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1**. INTRODUCTION**

Today’s age is “The Age of Anxiety” and this century is called “The Century of Stress”. Today majority of people are in a state of Stress. Their fast-paced lifestyle places them under pressure to perform the best. Stress is often termed as twentieth century syndrome born out of man’s race towards modern progress and its ensuring complexities. At one point or the other everybody suffers from stress. While the college students may experience stress in meeting the academic demands, the people in jobs and businessmen may suffer stress to reach office in time and to complete the projects on time. Even the household ladies may experience stress in managing the home affairs, look for a maid or servant. Most of us experience stress at one time or other; for without stress, there would be no life.

Stress thus, has become a part of day-to-day living of every individual. A stress condition can be real or perceived. However the brain does not differentiate between real and imagined stress. Right from the time of birth till the last breath every individual is invariably exposed to various stressful situations.

**ORIGIN OF STRESS**

The origin of the term ‘stress’ is ambiguous. It is a common term which began life in the 14th century. It meant the experience of physical hardship, starvation, torture and pain. These days, however, the term revolves around the medieval definition, in which ‘stress’ simply meant ‘hardship’. The recent scientific developments inform us that ‘stress’ is actually good for us. Stress is derived from the Latin word stranger, meaning to draw tight, and was used in the 17th century to describe hardships or affliction. During the late 18thcentury stress denoted ‘force, pressure, strain or strong effort’, referring primarily to an individual or to an individual’s organs or mental powers .

Stress is a physiological and psychological imbalance. Stress arises when individuals perceive that they cannot adequately cope with the demands being made on them or with threats to their well- being. Stress results from an imbalance between demands and resources. Stress is the body’s way of reacting to any situation and it can have serious repercussions on an individual’s life. Yet, people fail to realize the importance of stress management in their lives. Effective managers can stay in control of life, without panicking even under stressful situations. They handle stress by planning work, taking regular breaks, and rejuvenating them.

**WORK STRESS**

Work stress is a dynamic condition in which an individual confronts with an opportunity, constraint or demand related to what he or she desires and for which the outcome is perceived to be both certain and important.

The employee are highly prone to stress due to :

i. Pressure to learn a large number of business operations in a limited time.

ii. Heavy demands on their time to complete assignments and preparing for presentations

and discussions.

iii. The challenges of adjusting in the new environment.

iv. Pressure to meet high expectations from self and higher authorities.

v. Uncertainties about future task.

**TYPES OF STRESS**

**Prof. D.M. Pertonjee(1999)** a well known expert on stress research, classified stress into four main categories that people experience. There are four main types of stress that people experience.

**2.OBJECTIVE:**

* To examine the association between demographic factors and stress.
* To identify the most common factors that causes stress at workplace.
* To identify the ill-effects of stress on job performance.
* To summarize the findings of the study and recommend some valuable suggestions to the company.

**3.METHODOLOGY**

**COLLECTION OF DATA:**

The sampling technique used in convenience sampling or opportunity sampling, is a type of non-probability sampling that involves the sample being drawn from that part of the population that is close to hand. That is, a sample population selected because it is readily available and convenient.

Credibility of researchers results by convenience sampling will depend on convincing the reader that the sample chosen equates to a larger degree of the population from which they are drawn.

It is fast, inexpensive and the subjects are readily available. The relative cost and the time required to carry out a convenience sampling are small in comparison to probability sampling techniques.

**Questionnaire designing:**

* .Questionnaire designed in accordance with the objectives
* A pilot survey of sample size 100 followed by a finalized questionnaire

**Type of questions:**

* Dichotomous questions.
* Multiple choice questions.
* Single choice questions.

**Data collection:**

* The final questionnaire was then filled by interviewing on an individual basis
* A sample of 800 were collected; of which 798 were used for analysis
* 2 samples discarded due to improper and incomplete information

**Gender**

* *This graph shows that 60% of the respondents are male and 40% of the respondents are female.*

**Techniques used:**

* Chi-square test statistic.
* Binary logistic regression.
* Factor analysis.
* Pareto analysis.

**4. Graphical representation & Interpretation**

**5. Chi-squared (**[***χ***](http://en.wikipedia.org/wiki/Chi_%28letter%29)**2) test of Independence**

The Chi Square Test of Independence compares frequencies (counts) of nominal or ordinal level data for two samples across two or more subgroups displayed in a cross-tabulation table. This test is more common and more flexible than z-tests of proportions.

**Assumptions:**   
1. Independent random sampling.

2. Nominal/Ordinal level data.

3. No more than 20% of the cells have an expected frequency <5

4. No empty cells

**Hypothesis:**   
**Null (** H0): There is no association between the two variables.  
**Alternate** (H1): There is an association between the two variables.

