

Job Stress and Organizational Justice for Construction Engineers

Professor . Er.Sital Kumar Karki

Principal , National Open College, Sanepa, Lalitpur, Nepal

Email - Karkisital@yahoo.com

Abstract: The study on engineers on hydro project construction site to reveal the level of job stress and level of organizational Justice Satisfaction found need of improvements to be recommended. On the basis of this study the employee are recommended to practice proper pay, promotion and reward system as to lower the stress due to job demand. Similarly it is recommended to improve on adequate equipment, staff and safety as resources to minimize the Job stress on engineers. The level of stress measured by self developed stress scale (21 items) found mean value of (2.625) with reliability of ($r > 0.7$)The stress is at moderate level as per classification of American Institute of Stress (AIS) with mean value of (2.68) .So, more awareness is essential at hydropower projects. The overall Justice is found just at a level of mean value (3.235) just above neutral value of (3) neither satisfied nor dissatisfied, so recommended to improve by doing the justice to engineers employed. Intention to stay was found just below the neutral value so classified as intended to leave moderately. The correlation with intention to Stay was found for both stress scale negative with moderate significance which means higher stress will cause less intention to Stay. Stress was found associated with number of children of engineers while organizational justice was found association with number of children and annual family income. The correlation with intention to Stay was found for both stress scale negative with moderate significance which means higher stress will cause less intention to Stay. Stress was found associated with number of children of engineers While organization justice was found association with number of children and annual family income. Most of the engineers were found: with annual family in come group half to one and half millions Nrs and having without children. greter autonomy to engineers to have more control and participation in decision making will reduce the distress.

Key words: Job Demand, Job control, Job stress, Organizational justice, Intention to Stay.

1. INTRODUCTION:

The study made during October, 1996 among all hydropower projects in Nepal, was a quantitative study among N= 219 engineers at site. The socio-Demographic in brief include most of engineers at age group of 23 to 30 years, mostly married with experience of 1 to 5 years as an engineer. This paper presents the study in brief for the measurement of level and causes of job stress and organizational justice. The study is cross sectional study based on perceived justice and stress within last one month.

2. JOB STRESS:

Arnold and Fieldman, (1986)[1] defines stress as relation of individual with new or threatening factors in their work environment. McGrath (1975) [11] argued moderate level of stress empower people to perform better. (Lawless, 1992, Sizilas, 2011) [15] said if stress is far greater it will decrease performance and concerning health issues. Hans Seyle, (1936, 1946, 1956) [14] gave name "Stress" with analogy to engineering, so initial definition became cloudy (Cooper, 2000: Sizilas, 2011) [15]. (Harkness et al 2005, Sizilas, 2011) [15] found stress being a normal state of work.

3. ORGANIZATIONAL JUSTICE:

Pleto wrote about justice in The Republica and Aristotle analyzed the fairness, latter in 17th century theme of fairness provoked again, like in works of Hobe and writing of Locke (Human Right) as well Mill (Utilitarianism) as per (Colquitt, 2005) [2]. F. W. Taylor, M.P.Follet were also attracted to Justice (Colquitt, 2005) [2] while contemporary research focus on justice on how individual perceive justice (Cropanzano et al 2005; Greenberg and

Bies, 1992; Sizilas, 2011) [15]. The dominant discipline is Organizational Behavioral and Organizational Psychology with an interest on work place Justice. The organizational justice is conflicting demand of concern for business and concern for people (Barely and Kundd, 1992; Cropanzano, 2001; Sizilas, 2011) [15]. Employee concern on pay or remuneration equity process is Distributive Justice (Leventhal, 1976; Deutsch, 1975; Adams, 1963; Sizilas, 2011) [15]. Fairness to decision making as procedural Justice (Leventhal, Karate and try, 1980; Thibaut and Walker, 1975; Sizilas, 2011) [15]. Concern for interpersonal treatment as Interactional Justice (Braes and Moag, 1986; Sizilas, 2011) [15]. All these 3 became organizational Justice (OJ) first coined by (Greenberg, 1986, 1987) [4]; to describe perception of OJ (Colquitt, 2005) [2].

3. THEORITICAL REVIEW:

3.1 Theories on Job Stress (OS):

Theory on stress started with (Scientific foundation of Research) Hans Seyle in 1936 (Cooper, 2000; Sizilas, 2011) [15]. Ontological debate (Holmes and Rathe, 1976) [15]; Epistemological debate (Bunell & Moron, 1979; Sizilas, 2011) [15]; Methodological (Mullins, 2010; Sizilas, 2011); the Objectivist stream of stress (Seyle, 1936, 1946, 1956) [14]; the Subjectivist stream of stress (Payne and Cooper, 2001; Sizilas, 2011) [3]; Origin of Concept of Stress (Seyle, 1936, 1946, 1956) [14]; From GAS model (Seyle, 1946, 1956) [14] to Dynamic equilibrium (Sizilas, 2011) [15] also elaborated on the following theories.

