A FRAMEWORK TO MITIGATE THE OCCUPATIONAL STRESS FACED BY THE CONSTRUCTION PROJECT MANAGERS IN PUBLIC SECTOR ORGANIZATIONS IN SRI LANKA

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Master of Science in Project Management

Department of Building Economics

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Dissertation submitted in partial fulfillment of the requirements for the Degree of Master of Science in Project Management

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DECLARATION

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Dr. (Mrs.) Pournima Sridarran Date

Dissertation supervisor / Senior Lecturer,

Department of Building Economics,

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ABSTRACT

A framework to mitigate the occupational stress faced by the Construction Project Managers in public sector organizations in Sri Lanka

The construction industry is a dynamic and a complicated business. The most of construction experts suffer from stress in order to cope with the time, cost and quality expectations of both internal and external stakeholders. Project executives, in particular, are frequently the victims of this excessive stress. Extensive research has shown that it is possible to classify stressors into distinct levels. The aim of this research was to a framework to mitigate the occupational stress faced by the Construction Project Managers in public sector organizations in Sri Lanka.

The study's requirements were achieved using a mixed research approach that includes quantitative data gathering through a questionnaire survey and qualitative data collection through semi-structured interviews with construction management experts. The SPSS program was used to analyse data collected through a questionnaire survey in order to determine the relationship between stress factors and their impact on Construction Project Managers' performance.

The outcomes of this study have revealed that the mitigation of the occupational stress amongst the Construction Project Managers of public sector organizations in Sri Lanka can conduct to get more enhanced performance by verifying all the Construction Project Managers are employing the solutions that have been suggested by the experts of the semi-structured interviews. "Discuss with management" and "Try to avoid and adjust" were two key occupational stress mitigation strategies. Despite that, findings have also revealed, that there is a negative relation among the workload and work place related stress causes and organisation related stress causes with the organizational performance of the Construction Project Managers. However, the relationship that lies with the working time related stress causes and organizational performance of the Construction Project Managers is positive. Moreover, the solutions that have obtained through the semi- structured interviews have also provided the base for the developed frame work.

Keywords: *Construction Industry, Public Sector, Construction Project Managers, Occupational Stress, Performance*

DEDICATION

To

The strength behind me

The motivation behind me

My Loving Husband & Son

ACKNOWLEDGMENT

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CIDA	Construction Industry Development Authority
CCI	Chamber of Construction Industry
CPM	Construction Project Manager
GDP	Gross Domestic Product
GNI	Gross National Income
CBSL	Central Bank of Sri Lanka
LVI	Land Valuation Indicators
COVID-19	Coronavirus Disease 2019
SPSS	Statistical Package for the Social Sciences

CHAPTER 1

INTRODUCTION

1.1 Chapter Introduction

This chapter is delineated to deliver an introduction to produce a framework to mitigate the occupational stress faced by the Construction Project Managers (CPMs) in public sector organizations in Sri Lanka. This will allow readers to comprehend the context of the research question, the recognition of the dilemma on which the investigation is built, and the objectives set out to attain solutions via this investigation.

1.2 Research Background

The construction sector is a dynamic section of the economizing, that includes a diverse spectrum of stakeholder groups and has wide relationships with other areas of economic action such as producing and energy consumption, financial services, raw material, machinery, and workforce (Stasiak-Betlejewska and Potkány, 2015). This implies that the construction sector accounts for the majority of almost any nation's economic savings and is essential to persistent economic growth and development, particularly in emerging countries (Ametepey, Aigbavboa and Ansah, 2015). As an important sector, the construction sector has unique characteristics that must be recognized for it to function properly and efficiently (Ofori, 2015). Past research completed through the world have predicted that the construction sector would carry on with to develop fixedly in the coming decade (De Silva, 2021). However, the construction sector has been recorded to confront several issues and obstacles (Silva, Rajakaruna and Bandara, 2008). These issues are exacerbated in developing nations by a common state of socioeconomic stress, institutional weaknesses, chronic source shortages and general incapability to cope with the major issues due to insufficient investment proposals and shifting public sector priorities as a result of numerous socio-cultural, economic, and political barriers (Álvarez Jaramillo, Zartha Sossa and Orozco Mendoza, 2019).