**Compute the Test Statistic:**

CHI-SQUARE=SUM(O(i)-E(i))**2/E(i) where the summation is from 1 to k

Where Oi = an observed frequency of ith group.

Ei = an expected (theoretical) frequency for ith group.

K = total number of observations.

The chi-square statistic can then be used to calculate a p-value by comparing the value of the statistic to chi-square distribution. The number of degrees of freedom is equal to (c-1)\*(r-1) where, c and r are the levels of two attributes.

**Set the Rejection Criteria:**

A chi-squared probability of less than or equal to 0.05 (or the chi-squared statistic being at or larger than the 0.05 critical point) leads to rejection of the null hypothesis H0 in favour of H1.

**CHECKING ASSOCIATION BETWEEN STRESS AND GENDER**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | GENDER | | |  | |
| **MALE** | **FEMALE** | **TOTAL** | |
| STRESS | **Yes** | **331** | **237** | **568** | |
| **No** | **140** | **90** | **230** | |
| TOTAL | | **471** | **327** | **798** | |

**Ho**: There is no association between stress and gender.  
**H1**: There is an association between stress and gender.

|  |  |  |  |
| --- | --- | --- | --- |
| Test | DF | Chi-square Value | p-value |
| Chi square | **1** | **0.45578** | **0.499602** |

As p-value 0.499602 > 0.05

Do not Reject Ho.

**Conclusion: There is no association between stress and gender.**

**CHECKING ASSOCIATION BETWEEN STRESS AND FAMILY TYPE**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | FAMILY TYPE | | |
| **NUCLEAR** | **JOINT** | **TOTAL** |
| STRESS | **Yes** | **412** | **156** | **568** |
| **No** | **147** | **83** | **230** |
| TOTAL | | **559** | **239** | **798** |

**Ho**:-There is no association between stress and family type.  
**H1**:-There is an association between stress and family type.

|  |  |  |  |
| --- | --- | --- | --- |
| Test | DF | Chi-square Value | p-value |
| Chi square | **1** | **5.801** | **0.016017** |

Thus p-value 0.016017 < 0.05

Reject Ho.

**Conclusion: There is an association between Buyers and Superior image.**

**CHECKING ASSOCIATION BETWEEN STRESS AND SALARY**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | SALARY | | | | |
| **<3 LAKH** | **3-6 LAKH** | **6-9 LAKH** | **>9 LAKH** | **TOTAL** |
| STRESS | **Yes** | **218** | **203** | **72** | **75** | **568** |
| **No** | **90** | **77** | **34** | **29** | **230** |
| TOTAL | | **308** | **280** | **106** | **104** | **798** |

**Ho**: There is no association between stress and salary.

**H1**: There is an association between stress and salary.

|  |  |  |  |
| --- | --- | --- | --- |
| Test | DF | Chi-square Value | p-value |
| Chi square | **3** | **0.85388** | **0.836541** |

Thus p-value 0.836541 > 0.05

Do not reject Ho.

**Conclusion: There is no association between Stress and Salary.**

**CHECKING ASSOCIATION BETWEEN STRESS AND TRAVELLING TIME**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | TRAVELLING TIME (in hrs) | | | | |  |
| **< 0.5** | **0.5 - 1.0** | **1.0 - 1.5** | **1.5 – 2.0** | **> 2.0** | **TOTAL** |
| STRESS | **Yes** | **105** | **222** | **154** | **58** | **29** | **568** |
| **No** | **68** | **91** | **45** | **16** | **10** | **230** |
| TOTAL | | **173** | **313** | **199** | **74** | **39** | **798** |

**Ho**: There is no association between stress and travelling time.

**H1**: There is an association between stress and travelling time.

|  |  |  |  |
| --- | --- | --- | --- |
| Test | DF | Chi-square Value | p-value |
| Chi square | **4** | **15.081** | **0.004536** |

Thus p-value 0.004536 < 0.05

Reject Ho.

**Conclusion: There is association between Stress and Travelling time.**

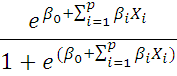
**6.Logistic Regression**

Logistic regression is useful for situations in which we want to predict the presence or absence of a characteristic or outcome based on values of a set of predictor variables. It is similar to a linear regression model but is suited to cases where the dependent variable is dichotomous. Logistic regression coefficients can be used to estimate odds ratios for each of the independent variables in the model. Logistic regression is applicable to a broader range of research situations than discriminant analysis.

**Binary** **Logistic Regression:**

Binary logistic regression is a form of regression which is used when the dependent variable is binary and the independent variables are of any type. The goal of an analysis using logistic regression method is to find the best fitting and most reasonable model to describe the relationship between an outcome(dependent or response variable) and a set of independent(predictor or understand the impact of explanatory) variables and to determine the percent of variation in the dependent variable explained by the independent variables, to rank the relative importance of independents, to assess interaction effects and to covariate control variables.

