A STUDY ON WORK STRESS AMONG ARCHITECTS AND CONSTRUCTION PROFESSIONALS IN INDIAN CONSTRUCTION INDUSTRY

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ABSTRACT

In reality, very little is known about work stress among professionals in building industry which creates life and death particularly in Indian context. This study is to identify the key stress factors among construction professionals including architects, engineers, builders and other related specialists involved in building construction industry. The study involved a questionnaire survey to 117 professionals randomly selected from 56 public and private sectors on going building projects among four major cities in India (Chennai, Hyderabad, Mumbai and Gujarat). The data were analyzed by SPSS and findings show that the main and principal sources of stress were heavy volume of work, work pressure, lack of provisions at site, non-co ordination of people from various levels, improper administration, lack of feed back on previous and ongoing building projects and finally charges in scope of work in ongoing building projects. This paper concludes that the adequate capacity to undertake projects, capability to handle, establishing and maintaining budgets and time frames for project delivery, proper provisions at sites and offices, confirm to appropriate design practices and education of professionals in stress management will result in better scope of work and less stress among professionals at various levels in building industry.

Key words: Work Stress, Professionals, Building Industry, India.
INTRODUCTION

From the past history and the real world changes the building construction industry has witnessed tremendous institutional and organizational transformation across the globe. The enhanced environment in the construction industry related to building process, pace and complexity of work, changing consumer preferences and demand for higher productivity makes the construction industry a more response one.

Rapid changes taking place within the construction industry in general due to dynamic and complex nature of construction works, technological advancement and the hostile attitudes of participants (Wong et al., 2010). Being in the extremely competitive environment tight budget and fixed time frames construction professionals are more stressful and in greater work force (Wahab 2010) Stress is not limited to any particular profession (Ng et al, 2005; lath, 2010). However staff (1994) noted that construction work is the third most stressful profession after mining and police work.

The nature and production processes that take place in the construction industry as being responsible for making construction work a dangerous and stressful occupation. Since stress perception is highly subjective and varies from one individual and context to another (wong et al, 2010), Variation among construction professionals depends their perception of stress factors and more studies on work stress especially in developing countries become more important. This paper presents the stress factors among professionals in the building construction industry in India. It identifies the key stress factors among architects builders, engineers and quantity surveyors directly involved in the projects. Based on the findings, the derived strategies recommends to eliminate or reduce stress factor among professionals in the Indian construction industry.

LITERATURE REVIEW

From the view of organizational and social literature the concept of stress has a long history to go through (Som erfield and McCrae, 2000). However the stress definition has been viewed from diverse perspectives. Drawing from selyes’ submissions, Pulat (1997) and Martino and Musri (2001) opined that some amount of stress is necessary to generate enthusiasm and creativity for optimal productivity. They also cautioned that intense or too much stress in work environment poses great risk to workers safety, health and emotional stability. But at the outset within the level stress also engender enthusiasm creativity and productivity.

On the other hand stress is an experience expressed in one’s feeling of being strained (Media and Becerril, 2007) From the Health and Safety Executive (HSE, 2007) point of view, stress can be an adverse reaction people have due to excessive pressure or other types of demand placed on them. In different view Lath (2010) defined that every person including a child, an adult, employed or unemployed faces stress in his/her every day life. He defined stress as any challenger that exceeds the coping abilities of the individual, From the occupational perspective stress has also been defined as the physical and emotional response that occur when workers perceive and imbalance between their work demands and their capability to meet such demands. It is a state of conflict between the job demands on a worker and his/her capacity to meet the same (Brown; 2001; Lath; 2010). The general inference that can be drawn from these reviews work stress is viewed as a human perception of condition that scare excite, annoy, threaten or strain individual as a result of their occupation.
Stress from the point of view of occupation seen as comprising, three dimensional syndrome of emotional exhaustion, depersonalization and reduced personal accomplishment (Maslach et al. 1996). Stress in this context is seen as a state of physical, emotional and mental exhaustion due to long- term involvement in situations that are emotionally testing (Melia and Becerril, 2007). Maslach et al (2001) noted that individuals experiencing long periods of chronic job stress are likely to encounter physical and health problems reduced productivity or effectiveness, lower levels of satisfaction and organizational commitment.