Over 300,000 businesses in the sector employ over 2 million employees in a variety of jobs, including suppliers, professional designers, builders, producers, and others that supply goods and services to the industry (Towey, 2012). Construction projects are seldom without complications due to their complicated and dynamic character, as well as the often combative attitude of their contributors (Ng, Skitmore and Leung, 2005). Furthermore, as a high labor incentive sector, to maintain the job security of employees, most of the firms demand their employees to tackle their responsibilities properly, which has forced employees to work excessive shifts, resulting in insufficient sleep, weariness, tiredness, and low job satisfaction (Edralin, 2012). Construction companies are engaged in a massive number of local and international projects, putting a lot of burden on project managers and putting them under a lot of stress (Wu *et al.*, 2018). Construction Project Managers (CPMs) are constantly confronted with classic obstacles such as cost, schedule, and quality, as well as pressing safety and environmental concerns (Zhao, Hwang and Lee, 2016). In reality, CPMs manage the actions of all construction stakeholders to guarantee that individuals perform their assigned duties promptly, resulting in a more productive project team (Wu, Hu and Zheng, 2019). CPMs are inevitably subjected to a tremendous level of role stress in their employment in this situation (Amoah and Marimon, 2021). Job burnout has been identified as a common reaction to the outcome of job stress, which can have a negative effect on a CPM's output, as a consequence, CPMs experience tremendous psychological stress and have a strong desire to leave (Lee and Ashforth, 1993). Pinto, Patanakul and Pinto (2016) also found that the risk experienced by building industrial practitioners and project managers is significantly greater than that encountered by managers of other types of work and personnel in other job categories.

As discussed, individuals experience stress as a negative reaction to excessive pressures and demands imposed on themselves, and this is due to a lack of resources to handle these demands and expectations (Mental well-being at work, 2022). Individuals experience stress as a negative reaction to excessive demands and pressures imposed on themselves, and this is due to a lack of resources to manage these demands and expectations (Michie, 2002). Further, he states that

stress is a physical and psychological mention that occurs when a person's energies are insufficient to cope with the demands and pressures of a circumstance. Occupational stress is defined as stress that affects employees in the workplace and/or in their chosen profession as a result of overwhelming work demands and expectations that individuals do not have the means to deal with (Omeje *et al.*, 2021). Moreover, this type of stress has been linked to a higher frequency of medical leave, demotivation, higher turnover rates, and a rise in occupational errors. Even though occupational stress has been identified as a major threat to the performance level of the construction professional by many scholars (Ng, Skitmore and Leung, 2005; Ajayi, Jones and Unuigbe, 2019; Omeje *et al.*, 2021), there have been no studies conducted on the effect of occupational stress on the performance of CPMs' in public sector construction organizations in Sri Lanka. The public construction sector has a significant effect on global economic growth. A country's industrialization, social progress, freight transportation, urbanization and sustainable development are all ensured by adequate buildings and facilities built by the construction sector (Alaloul *et al.*, 2021). The leading bodies and approved members of the domestic construction sector are the Chamber of Construction Industry Sri Lanka (CCI) and Institute of Construction Industry Development Authority (CIDA). Many state-owned building companies and private construction companies, on the other hand, are registered under CIDA (Perera and Dewagoda, 2020). Project managers for construction projects undertaken by the above-mentioned public sector construction organizations in Sri Lanka are in the area of current research. Depending upon the significance of the public sector institutions towards promoting economic growth in Sri Lanka, it is of utmost importance to identify the effect of occupational stress on the performance of CPMs' in public sector construction organizations, for the development of the underdeveloped nations (Thenuwara, 2018).

1.3 Problem Statement

Due to labor stress connected with heavy workloads, timings, and associated deadlines, the construction sector is recognized to be an unpleasant sector for employees across the world (Lingard, Francis and Turner, 2012). Workplace stress

has been shown to have a negative influence on productivity and frequently leads to poorer stages of performance among construction personnel (Francis *et al.*, 2013). Nevertheless, the construction sector specialists overlooked this particular issue. Therefore, achieving a balance amongst job and family life is becoming increasingly challenging since many employers want employees to work longer hours and complete heavier workloads, which necessitates trade-offs from many employees, in the construction sector throughout the world (Oyewobi *et al.*, 2019).