The Binary logistic regression model is,

Π(X) = 

Where,

Π(X): conditional probability that the outcome is present.

i.e. Pr(Y=1|X)

Y: response variable,

X: vector of independent variables.

We use the transformation called logit, which forces the prediction equation to predict values between 0 and 1.

Log it transformation of above model:

Log it(pi) = β0 +∑β1i X1i + ∑β2i X2i +∑β3i X3i +∑β4i X4i + ∑β5i X5i

+∑β6i X6i +∑β7i X7i + ∑β8i X8i

where,

log it(pi) : log it transformation of the probability of the event.

**β0**  : intercept of the regression line

**βi**  : slope of the ith regression line

1. **Procedure to carry out Binary Regression Analysis:**
2. **Global testing:**

Global testing is used to test whether or not, at least one of the independent variables influence the dependent variable i.e. at least one of the independent variables is significant.

1. **Stepwise selection procedure:**

* It begins with no variables in the equation and subsequently increases the number of variables in the model until the model is satisfactory.
* The order of the variables to be included in the model is determined based on partial correlation coefficient which measures the importance of the variables not yet in the equation. It is possible that one variable which was included in the model at earlier stage is removed due to its relationship with other variables in the model.
* At each step an appropriate statistical test for each variable currently in the model will be performed to determine whether the variable has significant contribution to the model.
* A negative result may suggest the removal of the variable.
* When no variables in the current model can be removed and no new variables are suggested to be added to the model, the selecting procedure stops.

1. **Residual chi-square:**

The residual chi-square test is carried out to test the significance of the remaining independent variables which have not been entered into the model.

1. **Wald Statistic:**

Wald statistic is used to test the significance of individual coefficients in the model. Each Wald statistic is compared with a χ2 distribution with 1 degree of freedom.

1. **Hoshmer and Lemeshow goodness of fit test:**

* The Hoshmer -Lemeshow statistic evaluates the goodness of fit by creating ordered groups of subjects and then comparing the number actually in each group(observed) to the number predicted by the logistic regression model(predicted).
* The statistic used is a chi-square statistic with a desirable outcome of non-significance, indicating the model prediction does not significantly differ from the observed.
* **Classification table:**

Classification table is used to summarize the results of a fitted logistic regression model. This table is a result of cross-classifying the outcome variable with a dichotomous variable whose values are derived from the estimated logistic probabilities.

* **ROC Curve:**

Receiver Operation Characteristic (ROC) curve is a plot of true positive rate against the false positive rate. It shows a trade off between sensitivity and specificity ( any increase in sensitivity will be accompanied by a decrease in specificity ). The closer the curve follows the left hand border and then the top border of the ROC space, the more accurate the test. The closer the curve comes to the 45-degree diagonal of the ROC space, the less accurate the test. Accuracy is measured by the area under the ROC curve. An area of 1 represents a perfect test , an area of 0.5 represents a worthless test.

**ANALYSIS**

**Dependent variable:**

The dependent variable is binary

Y=1; **Yes** (if the person is stressed)

Y=0; **No** (if the person is not stressed)

**Independent variables:**

X1: Age

X2: Gender

X3: Job Position

X4: Income

X5: Job Experience

X6: Working Hours per day

X7: Traveling Hours per day

X8: Dependent members in the Family

OUTPUT:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | Estimates | Std Error | Z Value | Pr(>|Z|) |
| Intercept | -1.64553 | 1.26442 | -2.301 | 0.0214 |
| X1 | 0.04681 | 0.02207 | 2.122 | 0.03387 |
| X2 | -0.10041 | 0.17168 | -0.585 | 0.55865 |
| X3 | 0.09898 | 0.07748 | 1.984 | 0.04733 |
| X4 | -0.04484 | 0.10833 | -0.414 | 0.67892 |
| X5 | -0.16723 | 0.14378 | -1.163 | 0.24477 |
| X6 | 0.31304 | 0.10758 | 2.910 | 0.00361 |
| X7 | 0.25400 | 0.07955 | 3.193 | 0.00141 |
| X8 | 0.19366 | 0.09747 | 1.987 | 0.04693 |

AIC: 716.1

FINAL MODEL:

Using the Stepwise regression we get the final model as follows,

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variables | Estimates | Std Error | Z Value | Pr(>|Z|) |
| Intercept | -1.93419 | 0.91945 | -2.104 | 0.03541 |
| X1 | 0.02787 | 0.01392 | 2.002 | 0.04525 |
| X3 | 0.13565 | 0.07021 | 1.989 | 0.04672 |
| X6 | 0.30875 | 0.10613 | 2.909 | 0.00362 |
| X7 | 0.25248 | 0.07846 | 3.218 | 0.00129 |
| X8 | 0.15016 | 0.05072 | 2.961 | 0.00307 |

AIC: 704.16

In stepwise logistic regression procedure, the variables Gender, Job Experience and Income does not involve in any step.

