NESTED DUCK TRAVELER OPTIMIZATION BASED STRUCTURAL EQUATION MODELING (NDTO-SEM) FOR MANAGING STRESS ON SATISFACTION WITH DIFFERENT FACTS OF THE RESEARCH WITH SPECIAL REFERENCE TO SELECTED PRIVATE COLLEGE RESEARCH SCHOLARS IN TIRUPUR CITY

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ABSTRACT

One can't measure the intensity of stress. Stress may affect the individual physiologically and psychologically. Physiological symptoms are those changes that result in thing such as over smoking, indigestion, sleeplessness, drinking, and headache etc. psychological symptoms are those changes, which occur in the mind that relates with feelings such as tension, anxiety, anger, irritability and not interested in doing any work. The study reveals that the stress has a positive relationship with various facts of the research work. It also reveals that the impact of stress on measured variables latent variables has significance on research work satisfaction.

Stress has two effects, one is positive effect and another one is negative effect. Stress may be a good friend when an individual has the ability to manage it or it may be a worst enemy when an individual is prepared to tackle the situation tactfully. It has a positive effect in a work environment when one has to complete the work in time, which necessitates the time limit within which he or she has to complete the work. This time limit creates some degree of stress within him and this stress is a must in order to complete the work successfully. A positive stress will help the individual to accomplish the task and pave way for the development of the individual. When one has positive stress he/she will have a positive attitude. It has a negative effect when an individual is facing undue pressure in the work environment that ultimately leads to depression towards the work.

The factor that cause or influences the stress is called stressors. It may be internal or external. If the stress occurs within the individual, it is called internal factors. When the needs or wants of the individual are not fulfilled, that unsatisfied needs serve as a stressor and cause stress within the individual. As an individual has to interact with different environments such as social, political, economic and organizational environment, the uncertainly in the above environments creates stress within the individual and such factors are known as external factors.

Scope of the Study

Stress is a major concern not only to the developed nations but also for developing nations as well. In many countries teaching profession is considered as more stressful job. Further the advancement of science and technology accelerates the level of stress. The greatest part of stress is associated with rapid pace of changes in educational field especially in higher education. In the process of learning, stress affects both the teachers and students, since the teacher plays a vital role in imparting the knowledge to the students. They are in a position to know the

latest research findings and updating their knowledge as a part of their professional ethics in order to cope with the latest development, which in turn cause stress to them. The present study entitled "Stress management among the private college Research Scholars in Tirupur City" analyses the sources of stress under nine dimensions such as research work related stressors, working hour related stressors, Interpersonal relationship at research work place, Research progress, Learning, Service, General work stressors, Work / Family conflict issues, Financial Issues, Impact of stress under two dimensions i.e., Attitude towards Academic Profession and Satisfaction with different facts of the research work and coping strategies adopted by the respondents to relive or manage stress.

Objectives of the Study

The following are the main objectives of the study

- To analyze the perception of stress among private college Research Scholars based on various Dimensions.
- To analyze the findings and offer valuable suggestions to manage and prevent the stress.

Sampling Design

For the study purpose colleges were classified into two categories such as Government and private Research Scholars situated in the Tirupur city. Totally more than hundred colleges are running in Tirupur City. The total size of population is more than 2500. Finally the research took the sample size 800 respondents. The information is collected from the sample respondents trough structured interview schedule. Stratified random sampling method is used to select the sample size.

REVIEW OF LITERATURE

Review of literature is an important aspect of any research work and this helps the researcher to obtain information about previous studies. Review of previous studies widens the knowledge of the researcher and in the light of the literature review the researcher can analyse and identity the gaps that exist between the past and present study. The reviews of literature relating to different fields are given below.

Fako. T.T (2010)[1] investigated the extent with which university employees experience occupational stress, the factors associated with and the factors that could be used to predict occupational stress among them. The study shows that citizens are more likely to experience stress than noncitizens. Those with a master's degree were the most likely to experience stress followed by those with a doctorate and those with a bachelor's degree or less qualification. Occupational stress is associated with work overload, clarity of responsibility, tidiness of the physical work environment, layout of buildings and landscape equity in the distribution of the work load, adequacy of the work. load and freedom to make decisions at work. Occupational stress is associated with poor health, poor emotional wellbeing and poor quality of social life. 'It js positively associated with indicators of burnout including emotional exhaustion, emotional hardiness, fatigue and sleeplessness. Those who feel that their responsibilities are ambiguous, vague or unclear were more likely to experience stress than those who feel that their responsibilities are clear and unambiguous. Clarity of responsibilities, equitable distribution of work load is inversely associated with occupational stress.