Love, Edwards and Irani (2009) stated that the degree of stress incentive encountered by CPMs' is considerably larger than that of managers in other sectors and other construction professions because of the dynamic type of the construction industry. Therefore, it is clearly visible that stresses that occur in one profession drastically differ from another profession. Hence, as the key responsible personnel of a construction project, CPM has to undergo depression, stress or anxiety directly because of the hectic working culture of the construction projects (Senaratne and Rasagopalasingam, 2017).

As per the Gimhani and Perera (2021), multiple investigations on stress have been undertaken in the construction industry in various situations throughout the last decade but none of them has specifically addressed the stress level that has been caused to the CPMs' who are working in the public sector organizations in Sri Lanka. In most of situations, enormously large government sector projects run with very limited budget and time. These public projects are often subjected to changes and accelerations according to political influences and government policy changes (Gimhani and Perera, 2021). Therefore, the pressure that comes towards a CPM who works for a public sector project is significant compared to a private sector CPM. The construction sector is well-known for its high - stress environment, which can result in a variety of health problems including depression, tiredness, pressure, and heart palpitations (Doran *et al.*, 2015). Despite that, the health issues that arise as a consequence of the occupational stress may result in poor job performance among the CPMs (Al-Omari and Okasheh, 2017). Hence, as a major sector that contributes to the development of the Sri Lankan economy, it is significantly important to investigate the perspective of the CPMs' who are working

in the public sector due to the significant stress that is daily occurring compared to the private sector projects and their effect on performance level.

1.4 Aim

The aim of this study is to mitigate the occupational stress faced by the Construction Project Managers in public sector organizations in Sri Lanka.

1.5 Objectives

1. Identify causes for occupational stress of Construction Project Managers in public sector organizations in Sri Lanka.
2. Identify the relationship between the occupational stress causes and their impacts on the performance of the Construction Project Managers in public sector organizations in Sri Lanka.
3. Analyse the most critical occupational stress causes on affecting the performance of the Construction Project Managers in public sector organizations in Sri Lanka.
4. Propose solutions to mitigate occupational stress faced by Construction Project Managers in public sector organizations in Sri Lanka.
5. Develop a framework enables the management of occupational stress faced by the Construction Project Managers in public sector organizations in Sri Lanka.

1.6 Research Methodology

As per the claims made by Johnson and Onwuegbuzie (2004), this research utilized a mixed approach that included both quantitative and qualitative methodologies due to the enormous benefits that consist of the mixed approach. Under the mixed research approach, two distinct techniques of data collection have been utilized as follows.

1.6.1 Literature Review

A widespread literature analysis was carried out to distinguish occupational stress-related causes of Construction Project Managers in public sector organizations in

Sri Lanka. A range of journals, conference papers, books, articles, thesis, and dissertations on occupational stress in the construction sector was used to grow the literature synthesis. The first objective was covered through this literature synthesis.

1.6.2 Questionnaire Survey

According to Naoum (2007) questionnaire survey is most suited for descriptive and analytical studies to discover the details, beliefs and views on what is happening. Therefore, in order to assess the relationship between the occupational stress-related causes and their impacts on the performance of the CPMs it is well suited. Hence questionnaires were distributed to CPMs' who were involved in public sector construction developments for the realization of the second and the third objectives of this study.

1.6.3 Semi - Structured Interviews

Semi-structured interviews are excellent for a range of important activities, especially when some of the open-ended questions need follow-up questions (Adams, 2015). Six (06) experts, who are practicing in the public sector projects in Sri Lankan construction industry, were interviewed for the attainment of solutions to mitigate occupational stress faced by Constriction Project Managers. Because the interviews were performed using a semi-structured guideline, the experts were expected to provide their feedback throughout the interviews.

1.7 Limitations and Scope of the Research

This study has been intended to limit the CPMs, who have experience in handling projects that are above Rs.100 million costs in the Sri Lankan construction industry. Because, due to the political influences and lack of resources in the public sector projects, CPMs who are dealing with public sector projects are considered to be exposed to much more stress compared to private sector CPMs. Hence, this study has been limited to the CPMs, who have experience in working under public sector building projects and due to the huge, easy accessibility in data further study has been limited to the building projects. However, the overall scope of this study is limited to the CPMs, who have experience in working under public sector building

projects that are above Rs.100 million project cost in the Sri Lankan construction industry.

