

A Study on Influence of Stress on The Performance of Construction Project Managers

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Abstract- Construction is the second largest economic activity in India after agriculture and remains with the continuation of development process. This industry has immense potential in generating large amount of employment. As the physical and mental work load for construction professionals are high, they suffer from stress, especially Construction Project Managers (CPM). Construction Project Manager has the overall responsibility for the successful initiation, planning, design, execution, monitoring, controlling and closure of a project. This study focuses on the behaviour of Construction Project Managers towards the impact of stress and its influence on their performance. An extensive literature suggests that stress can be categorized as job stress, burnout and physiological stress and the performance as task performance, interpersonal performance and organizational performance.

This study is to focus on identifying the Stress factors affecting the performance of Construction project Managers from the various literatures and the interview with the selected respondents. Questionnaire has been prepared with keep in mind about all Construction projects and the questionnaire will be distributed to various Project Managers and contractors in Salem District.

I. INTRODUCTION

GENERAL

Construction projects are very complicated at different stages of work progress. Construction industry is considered as a more stressful industry and professionals working here suffer from stress (CIOB, 2006). Among all construction professionals, Construction project managers are not only responsible to plan, organize and supervise the progress and safety of the project, they should also motivate other employees to complete the project as scheduled. In managing a project, construction project managers will have direct contact with clients, various governmental departments, construction professionals, consultants, contractors, sub contractors and suppliers. Every single decision made by project managers has greater influence on work and worker safety.

The work of construction project managers (CPM's) is often highly stressful, due to time pressures, and due to the uncertainties and the dynamic social environment involved in construction projects (Mei – yung Leung, 2008). Stress is a highly individualistic experience and not uni – dimensional. It is also believed to be a major contributor to absenteeism, low employee morale, high accident and turnover rates as well as increasing medical expenses of many organizations (Wahab, 2010). To optimize the profitability of construction companies and to enhance the performance in challenging environment, stress management is necessary to focus on stress and performance influencing factors.

Construction Project Managers

Due to the complex, demanding, and dynamic nature of construction projects, an indispensable specialist, the C-PM, is appointed to oversee projects from inception to completion. The roles of a C-PM include: analyzing data from designers, subcontractors, and suppliers; designing the best alternative construction methods; planning the construction procedures; forecasting the probable difficulties; monitoring the financial situation of the construction company; arranging the human resources and manpower; motivating the participants and ensuring cost effectiveness; controlling the construction process throughout the design, construction, and operation phases; producing a well-designed construction product, and satisfying various stakeholders' requirements regarding quality, performance, and cost .

The main duties of C-PMs from preconstruction stage to completion stage

- **Pre-construction Stage**

- i) Ascertain the viability of the project in financial, technical and tim terms.
- ii) Prepare master and construction programs for
 - a. the design and construction phases.
- iii) Obtain agreement from clients about the
 - a. building design and specifications.
- iv) Obtain agreement from clients about the
 - a. building design and specifications.

- v) Ensure that the quality, control, quality
 - a. assurance, and testing requirements are
 - b. clearly defined and agreed with clients.
- vi) Select and appoint consultants, contractors,
 - a. sub-contractors.
- vii) Develop the project team.

- **Construction Stage**

- i) Review and monitor construction progress.
- ii) Set up regular progress meetings with designers, contractors, sub- Contractors, consultants, and suppliers.
- iii) Coordinate a diverse range of material, plant, and labor inputs.
- iv) Ensure site safety, security.
- v) Ensure the projects are environmentally friendly.
- vi) Ensure work quality.
- vii) Review, monitor, and measure the project budget and variation orders.
- viii) Keep the project team motivated.

- **Completion Stage**

- i) Ensure the final accounts comply with the contract conditions.
- ii) Ensure all claims have been settled.
- iii) Develop a maintenance program.
- iv) Plan facilities management.

