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Comparative Analysis of Occupational Stress of Employees in the Manufacturing & Education Sector

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Abstract: The following study attempts to analyze the difference in the levels of stress experienced in two different sectors. A study of Supervisors in the Manufacturing Firm along with Teacher in a Post-Graduate Programme has been conducted here. All employees experience stress in their jobs. The parameters along which they experience stress also remain the same more or less. It is quite possible that the overall stress experienced in any job may not truly be distinguishable from the other. It is thus, important to see whether the difference in the jobs causes any significant difference in the stress experienced while performing the job. So, this study aims at finding out whether the levels of occupational stress among supervisors working in a manufacturing firm and teachers. The study is based on the primary data collected through structured questionnaire from a total 48 respondents (24 from a manufacturing firm and 24 from a Post-Graduate Programme) from Nagpur City. The comparative analysis of the 12 parameters of occupational stress between supervisors and teachers shows that there is a significant difference across the board.

Keywords: Occupational Stress, Comparison, Education, Manufacturing

1. Introduction:

The modern man faces many challenges. In order to survive, he needs to not only work but also grow; grow in stature, position, skills and also leadership. As one progresses along the chain of command, a person is given authority over others. This supervisory level entails the management and productivity of the subordinates. If one thinks like that then, the role of a Supervisor and a Teacher in a professional post-graduate programme seems to be quite similar. Both the Supervisor and the Teacher has to manage a number of people, look at their current capacity, analyze and guide efforts to ensure productivity. Along with this, both also play a key role in the administration of their respective organization, have to report to superiors and remove or remedy conflicts that arise among the subordinates. This inevitably leads to stress. Modern life is stressful. In order to survive, one must identify a vocation and pursue it with all the strength he can muster. One learns to perform along the expected levels of his vocation through practice but along with that he also has to work in teams, is responsible for persons and faces peer-to-peer challenges. It is quite possible that in doing so, he may become stressed.

Stress has been one of the major topics of research since decades. The impact it has on people and the effective means of tackling stress have been the driving force of all major studies in recent past. There is also a need however, to analyze whether the stress experienced among employees of different organizations is different or not. The following study was conducted with the view to analyze the levels of stress among two different groups who seem to have a similar set of tasks at the cursory level. The researcher believes that there may be no significant difference between the two groups' stress levels.

2. Review of Literature:

The term stress has been explained in many ways by different theorists. According to the Oxford Dictionary," stress is a state of mental or emotional strain or tension resulting from adverse or demanding circumstances". (Selye, 1956) defined it as, "any external event or internal drive which threatens to upset the organismic equilibrium". In a medical or biological context stress is a physical, mental, or emotional factor that causes bodily or mental tension (Palmer, et al., 2003). The terms like job stress, work stress, and work related stress are generally used interchangeably to represent occupational stress (Dollard, 2003).

In recent times, a new term 'stressor' is being used by the researchers for the situations that (Selye, 1956) evoke stress. Some of the stressors like poor working conditions, work overload, poor leadership, poor interpersonal relationships, role ambiguity, lack of career growth and development opportunities are identified in the study (Bright, 2001). Thus, it can be said that stress may be associated with the work or the responsibilities related to it, or by the situation or pressure prevailing in the organizational culture, or by the leadership style of seniors, or by the personality conflicts of the employees. A survey undertaken in a metro revealed that the environment, activities, professionalism (or lack thereof) along with work load, benefits,

income level time pressures are some of the important factors induce stress among teachers as well. (Chin, 2003)

Gender does not play a significant role in the overall stress levels experienced in the job (Ravichandran, 2007) & (Nagra, 2013). From the discussion presented as above it seems that, "occupational stress is inevitable for the employees" (Schuler, 1980). Demographic differences and occupational do not play a significant role and it was observed that trained graduate teachers are found to have higher occupational stress than postgraduate and untrained teachers (Aftab, 2012). Further, no significant differences between monthly salaries, subjects taught, marital status and occupational stress was observed by in his survey.

