------------- ---------------------- -----------
------------	SARANGSoft India Private Limited SDF Building, Module 428 and 429, Sector – 5, Salt Lake City, Kolkata - 700091	Information Technology (owned by NRI)
Sample 4		
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Sample 5	Gopal Hosiery 61, Ibrahimpur Road, Jadavpur, District : 24 Paraganas (S), West Bengal, 700032	Manufacturing
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	Jayshree IT Consultants Limited Y–13, Block EP, Sector -5, Salt Lake City, Kolkata-700091	Information Technology (owned by Indian)

Table-2
The Results of the Analyses of the Data

Serial Number	Union of workmen	Industrial Dispute History	Reason	Pending Demands
Sample 1	Recognized and unrecognized	Nil	Good personal relationship of management with union leaders	Salary revision from 2007, revision of LTA, new grades for better career progression, no outsourcing to contractors, and wage agreement on 5-yearly basis
Sample 2	Unrecognized	Non-cooperation and Go-Slow	Salary hike and medical facilities	Uniform salary hike, uniform rate of incentive and overtime, and commencement of recruitment
Sample 3	Unrecognized	Non-cooperation and Go-Slow	Salary hike and increment	Uniform salary hike and increment, restarting LTA that was stopped from 2009, introduction of overtime for working beyond working hours
Sample 4	Recognized and unrecognized	Lock-out	Failure to meet benchmark rate of production, as given by Minimum Wages Act, 1948	Payment of overtime to meet benchmark rate of production, 20% festival bonus, increase in the number of days of annual leave
Sample 5	Unrecognized	Lock-out	Agitation due to stoppage of salary caused by recession	Reopening of organization and payment of arrear salary

X. ANNEXURE

Sample Questionnaire

1. When was the organization started?
2. Is it a manufacturing unit?
3. What is the number of personnel in the organization?
4. What is the hierarchical system in the organization?
5. How many personnel are there in the workmen category?
6. How many other categories are there?
7. How many recognized unions are there in the organization?
8. How many unrecognized unions are there in the organization?
9. What are the political affiliations of the recognized union or unions?
10. What are the political affiliations of the unrecognized union or unions?
11. Are all the workmen members of one union or the other?
12. If no, how are the workmen, who are not members of any union, looked after?
13. If no, can these workmen approach the top management directly?
14. What are the fringe benefits that are being offered to the workmen?
15. Did the unions, if any, ever express any resentment or grievance over their benefits or wages?
16. If yes, how was the grievance handled and what was the result?
17. Was there ever any form of agitation by the employees against the management?
18. If yes, what was the form and how long did it last?
19. Did the management initiate any disciplinary action against any employee?
20. How was the issue of the agitation resolved?
21. At present, has any charter of demands been submitted to the management by the employees or the union(s), if any?
22. If yes, what are the issues and how does management propose to resolve them?
23. How is the fixation of wage made in the organization?
24. Is there any policy of offering incentives or performance linked rewards?
25. If yes, what are the criteria and have the criteria been approved by the employees or the union(s), if any?
26. What are the current issues of resentment of the employees, or the union(s), if any?
27. Did the management sit for a discussion with the representatives of employees or union leaders, if any, to resolve the issues?
28. If yes, what was the attitude of the employees, and how does the management propose to resolve the crisis?
29. What are the working hours of the organization?
30. Is overtime given to the employees? If yes, at what rate, and is it also a measure to prevent any form of agitation?

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