However, uncertainties and instabilities inevitably develop, in terms of human resources, materials, financial situations, site conditions, weather conditions, and so on. Too many resources and too tight a schedule have a significant impact on the profitability of a construction company, as extra monetary resources and tight deadlines generate higher construction costs. Similarly, inadequate resources (manpower, material, or budget) and inappropriate decision points can lead to a failure to complete the project on time, within budget, or to the required standard. In practice, C-PMs often find themselves trying to reconcile incompatible demands and conflicting expectations from people inside and outside the organization.

This induces role conflicts and additional workloads for C-PMs in the industry . In addition, client and design team often change the design at post contract stage. C-PMs need further information and are often obliged to change decisions at the last moment . Thus, stress can often and easily manifest itself as tension, dissatisfaction, reduced effectiveness, and so on.

Stressors of C-PMs

In the construction management process, a C-PM has to plan, organize, and control a construction project with the multi stakeholders in an organization, either in contractor companies or in consultant firms.

The stressors of C-PMs can, thus, generally be categorized into four groups

1. Task stressors
2. Organizational stressors
3. Personal stressors
4. Physical stressors.

Task Stressors

Task stressors usually refer to work overload, role conflict, and role ambiguity in the daily work of C-PMs. Work overload simply means that the job demands are too great for one individual. The position of C-PMs requires them to make various important decisions, carry a great deal of responsibilities, and keep learning new knowledge and technology (e.g., the new project planning software-P3, new construction materials-high strength G100 concrete) , which are all potential causes of work overload of C-PMs. Role conflict occurs when C-PMs are torn between conflicting job demands or doing things that they really do not want to do or do not think are part of the job specification. Role ambiguity means a lack of clarity about the expectations of the work role and about the scope and responsibilities of the job. Both role conflict and role ambiguity can stimulate stress in C-PMs, especially when they do not want to carry out a particular construction project or task or where information about it is limited. Several studies found that role conflict and role ambiguity lead to poor communication and stress.

Organizational Stressors

Organizational stressors refer to the sources of stress coming from and within an organization itself. These stressors include the organizational structure and a career-developing environment. Poor organizational structure covers the presence of bureaucracy and hierarchies, the omnipotence of rules, and unfair treatment by the organization in a construction company . The more complex the organizational structures in terms of rules and bureaucracy, the greater the intrapersonal conflict . It would also inhibit one's personal creativity, which is, in fact, an essential element in the role of C-PMs. Career-developing environment indicates the culture of an organization, the degree of participation in the decision making process, and the instability of the job of C-PMs .

Employees who have greater opportunities to participate in decision making can experience higher feelings of self esteem and job satisfaction , and lower feelings of stress . Therefore, a good career developing environment is necessary if the stress of C-PMs is to be relieved.

Personal Stressors

Personal stressors include both intrapersonal and interpersonal stressors. interpersonal stressors usually refer to an individual's personal behavior (Type A behavior). Individuals with Type A behavior are considered to be more competitive, aggressive, hasty, time driven, impatient, insecure of status, generally hostile, and incapable of relaxing . On the other hand, good interpersonal relationships at work have been recognized as key abilities for C-PMs to achieve good performance. Workgroup cooperation signifies close and harmonic interpersonal relationships between C-PMs and their subordinates, colleagues, and supervisors. However, a poor workgroup relationship leads to lower job satisfaction and higher psychological stress. Hence, workgroup cooperation is definitely important in helping C-PMs to relieve their stress appropriately.

Physical Stressors

Physical stressors refer to the environmental sources of stress existing in either the work or the home environment of C-PMs. On the construction site, C-PMs are usually obliged to work in poor physical conditions, such as extremely high or low room temperatures, inappropriate lighting, a lack of privacy, and so on. Sound is generally considered a physical entity, but noise on site is a psychological concept defined as unwanted sound. Excessive noise can cause various health problems (e.g., hearing loss and high blood pressure) , and can negatively affect psychosocial relationships and work performance. In addition, temperature influences thermal comfort. Both temperature and lighting in the working office affect health, subjective feelings, and stress levels, and consequently influence the work performance and social behaviors of C-PMs in the construction management process. A poor home environment refers to poor functioning at home or in other non job situations. Apart from the work environment, the home environment of C-PMs should also be considered, as a poor home environment can influence the personal health and stress of C-PMs directly.

