

A Meta Analysis of stress causing factors among the employees in paper Industry, TamilNadu

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Abstract: This paper takes a look at the stress which is an inevitable concomitant of organizational life causing many problems directly and indirectly to the employees in all organizations. Many past research studies proved that stress is an important factor, which minimizes interest and performance of workers. This paper deals with finding out of major sources, level and impact of occupational stress of employees in paper industry, TamilNadu and provides ways to overcome it.

Design/methodology/approach: This study used survey methodology to examine stress causing factors of the employees in paper industry, TamilNadu with the help of direct interview, observations, structured questionnaire consisting of questions related to factors causing stress and management of stress by the employees. Questions were being implemented by Likert Five Point Scale. The sample size is 1000.

Findings: Study found that the demographic variables like age, gender, salary, experience, marital status, qualification; designation has direct influence to the occupational stress. The research also found that perception of the job and level of occupational stress with demographic variables through Multiple Regression and Factor Analysis.

Research limitations/implications: Very limited number of units will be taken. Inconvenience of respondents (leads to biased response) to deliver the truth (due to organizational forces.) The behavioural symptoms of stress were excluded from the study. The study is confined to the factory employees only in the paper industry.

Practical implications: This study may throw light to minimize the stress level of employees in the organization. The study will give a feedback to the management and help them to take remedial measures if necessary.

Originality/value: The research finds out the level of stress among employees in paper industry and the research also gave suggestions to reduce the level of stress and in turn improve the performance of in their task.

I. Introduction

Stress is an inevitable concomitant of organizational life. Its source in an organization is task or role related. An organization, being a network of roles performed in interconnected positions, is dynamic in nature. The complex and dynamic environment of organization adds to further stress at work. These environmental forces include: 1. Rapid technological advancements, 2. The demands made on employee skills, 3. Increased employee expectations about the quality of work – life and incongruence between these expectations and the perceived organizational outcomes, and 4. Changes in organizations like downsizing, mergers and so on. These factors influence employment security, social relations at work and upward mobility, which, in turn, will result in stress of the employees (Harigopal, 1995). A lot of researches have been conducted about stress over the last hundred years. Some of the theories behind it are now settled and accepted; others are still being researched and debated. During this time, it seems that open warfare between competing theories and definitions does exist. Views have been passionately held and aggressively defended. Stress occurs when there is an imbalance between demand made on a person and the resources available to respond to the demand. The demand may be real (i.e. things outside the person's control, such as departure time of a plane and traffic) or perceived (how the person views the situation, i.e. within his/her control or sphere of influence or not). Similarly, the resources may be real (fact) or perceived (what you think, feel, imagine, etc). (Hans Selye, 1956). Thus it is necessary to take corrective measures to overcome the stress

II. Literature Review

Viljoen, J.P., and Rothmann, S. (2009) explained that Stressors contributed significantly to ill health and low organizational commitment. Stress about job security contributed to both physical and psychological ill health. Low individual commitment to the organization was predicted by five stressors, namely work-life balance, overload, control, job aspects and pay. Schmidt. et al (2009); evaluated the presence of occupational

stress among nursing professionals working in surgical settings and find that there is a positive relations between occupational stress and work characteristics. Li-fang Zhang (2009) suggested that controlling the self-rating abilities of the participants, the conductive conceptual change in teaching approach and their role insufficiency predicated that the conceptual change in teaching strategy is negative. Kayoko Urakawa and Kazuhito Yokoyam (2009), has resulted the adverse effects on mental health due to the job demand and job stress was positively associated with SOC (sense of coherence), the mental health status of males in managerial work was adversely negative, where as it was positive among the female co-workers. Thus, SOC is an important factor determining the coping ability over the job stress for both the genders. J.E. Agolla (2009) articulate that the police work stressors are; getting injured while on duty and the use of force when the job demands to do so, etc. The coping strategies were identified as exercising, socializing, healthy eating or diets, career planning and employee training. Chen, Wei-Qing., et al (2009) has suggested that gastric/ulcer like health problems, age, educational qualification, marital status has been positively associated with occupational stress and 'internal behavior' coping methods, but negatively associated with 'external/social behavior' coping methods. Chang-qin Lu., et al (2009) has showed that managers in private enterprises experienced higher levels of occupational stressors and psychological strains than those in state-owned enterprises. Moreover, 'Organizational structure and climate' was also found to be a major stressor when predicting both psychological and physical strain in both economic sectors. More over Katherine Pollak., et al (2009) in their book titled "Stress management in the workplace" it suggested that work stress significantly contribute to corporate health costs. Comparison through randomized controlled design of stress management and intervention provided by an instructor-led group and computer presented format, has resulted in significantly higher attrition in computer based presentation format.