Usman Bashir and Muhammed Ismail Ramay (2010)[2] examine the relationship between job stress and job performance on bank employees of banking sector. In the study the stressors of the work conflicts, work ambiguity, psychological indications of stress such as feeling of overburdened with work, not having the adequate resources and tools to complete the given task or projects and incapacity to handle all of the work have been evaluated. The results show that job stress significantly reduces the performance of an individual. The study also reveals job related tension linked positively with troubles at work, work participation, work expectation, lack of mental support from a mentor and family exception. Job tension is linked negatively with quality of work life, job satisfaction, goal accomplishment, organizational commitment, self-esteem at work, quality of family life and life satisfaction. The study suggests that organization should facilitate supportive culture within the working atmosphere of the organization.

Ziaudeen et al., (2010)[3] has investigated the relationship of job stress with organizational commitment and also the relationship of affective commitment, continuance commitment and normative commitment with job stress. The result of the study explains that there was a positive and significant relationship between job stress and organizational commitment. Affective commitment has the positive relationship with job stress. There is a positive relationship between job stress and continuance commitment. There is no positive

relationship between normative commitment and job stress. Respondents with below 25 years of age have relatively low commitment and with 34-35 years had higher commitment. The commitment of employees having qualification of higher secondary is higher than other group. The employees working in private sector are more committed than public sector employees. Females have emerged as more committed than their male counterparts.

Vijay V. Raghavan, et aI.,(2010)[4] has conducted a study on An Empirical Investigation of Stress Factors in Information Technology Professionals, IGI Global, U.S.A. They have found that the effect of flexible work schedule, employee support and training, and telecommuting as potential coping resources to relieve stress. Perceived workload, role ambiguity, work facilitation, and decision latitude are potential stressors of IT professionals. Removing role ambiguity and improving work facilitation reduce work-related stress and allowing employee to have flexible work schedules ease their perceptions of workload.

Muhammad Mansoor, et al., (2011)[5] have conducted a study titled "The Impact of Job Stress on Employee Job Satisfaction A Study on Telecommunication Sector of Pakistan". The result of the study reveals that job stress is negatively related with employee job satisfaction. Individuals under excessive stress tend to find their jobs less satisfying. Some of their intrinsic or extrinsic needs may be thwarted or not met sufficiently. Lower job satisfaction is found to experience more stress in the form of workload, role conflict and physical environment compared to those with higher job satisfaction. Due to the intense competition in telecom industry, organizations are exerting more and more pressure on employees to compete each other, and contradicting demands, excessive workload and physical working conditions cause job stress that decreases employee's job satisfaction.

Ghafoor Khan R.A. et aI., (2011)[6] have studied the effect of stress, work family conflict and flexibility scheduling on employees performance and examine, whether flexible scheduling helps in decreasing the stress and work family conflict or not. The result of the study shows that stress and work family conflict has significant effect on employee performance. Increase in stress and work and family conflict decreases employee performance. Flexible scheduling has significant effect on employee performance. Flexible scheduling improves employee's performance. The study also highlights that work family conflict has a negative effect on employee performance as stress and work family conflict decrease the employee performance. The study reports that flexible scheduling had a positive effect on employee performance and it also helps in decreasing stress and work family conflict.

Nydegger, R (2011)[7] has addressed the types of stressors that are most significant for male and female workers in both white and blue collar occupations and settings. The result does not find differences in types and amount of stress between two different types of occupational groups. However, there is a significant finding with respect to the source of' stress in both types of organisation. The study indicates that in both types of organisations, the primary source of stress for workers is organisational. Blue collar employees exhibited slightly more behavioural effects of stress due to problems with communication and conflict with their superiors. The white collar employees showed complaint of cognitive effect of stress. The causal factors for them were fear of job security, excessive work load, having too much responsibility and lack of social support in the, organisation. The blue collar employees reported impaired concentration, feeling of burnout, feeling of having too much to do, not enough time to do, tendencies of being rude or unpleasant to co-workers- and feeling of not being justly rewarded for their efforts were the effect of stress among blue collar employees.

Bhatti et al. (2011)[8] have investigated the relationship between job stress and job satisfaction among 400 university teachers in Pakistan. Management role, relationship with others, workload pressure, homework interface, role ambiguity and performance pressure was examined as determinants of job stress and the result reveals that there is a significant relationship between four of the constructs tested and there is a significant negative relationship between job stress and job satisfaction. Result reveals that job stress has negative impact on their health.