1.8 Chapter Breakdown

1.8.1. Chapter 1 – Introduction

This chapter describes the research's background, problem, aim, and objectives, methodology in a nutshell, limitations and scope, and design of the study.

1.8.2. Chapter 2 – Literature Synthesis

The purpose of this section is to identify the concept of occupational stress by reviewing the existing literature and organizational performance with related to the CPMs in public sector construction organizations.

1.8.3. Chapter 3 – Research Methodology

The methodology used in this study is described in this chapter, which includes the research approach, data collection methods, and data analysis tools.

1.8.4. Chapter 4 – Research Findings and Analysis

The findings of the research and the analysis of the data are presented in this chapter.

1.8.5. Chapter 5 – Conclusion and Recommendation

This chapter summarizes the achievements of the research aim and objectives, as well as providing recommendations and directions for future study.

CHAPTER 2
LITERATURE SYNTHESIS

2.1 Chapter Introduction

This chapter describes all related literature using published and accepted materials such as books, journals, articles, conference papers and other academically approved documents to support in the technique of accomplishing the aim and objectives. As a result, by objectively analysing both international and local literature references, this chapter attempts to fill in the gaps in previous information. In addition, literature on selected topics has been presented, such as the Sri Lankan construction industry, performance of construction industry, performance of the CPMs, concept of stress, occupational stress, and its impacts. Furthermore, the development of hypothesis is discussed as the workload and workspace related stress, organization related stress, and working time related stress on organizational performance.

2.2 Construction Industry and Performance

The output is defined as "the degree of success of a certain undertaking or effort" and refers to the target line or aims that resolve project scope (Chitkara, 2005). Accordingly, the project management perspective is about satisfying the expectations and hopes of a project or main stakeholder and inevitably includes introducing time, expense and efficiency on three major project components. In today's extremely dynamic and undefined market scenario, it has been seen that the owner, who is the key investor, needs quicker project completion from the early start of the development phase, the inevitability of success in terms of expense, efficiency and time, value for money for expenditure, minimum risk exposure and original design and price or cost and cost validation (Project Management Institute, 2004).

Rajan, Premkumar, Rajkumar and Richard (2005) stated that the construction process necessitates several physical activities that are taxing for industry personnel. These physical operations are typically performed by labours, which are

at the bottom of the pyramid of workers who contribute to the construction of the structures described.

Organisational performance has defined as the ability to deliver the work of the organisation through strong administration, strong government, and sustained dedication to achieving results. The actual results or results of an organisation are expected results or goals of corporate performance or measured with objectives organisational performance includes the exact result or results of an organisation, measured against expected results or goals or objectives. Also, performance is the cumulative effect of all the organisation's operations (Centre for Construction Strategic Studies, 1998).

As per the study of Wickremasinghe (2004), the Organisational performance is connected with organisational effectiveness and efficiency. Effectiveness is defined as the proper methods of execution, while efficiency is the execution of a process in the corrected manner. Efficiency means doing the thing using proper execution methods. Effectiveness means doing the right things; goal attainment.