3.2 Job Demand Control Model (JDC Theory)

This theory states that stress is related with demand of job (Karesek, 1979) [10]. Job demand was explained by (Caplan, Cabb, French, Haririson, and Pinman, 1985; Peterson, 2009) [13]. Perception of Control was explained by (Dosyer, Ganster, 1992 and Peterson, 2009). Work on Support and Social Support was carried out by (Coplan et al, 1980; Fisher, 1985; French, 2000; Peterson, 2009) [13].

3.3 Job demand – Resources Model (JD-R Theory):

Lazarus, (1991); Lazarus and Forman, (1989); Lazarus and Lauding, (2008) as cited by (Sizilas, 2011) [15]; have worked extensively on JD-R Theory. They worked on Job Demands, Job Resources and concluded that when job demand is more than available resources then stress rises.

3.4 Organizational Justice (OJ)

Fairness Theory provides to explanation to organizational justice situation when an authority is held accountable for a justice (Folgers and Carpanzano, 2001; Sizilas, 2011) [15]. Would be, Could be and should be the conditions applied here (Sizilas, 2011) [15]. (Taylor and Blade, 2005; Sizilas, 2011) [15] suggested a Group Engagement Model, and concluded that people engage in group mainly by perception of OJ. Uncertainty Management Theory, (Lind, 200; Sizilas, 2011) [15] concluded from research that the acceptance of management instructions is based on Just Judgment. So, overall fairness is overall justice for many researchers. (Powell, 2011; Sizilas, 2011) [15] opinions that supervisor support is the extent to which leaders value their employee, contribution to care about their wellbeing. In an organization where superior is a team supervisor, the subordinate are heard, valued and cared for. A leader with high superior support will definitely bring about higher performance and higher yield (Sizilas, 2011) [15].

Greenberg (Greenberg, 1987) [4] defines people concerned with fair share, equity theory, and group value as contributor of OJ. The idea that people believe they are important part of the organization when an organizational official takes the time to explain thoroughly to employee. Then only they will be retained behind a decision. The following can be treated as three components of OJ for overall fairness (Colquitt, 2012) [3].

1. Distributive Justice (DJ): Comparison inside and outside so justice of outcome (pay, assignments etc), people concerned with fair share, equity theory.

2. Procedural justice (PJ) : Adherence to rules , voice in making decisions, consistency on rules, accuracy on use of system, opinion to be heard, safeguards against biases , justice of formal allocation.

3. Interpersonal Justice: the study of people's perception of members in organization relationship between them.

4. METHODS:

The study is quantitative, x- sectional study. Population of 500 engineers in various hydro projects over Nepal was surveyed with web base and paper survey with sample size N=219. The analysis was done by SPSS 20.0 version. Reliability test was by Cronbach's Alfa(r) and association was analyzed by Pearson's coefficient. The reliability was tested during Pretest at N=14, at N=65; at N=219. The study is based on (ILO, 2006) [6] which study job stress on construction workers. Organizational Justice (OJ): (Choi, 2001 and Matersion, 2008, Colquitt, 2012) [3]. Thus instrument shall evaluate the justice on aggregate (Colquitt , 2012) [3], in Oxford Handbook says the OJ can be measured in aggregate instead of measuring differentiation like distribution justice, Procedural Justice, Intermination Justice and Interactional range. The reliability found was $r=0.774$. Occupational Stress Scale (OSS): Self designed 21 questions on job- demand support Resource scale. Scale was same 1 to 5 as in all stress scale used in this study. Never to Always . This includes general job factors, Project environment, Project Team, Project work ($r=0.73$). AIS Overall stress scale. 8 questions adopted from American Institute of Stress (AIS) Scale was similar to (1 to 5) as above; AIS: American Institute For Stress, Scale for ordinary state of stress. Intention To Stay (IS): two questions 1.(Mersi and Humphry, 1980) 2.(Donnelly and Ivanceobhich, 1975) adopted from (Shrestha and Shrestha, 2012) [14]; Rahim (1997) found combined : ($r= 0.79$): Scale was similar to 1 to 5.