Necso.V.D (2011)[9] has identified the relationship between stress and job satisfaction among 70 University teachers of Romanian academics. Bums Anxiety Inventory, Bums Depression Inventory and Warr Job satisfaction scale by Travers and Cooper were used and the result indicates that there is a negative correlation between stress and job

satisfaction. High level of anxiety & depression is observed among female teachers. A low level of job satisfaction was found among female teachers, where male counterparts are found significantly opposite on these scales. Academic tenure shows substantially greater job satisfaction among them.

K. Chandrasekar (2011)[10] has conducted a study on "Workplace environment and its impact on organizational performance in public sector organizations", found that environmental factors are conducive to work. He also found that factors that affect attitude of employees to work are-interpersonal relationships control over environment, shift, factors, job assignment, overtime duty and extended work.

Hamanpreet Singh, Lakhwinder Pal Singh (2012)[11] have conducted research to gain an insight of females working in insurance sector; it has been attempted by the authors to identify occupational stressors among females in an insurance company. It is concluded that there is high stress in insurance industry and job dissatisfaction and stress is significantly positively correlated.

Sharma Jyoti and Arti Devi (2012)[12] have assessed the causes of role stress among the commercial bank employees. The study finds that role augmentation is the factor where private sector banks scores appreciably less than the public sector banks. Private sector employees are less stressful than public sector as public sector employees are sustaining in the same place for a long time period. On self-diminution of role stress, employees of the public sector feel more short capability to meet their demands in their role in comparison to the employees in private sector. Employees of the public sector banks perceive greater ambiguity and vagueness in their role and role stress. On the contrary, the employees of the private sector have been found to be more burdened with the excess role expectation. On role divergent dimension private: banks have positive score compared to the public sector banks as in both types of banks, there is competition with the bank amongst various employees. Public sector bank-has been influenced by role divergence and affected a lot by resource shortage compared to the private bank. Banks in the public sector are more characterised by role excess. Statistically significant differences have been found for role augmentation, self-diminution and role fortification in public and private sector banks. Hypothesis proves that there is a vital difference for employees experiences in role augmentation, self-diminution and role fortification across public and private sector banks.

RESULTS AND DISCUSSION OF STRUCTURAL EQUATION MODELING (SEM)

Structural Equation Modeling is a very general statistical modeling technique, which is widely used in the behavioral sciences. It can be viewed as a combination of factor analysis and regression or path analysis. The interest in SEM is often on theoretical constructs, which are represented by the latent factors. The relationships between the theoretical constructs are represented by regression or path coefficient between the factors. The structural equation model implies a structure for the covariance between the observed variables, which provides the alternative name covariance structure modeling. However, the model can be extended to include means of observed variables or factors in the model, which makes covariance structure modeling a less accurate name.

Structural Equation Modeling provides a convenient framework for statistical analysis that includes several traditional multivariate procedures for example factor analysis, regression analysis, discriminant analysis and canonical correlation as special cases. Structural equation models are often visualized by a graphical path diagram. The statistical model is usually represented in a set of matrix equations.

Structural Equation Modeling has its roots in path analysis, which was invented by the geneticist Sewall Wright (Wright, 1921)[13]. It is still customary to start a SEM analysis by drawing a path diagram. A path diagram consists of boxes and circles, which are connected by arrows. In Wright's notation, observed (or measured) variables are represented by a rectangle box and latent (or unmeasured) factors by a circle or ellipse or square box. Single headed arrows or 'paths' are used to define causal relationships in the model, with the variable at the tail of the arrow causing the variable at the point. Double headed arrows indicate covariances or correlation without a causal interpretation. Statistically the single headed arrows or paths represent regression coefficients and double-headed arrows covariances. Extensions of this notation have been developed to represent variances and means (cf McArdle, 1996)[14]

NESTED DUCK TRAVELER OPTIMIZATION MODEL(NDTO)

Nested Duck Traveler Optimization Model is observed from15-22.

To summarize the observations from ducks' foraging behavior, the following tasks are presented.