Test for multicollinearity :

|  |  |
| --- | --- |
| VARIABLES | VIF |
| X1 | 1.59225 |
| X3 | 1.538609 |
| X6 | 1.032759 |
| X7 | 1.00908 |
| X8 | 1.01149 |

Since, VIF<5 , Multicollinearity is absent.   
  
The model is partitioned into two:

Training Data: 598 Observations

Test Data: 200 Observations

Global Testing:

Global testing is carried out to check if variables have significant impact.

Wald’s test:

H0: βi = 0 ; i = 1,2,3,4,5

H1: Not H0

* Wald test for Age

F = 4.009437 on 1 and 592 df: p=0.0456

Since, p-value <0.05, we reject H0 and conclude that the variable Age is significant.

* Wald test for Job Position

F = 3.894349 on 1 and 592 df: p=0.0489

Since, p-value <0.05, we reject H0 and conclude that the variable Job Position is significant.

* Wald test for Working Hours

F = 8.463753 on 1 and 592 df: p=0.00372

Since, p-value <0.05, we reject H0 and conclude that the variable Working Hours is significant.

* Wald test for Travelling Hours

F = 10.35503 on 1 and 592 df: p=0.0013438

Since, p-value <0.05, we reject H0 and conclude that the variable Travelling Hours is significant.

* Wald test for Dependent Members

F = 8.766732 on 1 and 592 df: p=0.0031594

Since, p-value <0.05, we reject H0 and conclude that the variable Dependent Members is significant.

HOSMER AND LEMESHOW GOODNESS OF FIT TEST:

H0: Model is a good fit

H1: Model is not a good fit

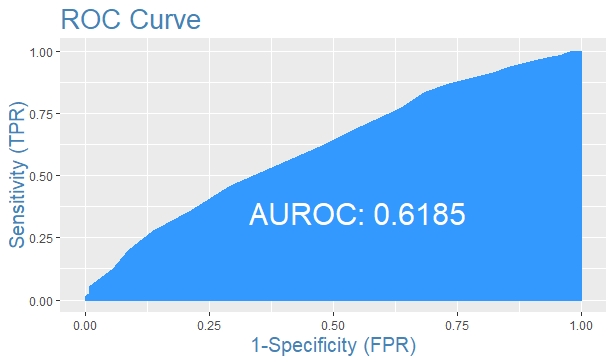
|  |  |  |
| --- | --- | --- |
| **Hosmer and Lemeshow Goodness of Fit Test** | | |
| Chi-square | DF | P-value |
| 3.9814 | 8 | .8588 |

**Conclusion:**

Since p-value is greater than 0.05, we accept H0 & we conclude that the model is a good fit.

Confusion Matrix:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Predicted Values | |
|  |  | 0 | 1 |
| Actual Values | 0 | 2 | 56 |
| 1 | 4 | 138 |



Area under the curve is 0.6185

From the above ROC curve we can observe that our model is fair.

**7. Factor Analysis**

1. **Introduction:**

**Factor analysis** is a technique that is used to reduce a large number of variables into fewer numbers of factors. The essential purpose of factor analysis is to describe, if possible the covariance relationships among many variables in terms of a few underlying, but unobservable, random quantities called *factors.* Factor analysis extracts maximum common variance from all variables and puts them into a common score. As an index of all variables, we can use this score for further analysis. Several types of factor analysis methods are available, but principal component analysis is used most commonly.

**Key Concepts:**

* **Principal Component Analysis:** This is the most common method used by researchers. PCA starts extracting the maximum variance and puts them into the first factor. After that, it removes that variance explained by the first factors and then starts extracting maximum variance for the second factor. This process goes to the last factor.
* **Correlation matrix:** A correlation matrix is a symmetric matrix showing the correlations between all possible pairs of variables included in the analysis.
* **Eigenvalues:** Eigenvalues are also called characteristic roots. Eigen values shows variance explained by that particular factor out of the total variance. From the communality column, we can know how much variance is explained by the first factor out of the total variance. For example, if our first factor explains 68% variance out of the total, this means that 32% variance will be explained by the other factor.
* **Communality:** Communality is designed to show the proportion of variance that the factors contribute in explaining a particular variable. The proportion of variance that is unique to each variable is then the respective variable's total variance minus the communality.
* **Scree Plot:** Scree plot is a useful visual aid to determining an appropriate number of principal components in factor analysis. With the eigenvalues ordered from smallest to largest, it is a plot of the magnitude of an eigenvalue versus its number. To determine the number of components we look for a bend in the scree plot.
* **Factor loading:** Factor loading is basically the correlation coefficient for the variable and factor. Factor loading shows the variance explained by the variable on that particular factor.