The existence of stress in a profession is one way perceived as a motivating factor as it urges the employees to thrive for brilliance and supremacy. The other perception is the excess amount of stress can result in problems like lack of concentration, lower self-confidence and productivity, less participation and involvement in routine tasks at workplace and many more like this. Therefore, the presence of stress is inevitable and necessary. However, too much stress will also lead to multifarious problems for the organization.

The study takes into consideration two different groups of people viz. supervisors in the manufacturing firm and teachers of a post-graduate programme. The above facets discussed above are prevalent in their professions at all levels. And therefore, from a bird's eye view, one feels that their stressors or stress parameters are quite similar. Thus, a comparison of their occupational stress experienced should be made.

3. Aim of the Study:

The study aims to identify whether there is a significant difference between the stress levels of employees in a manufacturing firm and teachers in an educational institute. Also, the study intended to identify if there were certain parameters along which there was a significant difference between stress levels for both the groups.

4. Hypothesis:-

The working assumption for the study is as follows:

"There will be a significant difference in occupational stress levels between the employees of a manufacturing firm and teachers of an educational institute."

Therefore, the hypothesis will be framed as:

H_0: There is no significant difference in occupational stress levels among employees of a manufacturing firm and an educational institute.

H_A: There is a significant difference in occupational stress levels among employees of a manufacturing firm and an educational institute.

Since there are 12 stress causing parameters being measured in this study there will be 12 null hypotheses and 12 alternate hypotheses. These are enlisted below:

3.1 Role Overload:

H_{01}: There is no significant difference in occupational stress levels of Role Overload between employees of a manufacturing firm and an educational institute.

H_{A1}: There is a significant difference in occupational stress levels of Role Overload between employees of a manufacturing firm and an educational institute.

3.2 Role Ambiguity:

H_{02}: There is no significant difference in occupational stress levels of Role Ambiguity between employees of a manufacturing firm and an educational institute.

H_{A2}: There is a significant difference in occupational stress levels of Role Ambiguity between employees of a manufacturing firm and an educational institute.

3.3 Role Conflict:

H_{03}: There is no significant difference in occupational stress levels of Role Conflict employees of a manufacturing firm and an educational institute.

H_{A3}: There is a significant difference in occupational stress levels of Role Conflict employees of a manufacturing firm and an educational institute.

3.4 Unreasonable Group & Political Pressure:

H_{04}: There is no significant difference in occupational stress levels of Unreasonable Group & Political Pressure between employees of a manufacturing firm and an educational institute.

H_{A4}: There is a significant difference in occupational stress levels of Unreasonable Group & Political Pressure between employees of a manufacturing firm and an educational institute.

3.5 Responsibility for Persons:

H_{05}: There is no significant difference in occupational stress levels of Responsibility for Persons between employees of a manufacturing firm and an educational institute.

H_{A5}: There is a significant difference in occupational stress levels of Responsibility for Persons between employees of a manufacturing firm and an educational institute.

3.6 Underparticipation:

H_{06}: There is no significant difference in occupational stress levels of Underparticipation between employees of a manufacturing firm and an educational institute.

H_{A6}: There is a significant difference in occupational stress levels of Underparticipation between employees of a manufacturing firm and an educational institute.

3.7 Powerlessness:

H_{07}: There is no significant difference in occupational stress levels of Powerlessness between employees of a manufacturing firm and an educational institute.

H_{A7}: There is a significant difference in occupational stress levels of Powerlessness between employees of a manufacturing firm and an educational institute.

3.8 Poor Peer Relations:

H_{08}: There is no significant difference in occupational stress levels of Poor Peer Relations between employees of a manufacturing firm and an educational institute.

H_{A8}: There is a significant difference in occupational stress levels of Poor Peer Relations between employees of a manufacturing firm and an educational institute.

3.9 Intrinsic Impoverishment:

H_{09}: There is no significant difference in occupational stress levels of Intrinsic Impoverishment between employees of a manufacturing firm and an educational institute.

H_{A9}: There is a significant difference in occupational stress levels of Intrinsic Impoverishment between employees of a manufacturing firm and an educational institute.