There are few models which shows that understanding stress and its effect on psychological and physical health. One such model is Deman-Control-Support model developed by Karasek in 1979. It focuses on the interaction between job demands and workers potential control over their work schedule. Anderson (1976) noted that work stress is a consequence of man’s exposure to conflict with his fellow workers, disintegration of work process into isolated routines, shift work environment, automation, rapid technological change and urbanization. In essence this model proposes that a combination of psychological job demands, decision making capacity and social support in the work environment can help in explaining the various consequences of stress (Karasek and Theorell, 1990). This suggests that a combination of high job demand, low decision making capacity and social support mechanization of work processes as well as routine jobs can be sources of occupational stress, which is detrimental to peoples health and productivity at work.

Viewed from a different perspective several authors have identified that stress can occur whenever there is a change in the equilibrium in man-machine-environment interaction which may result in the distribution of generated stress among the components of a production system. since man is known to be the weakest component of the work environment system most common signs of stress are manifested in some notable human responses such as crying smoking, excessive eating, drinking alcohol, fast talking, fear, anxiety, quilt, anger, grief depression, disgust (Lazarus, 1966, Leung et al, 2005; Yip et al., 2005; Wahab, 2010) In Hong Kong for instance high levels of job burnout have been identified among construction professionals. This has threatened their well-being and reduced industrial efficiency and long-term competitiveness of construction professionals in that country (Yip et al, 2005). Similarly stress has also been identified as one of the root causes of low productivity of construction site workers (Dainty et al, 1999; Lingard and Francis, 2004, Wahab, 2010) Moreover recent studies show that construction workers experienced much more stress at their work place than at home and this had negative effects on their health and productivity at work (Wahab, 2010; Halkors and Bousinakis, 2010).

With regards to stress factors in the construction industry, Kenneth (2005) noted that Construction project stress is the manifestation of factors that negatively erode values from the project, and thus make desired goal unattainable. Work overloads, working long hours and role ambiguity are known to be leading causes of stress amongst professionals in construction projects (Sutherland and Davidson, 1989) Statt (1994) asserted that multilevel subcontracting; time pressure; constant worker rotation and unstable work due to temporary contracts can contribute to psychosocial stress among workers. From a gender perspective, Loose more and Waters (2004) found that male professionals in the construction industry suffer more stress in relation to risk taking, disciplinary matters and implications of mistakes, redundancy and career progression than their female counterparts while female professionals suffer stress due to opportunities for personal development, rate of pay, keeping with new ideas, business travel and accumulative effect of minor tasks. Previous studies shows that the general sources of stress among construction sector workers
are quantitative work load, tight time schedule for work, lack of career guidance, poor communication among participants and bureaucracy. Others are inadequate room for innovation, unsatisfactory remuneration, ambiguity of job requirement, inadequate knowledge of project objectives, long working hours, tight schedules and unfavorable working conditions (Leiter, 1991; Ng et al., 2005). Generally speaking the sources of stress among workers in the construction industry as found in contemporary literature can be classified into the five principle groups. Table 1 shows a check list of the different work characteristics and associated stressors. It is evident from this the key sources of stress include (i) personal characteristics related sources (ii) relationship related sources (iii) work-nature and time related sources (iv) organizational policy and position related sources (v) situation/environmentally related sources of stress and others.