**Factor Rotations:** An orthogonal rotation of factors that redistributes the variance accounted within the pattern of factor loadings is called **factor rotation**. The objective of the rotation is to try to ensure that all variables have high loadings only on one factor. Both the communalities and the total variance accounted for are the same before and after rotation. The Varimax procedure is the most commonly used to re-orient the loadings obtained in a principal component analysis.

**II. General Steps to Factor Analysis:**

* 1. Selecting and Measuring a set of variables in a given domain
  2. Data screening in order to prepare the correlation matrix
  3. Factor Extraction
  4. Factor Rotation to increase interpretability
  5. Interpretation

Validation and Reliability of the measures

* **Kaiser - Meyer - Olkin Measure of Sampling Adequacy**:

This measure varies between 0 and 1, and values closer to 1 are better. A value of 0.5 is a suggested minimum.

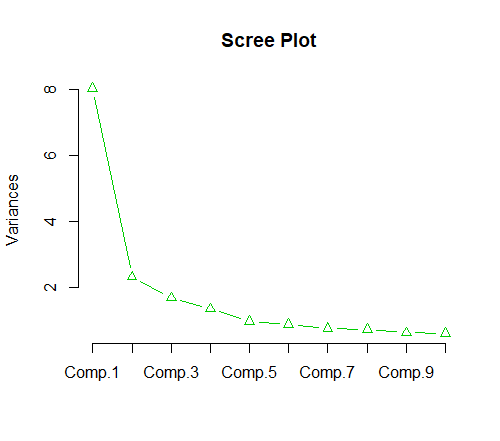
* **Bartlett's Test of Sphericity**:

This tests the null hypothesis that the correlation matrix is an identity matrix.  An identity matrix is matrix in which all of the diagonal elements are 1 and all off diagonal elements are 0.  You want to reject this null hypothesis.

**Taken together, these tests provide a minimum standard which should be passed before a factor analysis should be conducted.**

|  |  |  |
| --- | --- | --- |
| KMO and BARTLETT’S TEST | | |
| **Kaiser-Meyer-Olkin Measure of Sampling Adequacy** | | **0.91** |
| **Bartlett’s Test of Sphericity** | Chi-Sq. value(app) | **5927.418** |
| Degrees of freedom | **253** |
| P-value | **0.000** |

* The value of the KMO statistic (0.91) is >0.5
* The p-value of Bartlett’s test of sphericity is 0.000 which is less than 0.05, we can conclude that population correlation matrix is not an identity matrix.
* **Decision**: Thus, factor analysis may be considered as an appropriate technique for analyzing.



**Total variance explained table:**

|  |  |  |  |
| --- | --- | --- | --- |
| Component | Initial Eigen values | | |
| **Total** | **% of variance** | **Cumulative %** |
| **1** | **8.0167** | **34.855480** | **34.85548** |
| **2** | **2.3147** | **10.063960** | **44.91943** |
| **3** | **1.6688** | **7.255906** | **52.17534** |
| **4** | **1.3490** | **5.865563** | **58.04090** |
| **5** | **0.9685** | **4.211056** | **62.25196** |
| **6** | **0.8771** | **3.813445** | **66.06540** |
| **7** | **0.7594** | **3.301767** | **69.36717** |
| **8** | **0.7214** | **3.136492** | **72.50366** |
| **9** | **0.6245** | **2.715118** | **75.21878** |
| **10** | **0.6062** | **2.635588** | **77.85437** |
| **11** | **0.5712** | **2.483374** | **80.33774** |
| **12** | **0.5236** | **2.276581** | **82.61432** |
| **13** | **0.5081** | **2.209337** | **84.82366** |
| **14** | **0.4571** | **1.987589** | **86.81125** |
| **15** | **0.4331** | **1.883042** | **88.69429** |
| **16** | **0.3977** | **1.729369** | **90.42366** |
| **17** | **0.3769** | **1.638729** | **92.06239** |
| **18** | **0.3661** | **1.591882** | **93.65427** |
| **19** | **0.3447** | **1.498926** | **95.15319** |
| **20** | **0.3257** | **1.416303** | **96.56950** |
| **21** | **0.2931** | **1.274334** | **97.84383** |
| **22** | **0.2527** | **1.098930** | **98.94276** |
| **23** | **0.2432** | **1.057237** | **100.00000** |