- Task 1: A duck population comprises of several groups. Each group containing a number of ducks that optimizes the food search activity using their stack of intelligence. (Research Scholars Group)
- Task 2: Based on the height of the neck+head, the duck uses that information to select the hunting region. (Communication)
- Task 3: They travelling as a flock and follow their local guide which has fed on most food in the last location. (Group Discussions)
- Task 4: After a number of tasks, ducks return on surface to share with its local affiliates, via communication of exploitation, the locations and abundance of food sources. (Referred Journal publications)
- Task 5: If the food support is less for the ducks of a given group to live on, part of the group migrates to another place via communication of exploration. (Expected Solution)
- Task 6: Based on the satisfaction of end criteria, output the optimal solution. Otherwise go to Task 2. (Submit the Thesis/ Rework)

Figure 1: Duck Flock Example for Research Scholars Group

Research Model and Hypothesis Formulation

The research hypothesis have been defined on the basis of the constructs outlined above and using previous research on impact of stress on satisfaction with different facts of the research among private college Research Scholars. The following figure is a graphic presentation of the developed hypothetical model. On the basis of above presented model, the following hypotheses are proposed.

Hypothesis of the Study

There is a positive impact of selected independent variables of the impact of stress on satisfaction with different facts of the research work among private college Research Scholars.

RESULTS

Structural Equations: Methodology and Technical Application

The following path analysis is used to prove the selected hypothesis.

The above Table 1 enumerates that the communalities of the selected 9 variables have good reliability 0.976, and are keenly checked that no single variable has low loading, ie., less than 0.5. Thus finally, 5 variables are selected for the SEM analysis.

Validity of the Measurement

In structural equation modeling the confirmatory factor model is imposed on the data. In this case the purpose of structural equation modeling is twofold. First it aims to obtain estimates of the parameters of the model, i.e., the factor loadings, the variances and covariances of the factor and the residual error variances of the observed variables. The second purpose is to assess fit of the model, i.e., to assess whether the model itself provides a good fit to the data.

The ability of SEM to produce a meaningful identification of the correlation between factors is a key strength.

In multiple regression analysis, generally assume that the independent variables are correlated as the two-headed arrows between the predictor variables. The residual error in multiple regression analysis is actually an unobserved latent variable. Note that to fix loading of the residual error factor to one to achieve identification.

To obtain unstandardized and standardized regression weights, a variance estimate for the residual errors and the squared multiple correlation of the dependent variable "Impact of Stress on Satisfaction with Different Facts of the Research work among Private College Research Research Scholars". In this case, the calculated value of chi-Square test is 2.978 on 6 degrees of freedom which gives a p-value of 0.000 and this model is a good fit for the analysis. The real strength of SEM is to estimate more complicated path models with intervening variables between the independent and dependent variables and latent factor

as well.

The table 3 shows that the regression coefficient of the exogenous variables. It is noted that critical ratio except the variable as "Inadequate communication as compared to contribution and experience" of the respondents is above table value 2.962 and it is insignificant at 1 and 5 per cent level. Among the selected eight variables except the variable "Inadequate communication as compared to contribution and experience" are the most influenced factors to develop their Impact of Stress of Satisfaction with Different Facts of the Research work among Private College Research Scholars.

From the table 4 exhibits that covariance matrix it is identified that the critical ratio value of the all the combinations less than the table value. But "The academic research profession" is correlated with "Relationship among colleagues in research forum" at 1 per cent level of significance. "Relationship among colleagues" is correlated with "Inadequate solution as compared to contribution and experience" at 5 per cent level of significance. "Research working conditions" is correlated with "Guide Welfare activities such as Respect, Refereed Journal Publications, Quick response etc" at 5 per cent level of significance.

CONCLUSIONS

The path diagram measured variables with latent variables of Impact of stress – Satisfaction with different facts of the research work of private college Research Scholars is having positive relationship and also significance at 1 and 5 per cent level. The analysis of the model, from the viewpoint of the appreciable Impact of Stress, suggests that all the measured variables are significant.

Moreover the important aspect of every organization is, Stress. Stress has become the most common cause in adequate contribution of teachers in all the private colleges. Stress can make an individual productive and constructive when it is identified and well managed. Positive attitude and meditation will be helpful for coping the stress. Thinking in a broader perspective of life will definitely change stress. There are many ways for managing stress, such as meditation, Yoga etc. The Negative stress or Distress kills the employees' positive attitude and it turns to

absenteeism, turnover, immoral, anxiety, depression, aggressiveness and so on. Hence, we will be successful if we make distress into eu-stress, our healthy lifestyle as well as organizational well-being will change.