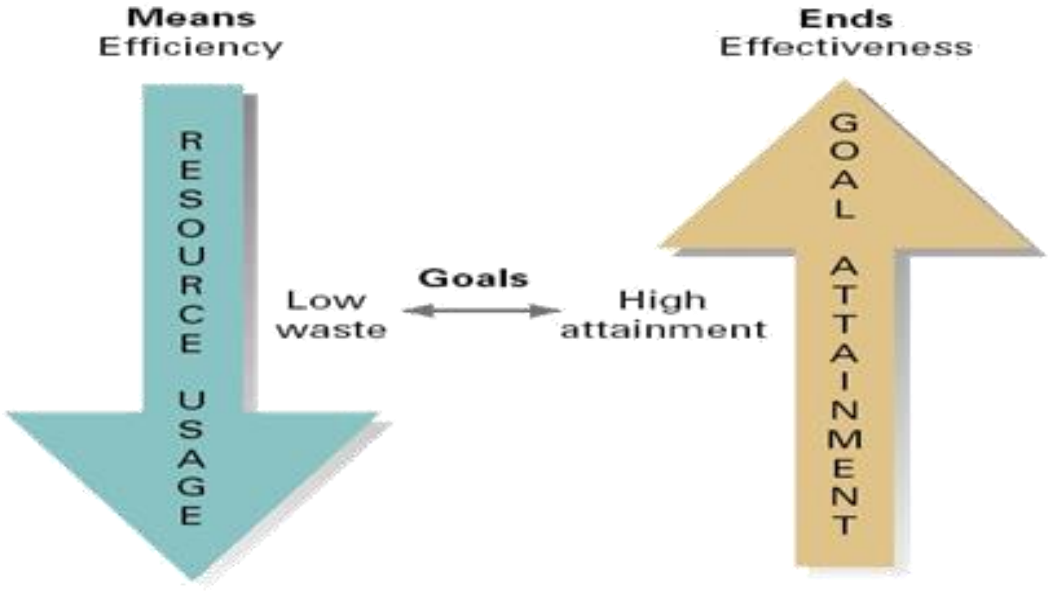

Figure 2.1: Efficiency and Effectiveness

Source: Adapted from (Wickremasinghe, 2004)

As per the Figure 2.1, the study elaborated that higher performance can be achieved by reducing the usage of resource and lowering the wastage and increasing goal attainment.

At the industry level, performance can be measured under different levels, including businesses, organisations, operations and project-based industries. Also, productivity is one of the most common performance measures. Productivity has been well-defined as a ratio among the volume of output and the amount of input use (Ekundayo, 2014). This definition of productivity is based on the market prices of products and inputs. The construction industry has been undermining productivity and productivity has been the entertainment industry for decades due to a recession. It is difficult to quantify the agility of the construction sector because there are problems with the service sector related to measuring the differences in the quality changes. Moreover, Ekundayo (2014) stated, that it is difficult to define the outcome line, differentiate it from the factor and measure it. These problems apply to repairs as well, because the features of their services are very clear compared to other construction works.

2.2.1 Performance of the Construction Project Manager (CPM)

The project managers coordinate the activities of each project team participant in protecting to realise their envisioned responsibilities within a suitable time frame, which in turn contributed to the more efficient project team into the project manager being a leader if project team were supporters of a group (Derek and Yue, 2002). The project manager is answerable and assigned for apportioning the required project resources, motivating as well as monitoring of actual physical work progress and inducing the project team participant (Campbell and Chunxue, 2008).

According to the study of Wickremasinghe (2004) Project managers are very concerned with obtaining the most outputs from the smallest number of inputs. Reason for that, they deal with the scare capitals. Basic resources are workers, materials and equipment for any organisation. Project managers try to get the maximum output with well-organised of resources. Therefore, doing thing right that is not left-overring capitals called as efficiency. Project managers are worried about

being effective, finalising activities that organisational goals are achieved. Efficiency is defined as doing the right things. Organisational performance mainly encompasses their specific areas of organisational outputs. These are financial performance, market performance, customer satisfaction, productivity customer satisfaction, public responsibility, personnel development, and employee attitudes (Wickremasinghe, 2004).

Cooke and Davies (2001) described that performance of the project manager pivots on the capability to guide and monitor the procedures and systems which make up the project. As per the finding of Therese (2005), argument based on their research that conventionally the achievement of a project indirectly conjectures to suitable performance of the project manager with the accent on the success of time, cost and quality objectives. However, there are various other features that can be practised to scale the performance of a CPM within the combination of the current construction industry.

Natasha and Love (2004) stated, that job performance can be associated to the openness and willingness to attempt and realise innovative characteristics of the job, which in turn carried around an increase in person's output. According to Chan and Leung (2009), job performance has been linked to the significance of social upright within the position and to a certain degree of this opinion is like to previous views put forth and Loosemore and Waters (2004) highlighted a positive relationship among job performance and the status of the position itself. This positive relationship is brought on by the benefits and perks generally linked with a high standing job such as a more adaptable working condition, a higher remuneration and an occupation which is less dependent on physical labour.