### Table 1: Checklist of work characteristics and stressors

<table>
<thead>
<tr>
<th>Working Characteristics</th>
<th>Stressors</th>
</tr>
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<tbody>
<tr>
<td>Organization environment</td>
<td>Task oriented, poor communication, problem solving practices</td>
</tr>
<tr>
<td>Nature of Participants</td>
<td>Low Participation in decision making</td>
</tr>
<tr>
<td>Status of job</td>
<td>job insecurity, ill-defined work, poor pay</td>
</tr>
<tr>
<td>Career development</td>
<td>career uncertainty, stagnation</td>
</tr>
<tr>
<td>Job content</td>
<td>Physical constraints, fragmentations of work</td>
</tr>
<tr>
<td>Work place and work load</td>
<td>inflexible work schedule, work-overload lack of control</td>
</tr>
<tr>
<td>Work time schedule</td>
<td>Time pressure and dead lines Long hours of work</td>
</tr>
<tr>
<td>Training and skill development</td>
<td>In adequate preparation to deal with job, unconcern about skill.</td>
</tr>
<tr>
<td>Interpersonal relationship at work</td>
<td>Physical isolation, non – cooperation among staff, poor relationships.</td>
</tr>
<tr>
<td>Other Problems</td>
<td>insufficient resources, poor working environment, staff shortages</td>
</tr>
</tbody>
</table>

**RESEARCH METHODS**

To enable easy responses and quick progress the survey research method was adopted in this study with target population as construction professionals including architects, builders, civil engineers and quantity surveyors involved in ongoing building projects. The major study areas selected based on the volumes work and number of workers involved in the construction projects in four major cities (Chennai, Hyderabad, Mumbai and Gujarat). A preliminary survey conducted and 21 ongoing building construction projects of various categories were identified. From that 217 building projects were randomly selected for the study from each state representing around 26% of the identified building projects. Random sampling was used in selecting 175 professional for the administration of questionnaire. The cross-sectional survey was conducted between June 2013 to Dec 2013 with questionnaires administrated to the afore mentioned construction projects sites visited. Of the 175 questionnaires distributed 124 questionnaires representing around 65% of the distributed questionnaires were retrieved however seven of them were invalid and not used in the analysis. The different stressors in building projects were broadly classified according to job demand, physical factors, organizational factors and job role factors in line with evidence in literature on stress factors in the construction industry in general (Dainty et al, 1999; Lingard and Francis, 2004; Leung et al., 2005; Wahab, 2010). The questionnaire contained structured closed and open-ended questions. This had both the personal profiles and also work stress perceived among professionals. The closed end questionnaires dealt with work related stress factors, physical and
environmental induced stress as well as stress due to organization structures. Respondents were provided with option of the different stress factors as identified in literature and were asked to identify by ticking the stress factors which according to their opinion contributed to their individual experience of work stress.

The data obtained in the survey was processed and analyzed using the SPSS15 for Windows. Descriptive statistical tools including cross tabulation frequency count and percentages were used in the analysis of the quantitative data obtained from the closed - ended questions while content analysis was used in the analysis of the open-ended questions. Secondary data obtained from the literature review.

RESULT AND DISCUSSION

The profile of the respondents shows that 92% were males as against 8% who were females. This underscores the dominance of male professionals in the building construction industry in general. The result shows that 33%, 21%, 22% and 24% of the respondents were in construction sites in Chennai, Hyderabad, Mumbai and Gujarat respectively. Some 34% of the respondents were builders, 27% civil structural Engineers, 22% Architects and 17% quantity surveyors, with specified qualifications. Table 2 shows the distributions of the respondents according to number of year of site experience. Most of the respondents had over 10 years of experience, 21% had between 6 to 10 years experience and only 11% had less than 6 years of professional site experience. This result shows that perception of work stress is based on personal experience with reasonable years of experience on their professions.