III. Statement Of The Problem

The expectations of modern society are that everything should be fast track. As the pace of life has speeded up, the incidence of certain forms of stress illness such as coronary heart disease, stomach ulcers and strokes has also increased. With the introduction of new high speed information technology, increased global competitiveness and reduced staff levels, employees have less job security. They are carrying heavier workloads and working longer hour for the purpose of continuing in their jobs. A marked increase in the stress levels at work is being experienced on a universal scale. Stress affects different people in different ways. While some take stress home with them everyone tries to make some personal changes to deal with it. However, it is shocking to note that, stress is considered something glamorous among certain individuals and industries. Many people leading a hard life style are showing their commitment to their career and significance. While this belief damages an individual personally, it harms the institution too. Thus stress would deteriorate the employees' efficiency and organizational effective functioning. In order to find the fact behind it, the researcher has chosen this topic to study in his research area and suggested ways to overcome it.

Research Methodology

Research Design

A research design is the basic framework or plan for a study that guides the collection of data and analysis of the data. The present study is descriptive in nature. A descriptive research is one which is concerned with describing the characteristics of a particular individual or of a group. Since this study describes the characteristics of employees influenced by stress and behaves in different ways, this research is certainly a descriptive one.

Study Units

The employees working in the paper units of TamilNadu are broadly classified into two, viz (i) Administrative employees, and (ii) factory employees. It has been understood that the factory employees have more stress compared to the stress experienced by the administrative employees. Hence it was decided to study the aspect of stress experienced by the factory employees alone in the paper industry of Tamil Nadu.

Population of the study

The population of the study is all the factory employees employed in the various units of the paper industry in Tamil Nadu.

Sampling Techniques

The actual respondent from each unit for the present study was selected at random. Thus the sampling technique used was stratified sampling technique, followed by random sampling technique.

Tools for Analysis

The statistical tools used to analyze the data with reference to the selected objectives of the study, include Simple Percentage with Standard Deviation, Multiple Regression and Factor analysis.

Analysis

S.No.	Age	No. of Respondents	Percentage	Average	Range		S.D
					Min	Max	
1	Below 20	52	5.2	30.5	23	36	3.3
2	21 to 25	102	10.2	30.0	19	45	5.5
3	26 to 30	140	14.0	30.0	17	44	4.9
4	31 to 35	203	20.3	29.8	19	40	3.8
5	Above 35	503	50.3	30.3	12	45	4.0
Total		1000	100.0				

Table: 1 AGE AND LEVEL OF OCCUPATIONAL STRESS

It is inferred from the above table that the level of occupational stress by the below 20 years age respondents ranged between 23 and 36 with an average of 30.5. The level of occupational stress by the 21-25 years age respondents ranged between 19 and 45 with an average of 30.0. The level of perception by the 26-30 years age respondents ranged between 17 and 44 with an average of 30.0 and 31 to 35 years age respondents ranged between 19 and 40 with an average of 29.8. On the other hand the level of occupational stress by the above 35 years age respondents ranged between 12 and 45 with an average of 30.3. From the analysis it is identified that the maximum level of occupational stress perceived by the respondents is among the below 20 years age category.

Table 2 : Gender And Level Of Occupational Stress

S.No.	Gender	No. of Respondents	Percentage	Ave rage	Range		S.D
					Min	Max	
1	Male	936	93.6	30.2	12	45	4.3
2	Female	64	6.4	29.7	24	37	3.5
Total		1000	100				

It is inferred from the above table that the level of occupational stress by the male respondents ranged between 12 and 45 with an average of 30.2 and female respondents ranged between 24 and 37 with an average of 29.7. From the analysis it is identified that the maximum level of occupational stress perceived by the male respondents than female respondents.