3.10 Low Status:

H_{010}: There is no significant difference in occupational stress levels of Low Status between employees of a manufacturing firm and an educational institute.

H_{A10}: There is a significant difference in occupational stress levels of Low Status between employees of a manufacturing firm and an educational institute.

3.11 Stressful Working Conditions:

H_{011}: There is no significant difference in occupational stress levels of Stressful Working Conditions between employees of a manufacturing firm and an educational institute.

H_{A11}: There is a significant difference in occupational stress levels of Stressful Working Conditions between employees of a manufacturing firm and an educational institute.

3.12 Unprofitability:

H_{012}: There is no significant difference in occupational stress levels Unprofitability between employees of a manufacturing firm and an educational institute.

H_{A12}: There is a significant difference in occupational stress levels of Unprofitability between employees of a manufacturing firm and an educational institute.

5. Research Methodology:

Methodology is a way to analyze and solve the research problem systematically. This section discusses the research methodology adopted in the present study to approach the objectives of the study. Research methodology includes research questions and formulation of hypothesis, sampling & data collection, survey instruments used along with standardizing them scientifically establishing validity and reliability and statistical techniques used for data analysis.

5.1 Sample of Study:-

The sample comprised of both employees from the manufacturing and teaching sector. The data was collected from a local manufacturing firm and the teachers were from a local college. The sample was collected in Nagpur City. A total of 24 employees each from manufacturing and teaching sector were taken under survey bringing the number of total respondents to 48.

5.2 Methods of Data Collection:-

The Occupational Stress Index was administered to the respondents and their responses were collected. The data was collected using the Occupational Stress Index Questionnaire designed by Srivastava and Singh. This scale, constructed by A. K. Shrivastava & A. P. Singh, consists of 46 items, each item is provided with 5 alternative responses. Out of 46 items, 28 are 'true-keyed' and 18 are 'false-keyed'. The reliability index ascertained by split half (odd-even) method and Cronbach's alpha coefficient for the scale were found to be .93 and .90 respectively. The data analysis was conducted using the Microsoft Excel Software (ver. 2007)

5.3 Procedure of Data Collection:-

5.3.1 Primary Data:

Primary data was collected through administering the questionnaire to the employees of the manufacturing firm and the teachers of a local institute. The data was collected by the researchers on a case by case basis.

5.3.2 Secondary Data:

Secondary data was collected through the various published materials already available in the listed Journals and databases and textbooks.

5.4 Limitations:

The research was limited to the manufacturing sector in Nagpur Region (specifically a firm in the MIDC area of Nagpur) and an educational institute from the city (a post-graduate programme college). The research will be limited for the Nagpur regionally.

6. Results & Discussions:

The data was analyzed using Microsoft Excel ver. 2007. The data was tabulated and matched according to the stress causing parameters for the groups and a t-test for Two-Sample Assuming Unequal Variances was run. This was done because the two groups are unpaired i.e. they are not dependent on each other. The two groups were distinguished using the labels of TAL and TEA for manufacturing employees and teachers respectively. The Roman numeral after the label is to denote the stress causing parameter. The resulting outcomes have been tabulated and display the values of the mean, variance, no. of observations, the hypothesized mean difference (taken to be 0 in this case). The tables also display the degrees of freedom, the t-statistic, p-values for both one tail and two tail tests and the t-critical values at one tail and two tails respectively. For the purposes of comparison we are using the comparison of the t-statistic and the t-critical two-tail values. It is observed that the t-statistic is lesser than the t-critical value throughout the 12 parameters.

6.1 Role Overload:

t-Test: Two-Sample Assuming Unequal Variances		
	TAL I	*TEA I*
Mean	18.41666667	17.04166667
Variance	34.25362319	12.30253623
Observations	24	24
Hypothesized Mean Difference	0	
Df	38	
t Stat	**0.987233186**	
P(T<=t) one-tail	0.164886499	
t Critical one-tail	1.685954461	
P(T<=t) two-tail	0.329772998	

t Critical two-tail	**2.024394147**	

Since the t-value is smaller than the t-critical value, we reject the null hypothesis. There is a significant difference between the stress levels of Role Overload between employees of the manufacturing firm and teachers of the educational institute.