5. ANALYSIS AND DISCUSSION

Organizational Justice (OJ)

The (7) item OJ instrument on Overall OJ found the level of satisfaction as (3.265) (mean of 7 item) with reliability of (0.774). The highest satisfaction was (3.49) "my supervisor is a fair person". The question 4th was found doubt of the term "Just". So employer fairness was (3.25, 3.23, 2.97 and 3.28) while supervisors Fairness was higher than employer (3.35, 3.49 and 3.31). Except one question which was confusion with word "JUST" scored (2.97) all other item scored more than 3.0? Overall fairness can be improved by improving company policy, system like being open, concerned to employee, good interactional, distribution of fair benefits, correct/fair procedure, and the employer can improve satisfaction on organizational justice.

Job or Occupational Stress (OS)

Now the stress on first sub group general job factors (Demand) mean and sd. (2.8667,0.71123) is highest, Project environment (Resources) (2.6944,0.76467) is second cause, Project work (Control) (2.5707, 0.56953) is third and Project team (Support) (2.4873, 0.0.49207) is the fourth or lowest among four sub factor. Thus one can recommend improving the project environment (Resources) specifically with adequacy on tool/ equipment and staffing. Job demand on pay, compensation, benefits is recommended to improve.

Job or Occupational Stress (OS) was measured on Various factors (21 items as shown in tables) with self-developed questionnaire based on JDC-R model and based on (ILO, 2006) [6] study on construction workers and other literature on construction (Korea, Australia, South Africa) with four sub factor 21 item Job Stress Scale. The level of stress on 21 item scale was found (reliability of 0.73) (2.652) mean value which is just below average or neutral (3.0). Highest being insufficient tools and equipment for work (3.17) followed by the insufficient staffing (3.06). Improper pay and compensation practice (3.02) was another major cause of stress. The lowest stress was on interpersonal relationship (1.86), i"was clear on role (1.92)" and "I have knowledge and skill required" (2.02). The reliability and stress level was found in literature are comparable and good (0.730). Highest stress was on general job factors (Pay overall second 3.02), project environment (overall first: inadequate tools and equipment (3.17) and overall fourth insufficient staffing 3.06), project work (clear on job overall second lowest 1.92) and project team (overall lowest stress on interpersonal relations. 1.86).

The discrimination should be immediately practice with main streaming. "The concentration and performance requirement" recommended analyzing. Now lets compare the e four sub factors: Deleting " I have to work on

isolation " one item all sub factor have now 5 items each, the total of each sub factors are: 14.35(demand, Project general job factors), 12.45(support, Project Team),12.68(Control, Project work) and 13.57(Resources, Project Environment). Without much debating my model of JDC-S-R, I can say the stress due to job demand is highest and resource available at site is insufficient to suit the employee P-E fit. Comparatively the support of organization and Social is better. Similarly based on well known theory of Job Characteristics (Hackman and Oldham, 1975) [5]. While analyzing further we can conclude: if discrimination at work (may be various types), the project team or Support will still improves and does not create Distress. In the same way if stress due to high concentration and performance is reduced, distress due to control on job or stress from Project work will be reduced considerably. Why this is recommended is clear these two one in each sub factor are only items which have stress level mean of above (3). This much finding along with the finding and recommendation from AIS scale below is sufficient complete research question and objective of this study.

Overall Stress: AIS

Table: 1 Overall Stress (AIS) **Item Statistics**

	Mean	Std. Deviation	N
Condition at work is unpleasant sometimes unsafe	(III)2.80	.950	193
,My job is affecting health and emotional wellbeing	(V)2.68	1.026	193
I have too much work to do and or too many unreasonable deadlines	(II)2.98	.921	193
I find difficult to express my opinions or feelings about my job conditions to my superiors	(VI)2.65	1.145	193
I feel job pressure interfere with my family or personal life	(IV)2.70	1.123	193
I have adequate control or input over my work duties	(VII)2.26	.922	193
I receive appropriate recognition or rewards for good performance	(I)3.28	1.176	193
I am able to utilize my skills and talents to the fullest extent at work	(VIII)2.08	.984	193