S. No.	Marital Status	No. of Respondents	Percen- tage	Ave rage	Range		S.D
					Min	Max	
1	Married	793	79.3	30.2	12	45	4.2
2	Unmarried	129	12.9	29.8	17	45	4.9
3.	Widow	48	4.8	30.3	23	36	2.8
4.	Widower	30	3.0	30.3	25	39	3.6
Total		1000	100.0				

Table 3 : MARITAL STATUS AND LEVEL OF OCCUPATIONAL STRESS

It could be noted from the above table that the level of occupational stress by the respondents who got married ranged between 12 and 45 with an average of 30.2. The level of occupational stress by the

respondents who are not married ranged between 17 and 45 with an average of 29.8. On the other hand the level of occupational stress by the respondents who are widowed ranged between 23 and 36 with an average of 30.3 and the respondents who are widower ranged between 25 and 39 with an average of 30.3. From the analysis it is found that the maximum level of occupational stress is perceived by the respondents who are not married.

S.No.	Educational Qualification	No. of Respondents	Percen- tage	Aver age	Range		S.D
					Min	Max	
1	School education	168	16.8	30.1	20	45	4.9
2	ITI	257	25.7	30.1	17	39	3.9
3	Diploma	193	19.3	30.0	19	44	4.2
4	Graduate	194	19.4	29.8	12	40	4.6
5	Post Graduate	188	18.8	30.7	24	45	3.5
Total		1000	100.0				

Table 4: EDUCATIONAL QUALIFICATION AND LEVEL OF OCCUPATIONAL STRESS

The employees (graduates) were ranged between 12 and 40 with an average of 29.8 But the post graduate employees were ranged between 24 and 45 with an average of 30.7 It is perceived that the employees who educated having more stress than other employees.

S.No.	Experience	No. of Respondents	Percen- tage	Average	Range		S.D
					Min	Max	
1	Below 10 years	439	43.9	29.9	17	45	4.0
2	11 to 15 years	293	29.3	31.1	21	44	4.0
3	16 to 20 years	77	7.7	30.7	22	45	4.7
4	21 to 25 years	54	5.4	30.6	19	39	4.4
5	Above 25 years	137	13.7	28.2	12	40	4.4
Total		1000	100.0				

Table 5 : EXPERIENCE AND LEVEL OF OCCUPATIONAL STRESS

It could be identified from the above table that the level of occupational stress by the respondents who had below 10 years of working experience ranged between 17 and 45 with an average of 29.9. The employees who were 11 to 15 years of span of service ranged between 21 and 44 with an average of 31.1. The level of occupational stress by the respondents who had 16 to 20 years of work experience ranged between 22 and 45 with an average of 30.7.and the respondents between 21 to 25 years of work experience ranged between 19 and 39 with an average of 30.6. The employees who were above 25 years of service were ranged between 12 and 40 with an average of 28.2 Through the above analysis it was found that the employees who had 11 to 15 years of work experience were in high level stress.

Table 6 : MONTHLY INCOME AND LEVEL OF OCCUPATIONAL STRESS

S.No.	Monthly Income	No. of Respondents	Percentage	Average	Range		S.D
					Min	Max	
1	Below Rs.5000	134	13.4	30.3	21	45	4.1
2	Rs.5001-10000	416	41.6	30.2	17	44	4.5
3.	Rs.10001-15000	240	24.0	30.7	19	40	4.0
4.	Rs.15001-20001	102	10.2	30.1	12	39	4.5
5.	Above Rs.20001	108	10.8	28.4	20	36	2.8
Total		1000	1000				

41.6 percent of the employees whose income was Rs.5001-10000 ranged between 17 and 44 with an average of 30.2. 24 percent of the employees falling under the income group of Rs.10001-15000 were ranged between 19 and 40 with an average of 30.7. Around 10 percent of the employees earning above the income of Rs. 15000 were ranged between 12 and 39 with an average of 30 percent. This analysis portrayed that the employees falling under income categories of Rs 10001 – 15000 were in maximum level of stress.