6.2 Role Ambiguity:

t-Test: Two-Sample Assuming Unequal Variances		
	TAL II	*TEA II*
Mean	11.375	11.125
Variance	13.46195652	12.375
Observations	24	24
Hypothesized Mean Difference	0	
Df	46	
t Stat	**0.240948902**	
P(T<=t) one-tail	0.405332731	
t Critical one-tail	1.678660414	
P(T<=t) two-tail	0.810665462	
t Critical two-tail	**2.012895567**	

Since the t-value is smaller than the t-critical value, we reject the null hypothesis. There is a significant difference between the stress levels of Role Ambiguity between employees of the manufacturing firm and teachers of the educational institute.

6.3 Role Conflict:

t-Test: Two-Sample Assuming Unequal Variances		
	TAL III	*TEA III*
Mean	14.54166667	14.04166667
Variance	12.51992754	14.82427536
Observations	24	24
Hypothesized Mean Difference	0	
Df	46	
t Stat	**0.468428156**	
P(T<=t) one-tail	0.320845317	
t Critical one-tail	1.678660414	
P(T<=t) two-tail	0.641690633	
t Critical two-tail	**2.012895567**	

Since the t-value is smaller than the t-critical value, we reject the null hypothesis. There is a significant difference between the stress levels of Role Conflict between employees of the manufacturing firm and teachers of the educational institute.

6.4 Unreasonable Group & Political Pressure:

t-Test: Two-Sample Assuming Unequal Variances		
	TAL IV	*TEA IV*
Mean	12.5	12.16666667
Variance	8.956521739	7.797101449
Observations	24	24
Hypothesized Mean Difference	0	
Df	46	
t Stat	**0.398960587**	
P(T<=t) one-tail	0.345884186	
t Critical one-tail	1.678660414	
P(T<=t) two-tail	0.691768372	
t Critical two-tail	**2.012895567**	

Since the t-value is smaller than the t-critical value, we reject the null hypothesis. There is a significant difference between the stress levels of Unreasonable Group & Political Pressure between employees of the manufacturing firm and teachers of the educational institute.

6.5 Responsibility for Persons:

t-Test: Two-Sample Assuming Unequal Variances		
	TAL V	*TEA V*
Mean	10.125	9.5
Variance	2.635869565	1.130434783
Observations	24	24
Hypothesized Mean Difference	0	
Df	40	
t Stat	**1.57771274**	
P(T<=t) one-tail	0.061254191	
t Critical one-tail	1.683851014	
P(T<=t) two-tail	0.122508382	
t Critical two-tail	**2.02107537**	

Since the t-value is smaller than the t-critical value, we reject the null hypothesis. There is a significant difference between the stress levels of Responsibility for Persons between employees of the manufacturing firm and teachers of the educational institute.

6.6 Underparticipation:

t-Test: Two-Sample Assuming Unequal Variances		
	TAL VI	*TEA VI*
Mean	12.375	11.33333333
Variance	8.940217391	15.10144928
Observations	24	24
Hypothesized Mean Difference	0	

Df	43	
t Stat	**1.040763618**	
P(T<=t) one-tail	0.151900979	
t Critical one-tail	1.681070704	
P(T<=t) two-tail	0.303801958	
t Critical two-tail	**2.016692173**	

Since the t-value is smaller than the t-critical value, we reject the null hypothesis. There is a significant difference between the stress levels of Underparticipation between employees of the manufacturing firm and teachers of the educational institute.

6.7 Powerlessness:

t-Test: Two-Sample Assuming Unequal Variances		
	TAL VII	*TEA VII*
Mean	8.458333333	9
Variance	5.650362319	6
Observations	24	24
Hypothesized Mean Difference	0	
Df	46	
t Stat	**-0.77744203**	
P(T<=t) one-tail	0.220439077	
t Critical one-tail	1.678660414	
P(T<=t) two-tail	0.440878155	
t Critical two-tail	**2.012895567**	

Since the t-value is smaller than the t-critical value, we reject the null hypothesis. There is a significant difference between the stress levels of Powerlessness between employees of the manufacturing firm and teachers of the educational institute.