NEED FOR STRESS AND PERFORMANCE MANAGEMENT

Stressful situations can lead to a number of undesirable consequences including decrement in

performance. Stress not only affects personal psychology, but influences the construction project, interpersonal relationships and organizational relationship (Leung et al, 2005).

Despite having too much stress (over - stress) can result in burn – out, too little stress (Under - stress) can also affect the performance of the construction project managers in rust – out. Based on Yerkes – Dodson Law (Yerkes and Dodson, 1908), various research studies (Fisher, 1986; Hebb, 1995) suggest that there is an inverted “U” – shaped relationship between the degree of stress and level of performance. There is an optimum level of pressure at which people work most effectively.

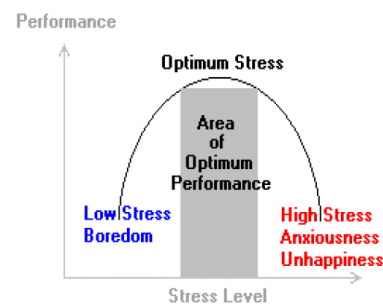


Figure 1. Relationship between stress and performance

Since stress is an individual perceived quality depending on the human behavior. It is difficult to determine the thresholds where a stressor changes from being under loaded to an optimal or vice versa (Cox 1983). Each person, thus, has different reactions to stress and the impact of stress over the performance of construction project managers.

NEED FOR STUDY

The Construction Project Managers Carry out one of the toughest and hardest jobs in the Construction process. Site Management is Characterized by a high work overload, long working hours and Many conflicting parties to deal with including the management, the Subcontractors , the Subordinates, the client , etc. This trait of the job makes it very prone to stress. Stress can have serious implication for both the Individual's health and Performance. This study is to focus on identifying the Stress factors affecting the performance of Construction project Managers and how to reduce these factors in field.

OBJECTIVES

Construction is a dynamic, competitive, ever changing and challenging industry. So the professionals working here suffer from stress, especially construction project managers. The main aim of this study is to analyze the

impact of stress on the performance of Construction Project Manager's.

The following steps are carried out to achieve the main objective.

- To conduct a survey among construction project managers and identify the stress and performance of Construction Project manager's.
- To analyze the Construction Project Manager's performance level from the obtained data.
- To formulate a linear relationship between stress and performance of Construction Project Manager's.

METHODOLOGY

- Review the relevant literature regarding formwork selection in construction
- Form the clear methodology about the project.
- Design of questionnaires with the help of literature review, field people.
- Conduct the questionnaire survey and analysis the data Using RII Method.
- Conclusion.

RELATIVE IMPORTANCE INDEX (RII) ANALYSIS

The data was analyzed based on the data collected from the Licensed Building Surveyor (respondents). The survey has completed with 30 and data has been analyzed and ranked using Relative Importance Index (RII) method.

Relative Importance Index (RII) analysis was employed to measure the Likert (ordinal) importance scale. In this study, five scale rating was used and the weight was give as below:

- 5 – Very High
- 4 – High
- 3 – Moderate
- 2 – Negligible
- 1 – Not Much

The RII was calculated by using the formula as below

$$RII = \frac{\sum w}{A \cdot N} \quad \text{Where, - Equation (3.1)}$$

w = weight of scale; A = highest weight ('5' in this case);

N = total number of respondent

From the analysis of data the following results were obtained and ranked according to the rank indexes

II. FACTORS IDENTIFICATION

Demographic Factors

The factors such as age, experience, working hours, gender influences stress at a greater level. Aging results in a decreased resistance to multiple forms of stress, as well as an increased susceptibility to numerous diseases (Kevin.C.Kregel, 2006). Women self-report more stressors and distress than men and consistently report more physical health symptoms, but men are more stress responsive and die younger (Robert-Paul Juster, 2010). Variety of factors contribute to workplace stress such as negative workload, isolation, extensive hours worked, toxic work environments, lack of autonomy, difficult relationships among co – workers and management, management bullying, harassment and lack of opportunities or motivation to advancement in one's skill level.