Table 2: Respondents years of experiences at site

<table>
<thead>
<tr>
<th>Site Experience (year)</th>
<th>Architects</th>
<th>Builders</th>
<th>Civil Engineers</th>
<th>Quantity Surveyors</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>13 (11%)</td>
</tr>
<tr>
<td>6-10</td>
<td>14</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>25 (21%)</td>
</tr>
<tr>
<td>11-15</td>
<td>7</td>
<td>10</td>
<td>12</td>
<td>3</td>
<td>32 (27%)</td>
</tr>
<tr>
<td>10 and above</td>
<td>3</td>
<td>21</td>
<td>16</td>
<td>7</td>
<td>47 (41%)</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>42</td>
<td>34</td>
<td>11</td>
<td>117 (100%)</td>
</tr>
</tbody>
</table>

Table 3 reveals the perception of work stress the respondents had on building construction sites. It shows that 93% of them have experienced work stress while 7% responded that they have not experienced work stress. This suggests that the data obtained on stress factors have a reasonable degree of reliability.

Table 3: Perception of work stress among the professionals

<table>
<thead>
<tr>
<th>Question : Work stress on construction jobs</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>109</td>
<td>93</td>
</tr>
<tr>
<td>No</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure 1 Shows the results based on five important work demand and environmental stress factors. The investigation reveals that a high volume of work was the most significant work related stress factor as identified by the respondents. The budget related pressures and time factor are the other two key stress factors. This is consistent with the evidence from the literature study. First is the
nature and complexity of work and second is the high volume of work because of multistory buildings and MNC’S which involves high volume of work in all stages. Subsequently the tight budgets and time frame are the other stress factors as most client want immediate delivery of their building projects in order to maximize profit on their investments.

![Fig1: Work Demand Related stressors](image1)

Similarly the physical work environment stressors were investigated in this study. It reveals that unfavorable working environment is a key source of stress among workers in the construction industry in general. Figure2 shows the respondents perception of the different physical work environment stressors.

![Fig 2: Physical Work environment stressors](image2)

The next study involves in the respondents perception of stress factors due to their professional roles in the building construction process. Figure 3 reveals the result that 79% of the respondents indicated variations in scope of work was a principal source of stress followed by lack of
clarity to 68% Fragmentation of work structure was also an impact and it was a source of stress to 63%. Job insecurity and insufficient skills were the sources of stress to 23% and 21% respectively.

![Fig 3: Job role stress factors](image)

Lastly, the organizational related stress factors were investigated along with eight important characteristics. The result shows that a majority (79%) of the respondents claimed that insufficient job Training followed by poor remuneration (65%). The result also reveals that most building construction and related firms are characterised by poor communication, planning and crisis management mechanisms. The other stressors are due to lack of proper evaluation and monitoring of staff performance on project sites, in adequate staffing and inter - personal conflicts and poor inter - personal relationship.

![Fig 4: Organizational related stressors](image)
CONCLUSION

This Study focused on work stress factors among professional architects builders, civil/structural engineers and quantify surveyors in the building construction industry in India. The findings reveals that the key stress factors among these professionals were high volume work lack of security safety measured on site, variations in the scope of work and fragmentation of building work into specialized fields. Other stress factors related to organizational structure were lack of feedback, poor communication, inadequate staffing and poor remuneration. The findings of this study have a number of implications that require attention in eliminating or reducing stress factors among professionals in the building construction industry in India. The number of mitigation measures may be considered aiming to reduce stress and give comfort environment to construction professionals to carry smooth working conditions. It is important for building contractors to work closely with architects, cost consultant and clients to arrive at realistic budgets and deadlines for job delivery at the design stage of building projects. Workable strategies are needed to improve the level of security and physical working environment of professionals in building construction sites. This calls for deliberate policies by organization in the building industry to improve employees working conditions and evaluate their performance to develop confidence among professionals in coping with challenges of work stress. On the outset, variations in the scope of work while the construction work is in progress can be reduced by engaging appropriate job design practices which ensures minimum variations due to human errors. The involvement of all professionals at the design and construction stages of building projects could ensure best results.

REFERENCES