**VARIABLES OF FACTORS**

* **Work Conditions**
* **Emotional well being**
* **Unreasonable Deadlines**
* **Opinions about Job Conditions**
* **Job pressures interfere with personal life**
* **Adequate control over work**
* **Appropriate recognition for performance**
* **Utilize skills at the fullest extent**
* **Variation in shift timing**
* **Change in Job Process**
* **Change in Management technique**
* **Monotonous/Repetitive work**
* **Long working hours**
* **Inadequate break times**
* **Job insecurity**
* **Lack of training**
* **Poor relationship with seniors/colleagues**
* **Constant nagging of boss/senior**
* **Bullying / Harassment**
* **Underpaid**
* **Problems with Family/Relationships affect your professional life**
* **Monetary issues**
* **Daily commute to work**

**Communalities:**

|  |  |  |
| --- | --- | --- |
|  | Initial | Extraction |
| Work Conditions | **1.000** | **0.384** |
| Emotional well being | **1.000** | **0.630** |
| Unreasonable Deadlines | **1.000** | **0.646** |
| Opinions about Job Conditions | **1.000** | **0.635** |
| Job pressures interfere with personal life | **1.000** | **0.571** |
| Adequate control over work | **1.000** | **0.524** |
| Appropriate recognition for performance | **1.000** | **0.610** |
| Utilize skills at the fullest extent | **1.000** | **0.624** |
| Variation in shift timing | **1.000** | **0.484** |
| Change in Job Process | **1.000** | **0.671** |
| Change in Management technique | **1.000** | **0.650** |
| Monotonous/Repetitive work | **1.000** | **0.602** |
| Long working hours | **1.000** | **0.582** |
| Inadequate break times | **1.000** | **0.532** |
| Job insecurity | **1.000** | **0.588** |
| Lack of training | **1.000** | **0.537** |
| Poor relationship with seniors/colleagues | **1.000** | **0.627** |
| Constant nagging of boss/senior | **1.000** | **0.643** |
| Bullying / Harassment | **1.000** | **0.568** |
| Underpaid | **1.000** | **0.596** |
| Problems with Family/Relationships affect your professional life | **1.000** | **0.577** |
| Monetary issues | **1.000** | **0.627** |
| Daily commute to work | **1.000** | **0.466** |

**Extraction Method: Principal Component Analysis**

Thus, Percentage of variance extraction for each of the variables is considerably high.

**Component Matrix**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Components | | | |
| **1** | **2** | **3** | **4** |
| Work Conditions |  | **0.518** |  |  |
| Emotional well being | **0.446** | **0.647** |  |  |
| Unreasonable Deadlines | **0.482** | **0.602** |  |  |
| Opinions about Job Conditions | **0.484** | **0.622** |  |  |
| Job pressures interfere with personal life | **0.447** | **0.548** |  |  |
| Adequate control over work |  |  | **0.679** |  |
| Appropriate recognition for performance |  |  | **0.683** |  |
| Utilize skills at the fullest extent |  |  | **0.727** |  |
| Variation in shift timing | **0.524** |  |  | **-0.477** |
| Change in Job Process | **0.660** |  |  | **-0.447** |
| Change in Management technique | **0.670** |  |  |  |
| Monotonous/Repetitive work | **0.682** |  |  |  |
| Long working hours | **0.710** |  |  |  |
| Inadequate break times | **0.677** |  |  |  |
| Job insecurity | **0.735** |  |  |  |
| Lack of training | **0.701** |  |  |  |
| Poor relationship with seniors/colleagues | **0.736** |  |  |  |
| Constant nagging of boss/senior | **0.777** |  |  |  |
| Bullying / Harassment | **0.676** |  |  |  |
| Underpaid | **0.730** |  |  |  |
| Problems with Family/Relationships affect your professional life | **0.610** |  |  |  |
| Monetary issues | **0.703** |  |  |  |
| Daily commute to work | **0.636** |  |  |  |

The higher the absolute value of the loading, the more the factor contributes to the variable. We suppressed all loadings less than 0.40