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Table 1: Communalities Before Removal of Low Loading Variables - (List of Measured Variables)

S. No	Variable	Initial	Extraction
1	The research academic profession	1.000	0.848
2	Relationship among colleagues in the research forum	1.000	0.712
3	Every day work	1.000	0.682
4	Inadequate communication as compared to contribution and experience	1.000	0.820
5	Research work security	1.000	0.612
6	Research working conditions	1.000	0.807
7	Scope for free journal publications	1.000	0.648
8	Staff Welfare activities such as Respect, Refereed Journal Publications, Quick response etc.,	1.000	0.994
9	Systematic and Periodical announcement of work progress or revision of presentation.	1.000	0.582
Cronbach's Alpha (α) = 0.976			

Table 2: Communalities After Removal of Low Loading Variables - (List of Measured Variables)

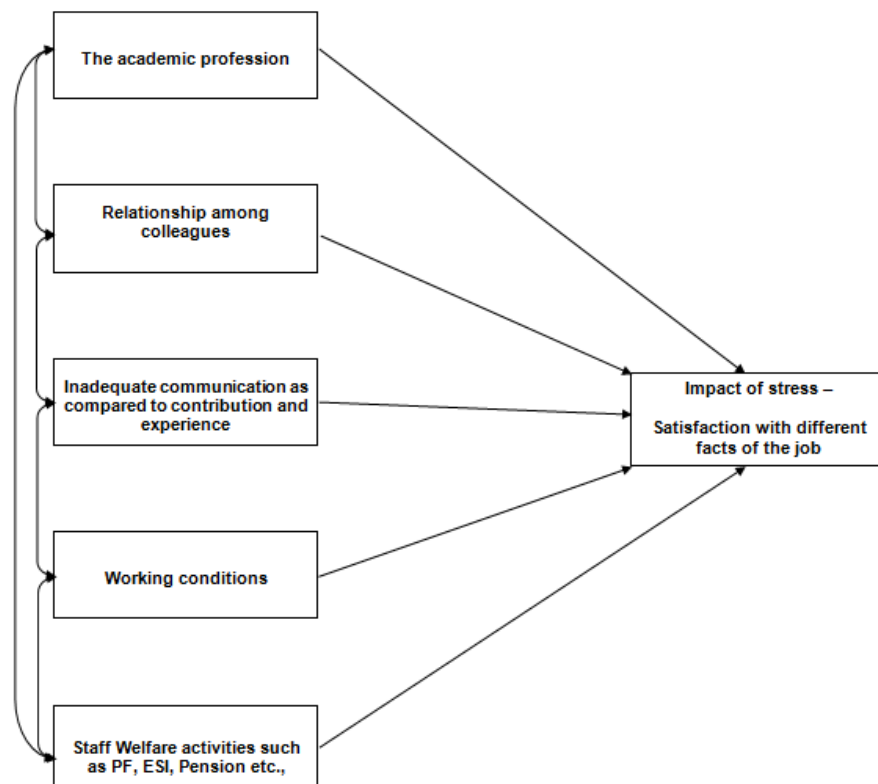| S. No	Variable	Initial	Extraction
1	The research academic profession	1.000	0.848
2	Relationship among colleagues in the research forum	1.000	0.712
3	Inadequate communication as compared to contribution and experience	1.000	0.820
4	Research working conditions	1.000	0.807
5	Staff Welfare activities such as Respect, Refereed Journal Publications, Quick response etc.,	1.000	0.994
Cronbach's Alpha (α) = 0.976			

Figure 2: Hypothesis Supporting Research Model.

Table 3: Regression Weights

Latent Variables	←	Measured Variables	Estimate	S.E	C.R	P
Impact of Stress	←	The research academic profession	0.240	0.023	10.503	5%
Impact of Stress	←	Relationship among colleagues in the research forum	0.062	0.029	2.142	1%
Impact of Stress	←	Inadequate communication as compared to contribution and experience	0.056	0.043	1.307	NS
Impact of Stress	←	Research working conditions	0.102	0.030	3.401	1%
Impact of Stress	←	Staff Welfare activities such as Respect, Refereed Journal Publications, Quick response etc.,	0.088	0.020	4.360	1%

Table 4: Covariance: (Group Number 1 – Default Model)

Measured Variables	<-->	Measured Variables	Estimate	S.E	C.R	P
The research academic profession	<-->	Relationship among colleagues in the research forum	0.554	0.077	-2.488	1%
Relationship among colleagues	<-->	Inadequate communication as compared to contribution and experience	0.419	0.069	1.921	5%
Inadequate communication as compared to contribution and experience	<-->	Research working conditions	0.459	0.066	-1.570	NS
Research working conditions	<-->	Staff Welfare activities such as Respect, Refereed Journal Publications, Quick response etc.,	0.350	0.072	1.874	5%
Staff Welfare activities such as Respect, Refereed Journal Publications, Quick response etc.,	<-->	The research academic profession	0.793	0.056	-1.306	NS