AIS in this study found most stressful on Reward and recognition as (3.28). Too many works and unreasonable dead line (2.98) second, unsafe and unpleasant (2.8) third, job pressure interfering family (2.7), affecting health (2.680). The overall stress level as measured by AIS overall (8 item) scale was found (2.68). The total scores of all (8) items added is (21.43) is categorized as "**Moderate Stress**" and AIS suggests to go for item wise analysis to find worst stress items. Therefore, Using a detail 21 item stress Scale above helps to find out the stressful items and take necessary actions. The respondent are among 21% of us (AIS), only 11 % individual are above this level. All other 68% are below this level. The assumption or hypothesis of "stress among engineers on Hydro projects", (35%) or the research question " what is the level of stress?" and "What are the causes and association?" is found significant and worthy to study. AIS categorizes as below: Score 15 and below: Chilled out, Stress is not an issue, (33% of us are in this range).Score 16 to 20: Fairly low Stress, (35%). Score 21 to 25: Moderate Stress, look for worst items, (21%). Score 26 to 30: Severe, as it is extreme, some management is needed, (9%). Score 31 to 40: Dangerous, seek professional assistance, (2%). For man overall mean is found 18.4, for women (18.1), age18 to 34 (17.6), age 35to 50 (19.2) age 50 or above (18.4). (AIS, 2016) web site quotes (NIOSH) for a loss of greater than 300 millions (now it is> 600 millions) annual loss from stress in USA alone. The cost includes accident, absents, turnover, diminished productivity, direct medical, legal, insurance and worker compensation costs.

Intention to Stay (Is)

Table 2 : Intention to Stay level

	Mean	Std. Deviation	N
I would prefer to continue working in this organization	3.33	1.020	204
If circumstances permitted I would jump at a chance to accept a job in another organization	2.36	1.081	204

The level of IS was found 2.846 below average (neutral). Among the respondents 61.3 % intend to stay in the job while 38.7 % intend not to stay on the job. At the same time 51.8% intent to leave and 48.2 % intend not to leave. The reliability was found low in this combined two item scale (0.369).This study was more important on association of other variables with IL than for level and causes of IL.

Associations:

The job stress was found associations with Intention to Stay and Organizational Justice.

Table 3: Job Stress Associations

		Job Stress with frequency distribution							
Some times	5	4	3	2	1				
	1	2	3	4	5				
Covariant	SD	D	N	A	SA	Chi Square	P value		
Intention to Leave	36 (19.8)	41 (22.5)	23 (12.6)	41 (22.5)	41 (22.5)	33.926	0.001		
Organizational Justice	35 (19.7)	38 (21.3)	24 (13.5)	40 (22.5)	41 (23.0)	68.319	0.0000001*		

Correlation analysis Pearson's Coefficient p Value:

The correlation with intention to Stay was found for both stress scale negative with moderate significance which means higher stress will cause less intention to Stay.

Table 4: job stress and Intention to Stay

Job Stress (21 item)	Intention to Stay	Job Stress (AIS)	Intention to Stay
-0.329	-0.329	-0.442	-0.442
N= 182	204	189	204

Socio- demographic Association:

Stress was found associated with number of children of engineers while organization justice was found association with number of children and annual family income.

Table 5: Job Stress (AIS) and number of Children Association.

No. of Children Job Stress							
None	17 (9.4)	24 (13.3)	8 (4.4)	22 (12.2)	23 (12.7)	23.568	0.099
One	8 (4.4)	8 (4.4)	8 (4.4)	7 (3.9)	12 (6.6)		
Two	8 (4.4)	6 (3.3)	7 (3.9)	11 (6.1)	6 (3.3)		
Three	0	3 (1.7)	0	0	0		
More than three	2 (1.1)	0	0	1 (0.6)	0		

Table 6: Organizational Justice and no. of Children Association.

No. of Children							
None	20 (10.1)	24 (12.1)	22 (11.1)	18 (9.1)	20 (10.1)	28.992	0.024
One	6 (3.0)	18 (9.1)	8 (4.0)	5 (2.5)	10 (5.1)		
Two	16 (8.1)	3 (1.5)	5 (2.5)	10 (5.1)	8 (4.0)		
Three	0	1 (0.5)	0	1 (0.5)	0		
More than three	0	0	0	1 (0.5)	2 (1.0)		

Table 7: Organizational Justice and annual Income Association.

Annual income							
Below 5 lacks	12 (6.0)	10 (5.0)	19 (9.5)	6 (3.0)	9 (4.5)	37.838	0.000163
5 to 10 lacks	18 (9.0)	17 (8.5)	10 (5.0)	8 (4.0)	11 (5.5)		
10 to 15 lacks	11 (5.5)	7 (3.5)	3 (1.5)	7 (3.5)	15 (7.5)		
More than 15 lacks	3 (1.5)	12 (6.0)	2 (1.0)	13 (6.5)	6 (3.0)		

Socio-Demographic Status

Most of the engineers were found with annual family in come group (31.1 +21.5 %) half to one and half millions Nrs and most of them having (52.5%) without children.