6.8 Poor Peer Relations:

t-Test: Two-Sample Assuming Unequal Variances		
	TAL VIII	*TEA VIII*
Mean	11.91666667	10.875
Variance	4.427536232	8.809782609
Observations	24	24
Hypothesized Mean Difference	0	
Df	41	
t Stat	**1.402601739**	
P(T<=t) one-tail	0.084131357	
t Critical one-tail	1.682878003	
P(T<=t) two-tail	0.168262715	
t Critical two-tail	**2.019540948**	

Since the t-value is smaller than the t-critical value, we reject the null hypothesis. There is a significant difference between the stress levels of Poor Peer Relations between employees of the manufacturing firm and teachers of the educational institute.

6.9 Intrinsic Impoverishment:

t-Test: Two-Sample Assuming Unequal Variances		
	TAL IX	*TEA IX*
Mean	11.125	10.5
Variance	16.89673913	8.086956522
Observations	24	24
Hypothesized Mean Difference	0	
Df	41	
t Stat	**0.61257222**	
P(T<=t) one-tail	0.271771058	
t Critical one-tail	1.682878003	
P(T<=t) two-tail	0.543542116	
t Critical two-tail	**2.019540948**	

Since the t-value is smaller than the t-critical value, we reject the null hypothesis. There is a significant difference between the stress levels of Intrinsic Impoverishment between employees of the manufacturing firm and teachers of the educational institute.

6.10 Low Status:

t-Test: Two-Sample Assuming Unequal Variances		
	TAL X	*TEA X*
Mean	7.791666667	6.708333
Variance	8.432971014	3.346014
Observations	24	24
Hypothesized Mean Difference	0	
Df	39	
t Stat	**1.546371309**	
P(T<=t) one-tail	0.065045995	
t Critical one-tail	1.684875122	
P(T<=t) two-tail	0.130091991	
t Critical two-tail	**2.022690901**	

Since the t-value is smaller than the t-critical value, we reject the null hypothesis. There is a significant difference between the stress levels of Low Status between employees of the manufacturing firm and teachers of the educational institute.

6.11 Stressful Working Conditions:

t-Test: Two-Sample Assuming Unequal Variances		
	TAL XI	*TEA XI*
Mean	11	10.33333333

Variance	9.391304348	5.014492754
Observations	24	24
Hypothesized Mean Difference	0	
Df	42	
t Stat	**0.860489777**	
P(T<=t) one-tail	0.197202374	
t Critical one-tail	1.681952358	
P(T<=t) two-tail	0.394404747	
t Critical two-tail	**2.018081679**	

Since the t-value is smaller than the t-critical value, we reject the null hypothesis. There is a significant difference between the stress levels of Stressful Working Conditions between employees of the manufacturing firm and teachers of the educational institute.

6.12 Unprofitability:

t-Test: Two-Sample Assuming Unequal Variances		
	TAL XII	*TEA XII*
Mean	6.125	5.708333333
Variance	4.461956522	3.346014493
Observations	24	24
Hypothesized Mean Difference	0	
Df	45	
t Stat	**0.730508516**	
P(T<=t) one-tail	0.234432897	
t Critical one-tail	1.679427393	
P(T<=t) two-tail	0.468865795	
t Critical two-tail	**2.014103359**	

Since the t-value is smaller than the t-critical value, we reject the null hypothesis. There is a significant difference between the stress levels of Unprofitability between employees of the manufacturing firm and teachers of the educational institute.

7. Conclusions:

The overall analysis of the two group's viz. employees of a manufacturing firm and educational institute shows that there is a significant difference between the stress levels experienced by them. Although both the roles are supervisory in nature it seems that the job itself entails a different approach. It is seen that there is a significant difference in the stress levels of

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