**Rotated Component Matrix**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Components | | | |
| **1** | **2** | **3** | **4** |
| Work Conditions |  |  | **0.602** |  |
| Emotional well being |  |  | **0.773** |  |
| Unreasonable Deadlines |  |  | **0.771** |  |
| Opinions about Job Conditions |  |  | **0.768** |  |
| Job pressures interfere with personal life |  |  | **0.726** |  |
| Adequate control over work |  |  |  | **0.696** |
| Appropriate recognition for performance |  |  |  | **0.764** |
| Utilize skills at the fullest extent |  |  |  | **0.784** |
| Variation in shift timing |  | **0.651** |  |  |
| Change in Job Process |  | **0.774** |  |  |
| Change in Management technique |  | **0.738** |  |  |
| Monotonous/Repetitive work |  | **0.690** |  |  |
| Long working hours |  | **0.631** |  |  |
| Inadequate break times |  | **0.583** |  |  |
| Job insecurity | **0.659** |  |  |  |
| Lack of training | **0.614** |  |  |  |
| Poor relationship with seniors/colleagues | **0.733** |  |  |  |
| Constant nagging of boss/senior | **0.671** |  |  |  |
| Bullying / Harassment | **0.719** |  |  |  |
| Underpaid | **0.693** |  |  |  |
| Problems with Family/Relationships affect your professional life | **0.751** |  |  |  |
| Monetary issues | **0.760** |  |  |  |
| Daily commute to work | **0.613** |  |  |  |

**CONCLUSION:**

On the basis of factor loadings obtained from the rotated component matrix we can classify the variables and name the following factors as follows:

* Job insecurity
* Lack of training
* Poor relationship with seniors/colleagues
* Constant nagging of boss/senior
* Bullying / Harassment
* Underpaid
* Problems with Family/Relationships affect your professional life
* Monetary issues
* Daily commute to work

Job satisfaction

Promotion and facilities

Role ambiguity/work load

Employment condition

* Variation in shift timing
* Change in Job Process
* Change in Management technique
* Monotonous/Repetitive work
* Long working hours
* Inadequate break times
* Adequate control over work
* Appropriate recognition for performance
* Utilize skills at the fullest extent
* Work Conditions
* Emotional well being
* Unreasonable Deadlines
* Opinions about Job Conditions
* Job pressures interfere with personal life

**8.PARETO ANALYSIS**

Pareto analysis is a statistical technique in decision making that is used for the selection of a limited number of tasks that produce significant overall effect. It uses the Pareto principle. It is known as 80/20 rule. The idea is that by doing 20% of the work you can generate 80% of the benefit of doing the whole job. This is also known as ‘vital few’ and the ‘trivial many’ effect.

Pareto chart organizes and displays information to show the relative importance of various problems or causes of problems. It is essentially a special form of vertical bar chat that puts items in order (from the highest to the lowest) relative to some measurable effect of interest such as frequency, cost or time.

The chart is based on the Pareto principle, which states that when several factors affect a situation, a few factor will account for most of the impact. The Pareto principle describes the phenomenon in which 80% of the variation observed can be explained by mere 20% of the causes of that variation. The Pareto can makes it clear as to where effort must be concentrated so as to give maximum effect.

The Pareto chart is very simple but effective tool for prioritizing problems causes , which is why it is widely used for problem – solving in the manufacturing industry.

**Steps to identify the important causes using 80/20 rule:**

1. Form an explicit table listing the causes and their frequency as a percentage.
2. Arrange the rows in the decreasing order of importance of the causes ( i.e., the most important cause first).
3. Add a cumulative percentage column to the table .
4. Plot with causes on x-and cumulative percentage on y- axis.
5. Join the above points to form a curve.
6. Plot (on the same graph) a bar graph with causes on x- and percent frequency on y-axis.
7. Draw a line at 80% on y-axis parallel to x-axis. Then draw the line at the point of intersection with the curve on x-axis . This point on the x-axis separates the important causes(on the left) and trivial causes(on the right).
8. Explicitly review the chart to ensure that at least 80% of the causes are captured.

PARETO CHART OF JOB PERFORMANCE

**Interpretation:**

The ill effects of stress on job performance are:

* Lack of concentration
* Can’t complete your work within specific time.
* Low morale
* Losing patience while dealing with customers or clients.

**QUESTIONNAIRE**

Dear Respondents,

The information given by you will not be misused or passed on to others.