Factors Influencing Job Stress

Job stress has been defined as the harmful physical and emotional response that occurs when the requirements of the job do not match the capabilities, resources or need of the workers. The factors which influence job stress are

• Work nature

The work environment contributes to employee health. A sick environment can threaten health through biological and psychological pathways.

• Work time

Time is a major constraint. Human brain will work more effectively for some hours and search time to take rest. If enough time is not given to workers to take rest, works get accumulated and stress level increases.

• Organizational policy

An organization's policy towards job condition of an employee, their contribution towards employee's career development influence stress.

• Organization position

Employee's position in an organization has greater influence towards stress. As the position goes up, responsibilities increase. Obviously this results in more stress.

• Personal factors

Personal factors such as age, family conditions, health of employee contributes varied stress levels.

- **Factors Influencing Burnout**

Burnout is a psychological withdrawal from work in response to excessive stress or dissatisfaction. It reduces the professional efficacy. Factors that influence Burnout are

- **Relationship conflicts**

Any organization or workplace is full of different people with varying goals, desires and agendas, and conflict between co – workers can easily develop. If conflict is not resolved, it can prove damaging to the employees involved and the company's bottom line.

- **Emotional stress**

The consequences of emotional states in the workplace, both behavioral and attitudinal, have substantial significance for individuals, groups, and society.

- **Chronic stress**

A state of prolonged tension from internal or external stressors, which may cause various physical manifestations, for example asthma, back pain, fatigue, headaches, irritable bowel syndrome, ulcers, and suppress in the immune system influences stress to a greater extent.

Factors Influencing Physiological Stress

Physiological stress appears in the form of headaches, back pain, and loss of appetite. The factors which are considered to cause physiological stress are as follows:

- **Exposure condition**

When exposed to severe climatic conditions, it is obvious that health condition of human affects. If project managers are tented to work regularly in these issues stress will be developed.

- **Safety measures**

It is the prime responsibility of project managers to ensure safety in work environment. The project managers should work and train the employee to attain maximum safety in site.

- **Health condition**

An unhealthy person cannot do a work sincerely and he will not be fit enough to achieve the task. If a person is forced to do a work in this situation, he undergoes physiological stress.

Factors Influencing Task Performance

The factors influencing task performance in construction project managers are

- **Duration**

Time is an important factor to be considered in every project. It is necessary to complete project in stipulated time. If project is not completed in time, project managers will hurry up the works which influences the performance.

- **Quality**

Quality control and Quality assurance should be there in every aspect of Work. Sometimes if quality is not achieved, it may result in failure of the project. The project managers who have responsibility in achieving good quality may get frustrated.

- **Cost**

A project should be completed as budgeted. If it is not achieved, financial condition of the project will be affected. This influences stress and affects performance among project managers.

Factors Influencing Interpersonal Performance

Factors considered to influence Interpersonal performance of project managers are inter – relationship between the project managers, supervisors and subordinates. From top level management to bottom line of the concern, a good relationship should be established. So that everyone can share their ideas and avoid conflicts, thereby influencing performance.

Factors Influencing Organizational Performance

Withdrawal behavior and Absenteeism towards work are the major factors which influences Organizations performance and financial condition. This involves top management involvement in encouraging all employees of the organization to improve performance.

III. CONCLUSION

Construction Project Managers are considered to perform key role in an organization, who are responsible to complete the company's project in a specific budget within a certain period of time. It is very clear that construction project managers of any construction will undergo intense stress in their work environment. This study "A Study on Influence of Stress on the Performance of Construction Project Manager's", provides a detailed investigation into stress response and its impact towards performance.

- The frequency of response rate of Project Manager's reveals that, Job stress is maximum due to nature of work, time, and organizational policy. Burnout among Construction Project Managers is due to relationship conflicts, emotional stress, and chronic stress. Exposure condition, safety measures and health imparts more contribution towards physiological stress.
- It is evident from the RII values and Rank that most of the Construction Project Manager's suffer from job stress and physiological stress.

To reduce Job Stress

- Preference for Task Performance and Organizational Performance
- Physiological Condition of the Employee should be Considered
- Relationship between the employees should be Maintained.

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