IV. Multiple Regression Analysis

A regression is a statistical tool used to find out the relationship between two or more variables. In simple regression there will be only two variables; one variable is caused by the behavior of another one. The former variable is defined as independent and the latter is defined as dependent. When there are two or more independent variables, the analysis that describes such relationship is called the Multiple Regression. The main objective of using this technique is to predict the variability of the dependent variable based on its co-variants with all the independent variables. It is useful to predict the level of dependent phenomenon through Multiple Regression Analysis model, if the levels of independent variables are given.

Level Of Occupational Stress

In the following analysis, the relationship between the respondents' level of occupational stress in paper industry and seven independent factors was studied. It was found that out of seven variables only four variables were closely associated with the level of occupational stress among the selected sample respondents. The seven independent variables used in multiple regression analysis are Age, Gender, Marital Status, Educational Qualification, Experience, No. of earning persons and Monthly Income. In order to measure the inter dependence of independent factors and the respondents' level of occupational stress, the results were subjected to multiple regression analysis. The result of multiple regression analysis is shown in the following table.

V. Multiple Regression Analysis

Sl.No.	Variables	Unstandardized coefficients	Standardized coefficients		T	Sig.
		B	Std. Error	Beta		
	(Constant)	0.409			3.438	
1	Age	0.056		0.053	3.674	1percentage
2	Gender	-0.028		-0.005	-0.361	NS
3	Marital Status	-0.016	0.027	-0.009	-0.603	NS
4	Educational Qualification	0.013	0.013	0.014	1.006	NS
5	Experience	0.852	0.014	0.903	61.713	1percentage
6	No. of earning persons	-0.069	0.023	-0.044	-2.943	1percentage
7	Monthly Income	-0.040	0.017	-0.035	-2.324	1percentage

R Value	R ² Value	Degree of freedom V ₁	Degree of freedom V ₂	F Value	Significance
0.93	0.816	7	992	628.295	1 Percentage Level

The multiple linear regression co-efficient (dependent variable) is found to be statistically a good fit since R² is 0.816. It shows that the independent variables contribute 81 percentage of the variations in the level of perception towards their job, and this is statistically significant at 1 percentage.

The table indicates that the co-efficient of Age and Experience are positively associated with the level of perception towards their job.

On the other hand, the co-efficient of number of earning persons and Monthly Income are negatively associated. Further, it indicates that the factors like Age, Experience, No. of earning persons and monthly income are statistically significant at 1percentage level. Both of these imply that their influence on the level of occupational stress is stronger than that of other variables.

Factor Analysis

Factor analysis is a branch of multivariate analysis that is concerned with the sharp internal relationship of a set of variables. The numerous variables used in a multi item scale such as that utilized in the paper can be analyzed of those variables could be seen approximately explaining a single factor (Koetse, M. J et.al. 2008). Both Exploratory Factor Analyses (EFA) and Confirmatory Factor Analyses (CFA) were used in this thesis. EFA refers to the determination of the number of common factors necessary and sufficient to account for the inter correlations of a given set of variables (Koetse, M. J et.al.2008). It is traditionally used to explore the possible underlying structure of a set of items without imposing any structure (Child 1990).

CFA on the other hand is where the number of factor is assumed to be known and the main issue is to fit a postulated pattern of zero and non zero loading to a given correlation matrix (Koetse, M. J et.al.2008). CFA more of a theory testing, rather than a theory rating method as it is based on strong theoretical and empirical foundation (Hair jr.et.al; 1998). Data obtained were investigated by an exploratory factor analysis to determine the number of latent constructs underlying the variables. This was then used in the CFA carried out by utilizing the first or second order CFA for the various scales used in the tests.

VI. Variable With Extracted Community Factor Value – Impact Of Occupational Stress

Variables	Initial	Extraction
FACTOR 1	1.000	.695
FACTOR 2	1.000	.991
FACTOR 3	1.000	.692
FACTOR 4	1.000	.991
FACTOR 5	1.000	.989
FACTOR 6	1.000	.769
FACTOR 7	1.000	.981
FACTOR 8	1.000	.989
FACTOR 9	1.000	.748

where,

- Factor 1 - They feel completely exhausted at the end of the day at their work place
- Factor 2 - They look irritated, nervous, angry and tensed while performing their job
- Factor 3 - They feel dissatisfied with their job
- Factor 4 - They often think of quitting their job
- Factor 5 - They feel calm and relaxed at work
- Factor 6 - They have taken a number of days of leave due to severe stress
- Factor 7 - They are able to complete their work in the stipulated time
- Factor 8 - They feel that they are doing work in the best way.
- Factor 9 - They feel that their official assignments are more important than their personal interests.