1. **Kindly furnish your personal particulars by ticking appropriate options.**

**Age**: \_\_\_\_\_ **Sex**: Male  Female    
**Education**: SSC  HSC  Graduate  Post Graduate  Other ⭘

**Marital Status**: Married  Single    
**Current Job Position**: ManagerTeamleader

Senior-Associates AssociatesTrainee  
**Which shift pattern do you follow?**

Day Only Night OnlyDay or Night   
**Number of working days per week :**  
**Number of Working hours (except break ) per day:**   
**Break time (approx in hours) per day :** \_\_\_\_\_\_\_\_\_\_ **Overall Job experience (in years):** <5 ⭘ 5-10 ⭘ 11-15 ⭘ 16-20 ⭘ >20 ⭘  
**How much time do you spend in travelling to reach at your workplace?** <0.5 hrs  0.5 - 1 hrs  1 - 1.5 hrs  1.5 - 2 hrs  >2 hrs   
**Salary (per annum) :** <3 lakhs  3-6 lakhs  6-9 lakhs  >9 lakhs   
**Type of family:**  Nuclear  Joint    
**Total number of members in the family:**   
**Number of earning members in the family:**   
 **B) Have you ever felt stressed in the workplace?** Yes  No    
 **If No**, **have you experienced stress in the past?** Yes  No    
If ‘YES’ answer from 1, if '**NO**' means answer from 6.  
 1) **How do you feel about the following statements regarding your job?  
 (Please put the tick in the relevant column)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Never** | **Rarely** | **Sometimes** | **Often** | **Very Often** |
| Conditions at work are unpleasant or sometimes unsafe |  |  |  |  |  |
| My job is negatively affecting my physical or emotional well being |  |  |  |  |  |
| Too much work to do or unreasonable deadlines |  |  |  |  |  |
| Difficult to express my opinions or feelings about my job conditions to superiors |  |  |  |  |  |
| Job pressures interfere with my family or personal life |  |  |  |  |  |
| I have adequate control or input over my work duties |  |  |  |  |  |
| I receive appropriate recognition or rewards for good performance |  |  |  |  |  |
| I am able to utilize my skills or talents to the fullest extent at work |  |  |  |  |  |

1. 2) **Do the following factors cause you stress?   
    (Please put the tick in the relevant column)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Strongly Disagree** | **Disagree** | **Neutral** | **Agree** | **Strongly Agree** |
| Variation in shift timing |  |  |  |  |  |
| Change in Job Process |  |  |  |  |  |
| Change in Management technique |  |  |  |  |  |
| Monotonous/Repetitive work |  |  |  |  |  |
| Long working hours |  |  |  |  |  |
| Inadequate break times |  |  |  |  |  |
| Job insecurity |  |  |  |  |  |
| Lack of training |  |  |  |  |  |
| Poor relationship with seniors/colleagues |  |  |  |  |  |
| Constant nagging of boss/senior |  |  |  |  |  |
| Bullying / Harassment |  |  |  |  |  |
| Underpaid |  |  |  |  |  |
| Problems with Family/Relationships  /spouse affect your professional life |  |  |  |  |  |
| Monetary(Financial) issues |  |  |  |  |  |
| Does daily commute to work  contribute to any kind of stress |  |  |  |  |  |

1. 3) **How stress shows its ill effect in job performance?** (Tick any one option)

|  |  |
| --- | --- |
| Can’t complete your work within specific time |  |
| Increased Absenteeism |  |
| Committing more errors |  |
| Losing patience while dealing with customers or clients |  |
| Lack of concentration |  |
| Low morale |  |

1. 4)  **Are you suffering from any of these following problems?** (Please tick all options applicable to you)
2. ⭘Headache ⭘Insomnia  
   ⭘Stomach disorder ⭘High/Low Blood Pressure
3. ⭘Chest pain ⭘Restlessness
4. ⭘Tension ⭘Back pain  
   ⭘Anxiety ⭘Insecurity ⭘Depression ⭘None  
   
5. 5)  **What are the behavioural changes that you experience due to physical and mental health problems?** (Please tick all options applicable to you)  
    ⭘ Frequent hospitalization ⭘ Withdrawal from relationship
6. ⭘ Increased smoking ⭘ Gambling
7. ⭘ Excessive alcohol ⭘ Suicidal Thoughts
8. ⭘ Under/Over Eating ⭘ Violence
9. ⭘ Frequent crying ⭘ None
10. ⭘ Poor performance in job
11. 6)  **Have you taken/taking any coping strategies to manage stress?**  Yes  No  **If Yes, is/was it beneficial?**  Yes No
12. 7) **What are the coping strategies you are managing to reduce stress?** **(Please put the tick in the relevant column)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Strongly Disagree** | **Disagree** | **Neutral** | **Agree** | **Strongly Agree** |
| Yoga/Meditation |  |  |  |  |  |
| Physical exercise |  |  |  |  |  |
| Watching movies |  |  |  |  |  |
| Listening music |  |  |  |  |  |
| Playing Games |  |  |  |  |  |
| Talking to the close friend |  |  |  |  |  |
| Medication |  |  |  |  |  |
| Spending time with family |  |  |  |  |  |
| Sleep |  |  |  |  |  |
| Going for a tour/trip |  |  |  |  |  |
| Going for a walk |  |  |  |  |  |
| Spending time on mobile |  |  |  |  |  |

1. 8) **Does your organisation take any suitable steps to help manage stress?** Yes  No
2. **Is/Was it beneficial?**  Yes No
3. 9) **What type of company-wide programs that could be adopted to manage stress?** Employee counselling ⭘   
    Effective training and development program ⭘  
    Motivational lectures ⭘  
    Health club ⭘