Table 8: Annual Family Income

Table 8: Annual Family Income					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		6	2.7	2.7	2.7
	10 to 15 Lacs	47	21.5	21.5	24.2
	5 to 10 Lacs	68	31.1	31.1	55.3
	Below 5 Lacs	58	26.5	26.5	81.7
	More than 15 Lacs	40	18.3	18.3	100.0
	Total	219	100.0	100.0	

Table 9: Number of Children

Table 9: Number of Children					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		6	2.7	2.7	2.7
	More than Three	3	1.4	1.4	4.1
	None	115	52.5	52.5	56.6
	One	48	21.9	21.9	78.5
	Three	3	1.4	1.4	79.9
	Two	44	20.1	20.1	100.0
	Total	219	100.0	100.0	

6. CONCLUSION:

Engineers are recommended to be aware about stress on time because the stress is already at moderate level. Reward and recognition must be redesigned and practiced properly is another recommendation. The perceived stress due to unsafe and unpleasant work place or site is recommended to make safe and pleasant. Unnecessary pressure of dead line due to work stoppage or schedule slip is recommended to plan, schedule and implement with reasonable time and accelerating techniques of work (Karki, 2000) [9]. Job pressure interfering family is recommended for future research on detail on WLB with application of Spillover Model. Turnover is

recommended for detail study with independent effect model of Job Stress. Respondent has perceived effect on health for which GHQ-12 or equivalent scale along with other detail study is recommended. The correlation with intention to Stay was found for both stress scale negative with moderate significance which means higher stress will cause less intention to Stay. Stress was found associated with number of children of engineers while organization justice was found association with number of children and annual family income. Most of the engineers were found with annual family income group (31.1 +21.5 %) half to one and half millions Nrs and most of them having (52.5%) without children. As stress is generally not classified on the basis of occupation, it is so because P-E Theory states it depend on person. So the result obtained in this study on job stress is for engineers in hydro projects at construction in Nepal. The increment on autonomy and participation on decision making (Jackson, 1983) [8] can reduce distress of engineers (Lewis and et al, 2007)[10] and save health problems.

REFERENCES:

1. Arnold, H. J. and Feldman, Daniel C. (1986): Organizational Behavior, McGraw-Hill International Editions, Management Series, 1986.
2. Colquitt J.A., Greenberg. & Zapata-Phelan, C. (2005). What is organizational justice: An
3. <http://www.stress.org>
4. Colquitt, J. A. (2012) "Organizational Justice" Oxford Handbook of Organizational Psychology on line Sept 2012, print published in July 2012.
5. Greenberg, J. (1986, 1987), Determinant of perceived fairness on of fairness of performance evaluation, *Journal of Applied Psychology* 71, 340-392. : 12, 9-22.
6. Hackman, J. R., & Oldham, G.R. (1975). Development of the Job Diagnostic Survey. *Journal of Applied Psychology*, 60, 159-170.
7. International Labor Organization (ILO) (2006)," The work stress and its causes in Construction: Study Report, 2006.
8. Jackson, S.E (1983). Participation in decision making as a strategy for reducing job-related strain. *Journal of Applied Psychology*, 68, 3-19.
9. Karasek, R.A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly*, 24 (2), 285-308.
10. Karki, S. K.(2000) , " Managing Time in Major Hydro Projects" MSc. Thesis (nec) 2000, Nepal.
11. Lewis, C. A., Burton, D. W., Francis, L. J. (2007). Clergy work-related psychological health, stress, and burnout: An introduction to this special issue of *Mental Health, Religion and Culture* [Electronic Version]. *Mental Health, Religion & Culture* 10, 1, 1-8.
12. McGrath, J. E. (1976). Stress and behavior in organizations. In M.D. Dunnette (Ed), *Handbook of industrial and organizational psychology*: Chicago: Rand McNally, 1351-1396.
13. Peterson, Jessica Zara (2009), "Job Stress, Job Satisfaction and Intention to Leave among New Nurses", PhD Thesis, University of Toronto, Canada, 2009.
14. Selye, H. (1936, 1946, 1956). *The stress of life* (rev.ed.). New York: McGraw-Hill.
15. Shrestha A. and Shrestha A. (2012) "Relationship of Job Stress Locus Of Control, Organizational support, Social Support, Psychological Strain, Job satisfaction and Turnover Intention: A study on Nepal." [www.researchgate.net/ publication /235 692 353](http://www.researchgate.net/publication/235692353)
16. Sizilas, Roland Ference, (2011), "Work Stress and Organizational justice ", PhD Thesis, Corvinus University, Budapest.