The following table reveals that the extraction has been undertaken by using principal-component method and the initial Eigen values are formulated from the communalities table and the same has been developed as extraction sums of squared loadings with percentage of variance and the relative cumulative

percentage. From the initial Eigen values and the extraction sums of squared loadings values, the rotation sums of squared loadings has been formulated and shown in the following table.

Total Variance – Perception Of The Job

Component	Initial Eigen values			Extraction Sum./s of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	percentage	Cumulative percentage	Total	percentage	Cumulative percentage	Total	percentage	Cumulative percentage
		of Variance			of Variance			of Variance	
1	5.031	55.898	55.898	5.031	55.898	55.898	5.004	55.602	55.602
2	1.803	20.030	75.928	1.803	20.030	75.928	1.816	20.173	75.775
3	1.013	11.251	87.179	1.013	11.251	87.179	1.026	11.405	87.179
4	.636	7.069	94.248						
5	.466	5.181	99.430						
6	.037	.411	99.841						
7	.013	.139	99.980						
8	.001	.015	99.995						
9	.000	.005	100.000						

The extraction process has been carried out by using principal-component method, and it is found from the rotation sums of squared loadings and that total sum of nine variables has been extracted and the same has been grouped into three components which have Eigen value of more than one. It ranges from component no. 1 to component no. 3 with the cumulative percentage from 55.898 percent to 87.179 percent. The percentage of variance ranges from 55.898percentage to 11.251percentage. For the third component of initial Eigen values, the total percentage of variance and the cumulative percentage values are 1.013, 11.251percentage and 87.179 respectively. The extracted sum of squared loadings for the same are 1.013, 11.251 percentage and 87.179percentage respectively. The rotation sums of squared loadings for the above are 1.023, 11.405 and 87.179 respectively.

From the analysis, it is inferred that the factor analysis has been supported up to 87.179percentage in this study. This is an excellent result and has made the study reliable to the analysis.

The following table has been formulated by using ‘principal-component method’ for extraction of variables into components and Varimax with Kaiser Normalization has been undergone by using ‘rotation method’. All the nine variables have been grouped into three components and each component consists of sets of factors and the analysis has been made to identify the influence of one variable over another.

Rotated Component Matrix ^A – Perception Of The Job

Variable No.	Component		
	1	2	3
FACTOR 1		.830	
FACTOR 2	.994		
FACTOR 3		.832	
FACTOR 4	.994		
FACTOR 5	.993		
FACTOR 6			.741
FACTOR 7	.989		
FACTOR 8	.993		
FACTOR 9			-.675

Extraction Method: Principal Component Analysis Rotation Method: Varimax with Kaiser Normalization a. Rotation converged in 6 iterations

It is observed from the above table that the following are the results extracted from the rotation component matrix among nine variables. Among the nine variables the Component factor 1 consisted of five variables which have high influence with one another. They are variable no. 2,4,5,7 and 8. Component factor 2 consisted of two variables which have high influence with one another and they are 1 and 3. Component factor 3 has two closely influencing variables and the numbers are 6 and 9.

From the above factor analysis, it has been identified that all the nine factors are very much closely

associated with one another and the same has been analyzed by using factor analysis and the influence of one factor with another has been tested and the same has succeeded in measuring the correlation between the particular variable and the factor with 87.179 percent reliability and the factor analysis supported the study.

VII. Conclusion

Employee's personal health and family circumstances are crucial factors for the quality of work life and stress. The maximum percentage of employees for their poor performance is due to physiological and psychological problems. The stress experienced by the employees in their job often reflected in behavior and attitudes. The stresses have been recognized as a disease which spoils the health of the employees and reduce their level of job performance. In short, a set of satisfactory human resource practices would result in stress free work life and high job satisfaction.

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