Table 5: Bootstrapping

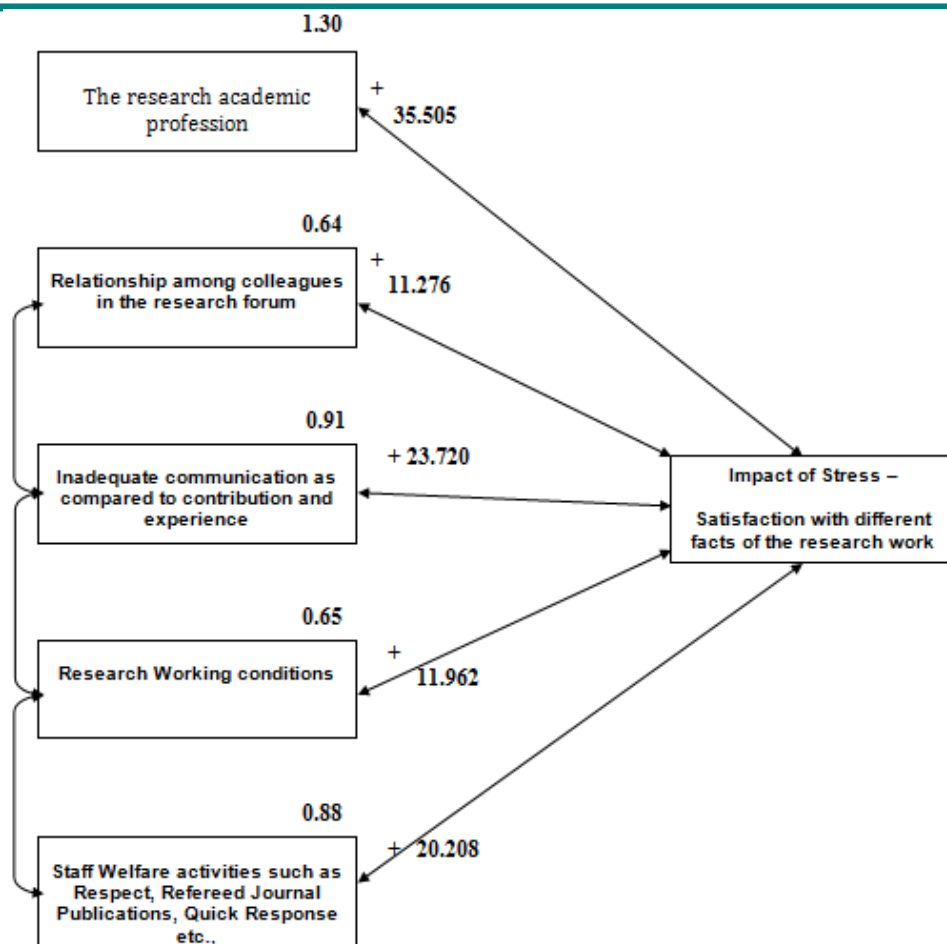| Paths			Estimate	S.E	Mean	't' Value	Result
The research academic profession	→	Impact of Stress	1.298	0.037	0.868	35.505	H$_1$ Accepted
Relationship among colleagues in the research forum	→	Impact of Stress	0.642	0.057	0.486	11.276	H$_2$ Accepted
Inadequate communication as compared to contribution and experience	→	Impact of Stress	0.906	0.038	0.760	23.720	H$_3$ Accepted
Research working conditions	→	Impact of Stress	0.652	0.054	0.508	11.962	H$_4$ Accepted
Staff Welfare activities such as Respect, Refereed Journal Publications, Quick response etc.,	→	Impact of Stress	0.883	0.044	0.706	20.208	H$_5$ Accepted

Figure 3: Hypothesis Model.

Table 6: Testing of Hypothesis

Hypothesis	Hypothetical Relationship	Result
H1: There is a positive impact of "The research academic profession"	Positive	Confirmed
H2: There is a positive impact of "Relationship among colleagues in the research forum"	Positive	Confirmed
H3: There is a positive impact of "Inadequate communication as compared to contribution and experience"	Positive	Confirmed
H4: There is a positive impact of " Research Working Conditions"	Positive	Confirmed
H5: There is a positive impact of "Staff Welfare activities such as Respect, Refereed Journal Publications, Quick response etc"	Positive	Confirmed