However, for many workers, performance is an aspect of the job, such as productivity or quality of work. The role of CPM needs the skills required to improve the quality of work and agility of the construction and to enhance individuals and organisational performance in the construction industry. Furthermore, "performance of construction project managers in public sector

organizations in Sri Lanka" is referred to as "organizational performance" in this study.

2.2.2 Task Performance

According to the finding of CIOB (2006), there are three basic requirements for assessing the job success of CPMs they manage, such as time, expense and efficiency of construction projects. In order to determine the overall success of the building, the full decisions taken by the CPM concerning the management of the project period and the reliability of the scheduled timetable (time), the control of project spending (cost) and the outcomes of projects in terms of achieving client requirements (quality) are necessary. According to Windapo (2018), the major factors for measuring construction performance are time, money, and quality (Iron triangle). The key project objectives to consider while choosing the right construction method are a shorter construction time, a lower cost, and a higher quality product.

2.2.3 Individual Performance

Individual job performance is a popular issue in management, occupational health, and work and organizational psychology. (Koopmans et al., 2011). According to the finding of Opatha (2002), job performance can be stated how well the worker performs the duties and responsibilities of the profession. Velnampy (2006) highlighted that performance is an act of two variables, Capacities for work (C) and Motivation (M). Worker performance is contextual behaviours and task of workers. Contextual behaviour is one's relationship knowledge and expertise that supports the larger social environment, whereas task behaviour is related with servicing and maintaining an organization's technical core. (Yiing and Ahmad, 2009).

As per the study of Opatha (2002), results-based data and traits behaviours are the main variables of worker performance as well. Furthermore, trait-based data recognises a subjective character of the worker’s actions is procedures, that the worker can produce worker entertainment in relation to the profession outcomes. Kottawatta (2007) emphasised, that variables can be divided as trait-based,

behaviour-based and results-based information. Job knowledge, cooperation, dependability, interpersonal relations, and communication skills are more often trait-based variables; behaviour-based variables include planning, organizing, punctuality, attendance, and speed; and results-based variables include efficiency achievements, on-time completion, and quality of work.

According to the findings of researchers, performance indices are selected for calibration based on time, cost and quality factors. High budget estimates and multiple calculations and errors as cost factors were taken. Timely completion of a given task and inefficiency in programming are factors that measure performance. Effective scheduling and customer satisfaction indicate performance in quality counting.

2.2.4 Sri Lankan Construction Industry

Oladinrin et al. (2014) stated that the construction industry generates a significant component of the economy in the nation. It elaborates more difficulties procedure and broad connections to above hundreds of upstream and downstream sectors. According to Liu and Liung (2002), construction developments have been uncommonly progressed naturally. They are multifaceted and dynamic in nature, including the challenging posture of its participant's consequences in the incidence of frequent main problems. The construction sector generates roughly 7% of Sri Lanka's Gross National Income (GNI) (Annual Report 2019, Central Bank of Sri Lanka). The most employment contribution in Sri Lanka is identified as construction industry.

According to Sri Lanka – Construction (2022), the Colombo District Land Valuation Indicator (LVI) of the Central Bank of Sri Lanka (CBSL) showed an overall growth rate of 6.8% in the first half of 2021. Since 2010, there has been significant growth in high-end residential, commercial space, hotel and resort construction, and infrastructural development. The construction industry is expected to earn $4.3 billion in annual revenue per year. Many local and multinational companies work in the construction industry.

Table 2.1: High Construction Industry Contributors

Name of Construction Industry
Urban Development
Public and Private Housing
Roads, Bridges and Highways
Airports, Ports and Fisheries Harbours
Water Supply and Sewerage
Land Development
Educational and Training
Telecommunication
Power and Energy Development
Tourism and Leisure Industry
Manufacturing Industry
Health Services
Sport and others Social Development Activities
Irrigation and Agriculture
Land Drainage
Coast Conservation
Flood Control and Disaster Management
Defence and National Security

Source: Adapted from (Way Forward CIDA Report, 2020)

According to the Construction Industry Development Authority's study (CIDA), the construction industry describes majoring several sectors. Table 2.2 elaborates the high construction industry contributors in Sri Lankan construction industry (Way Forward CIDA Report, 2020).

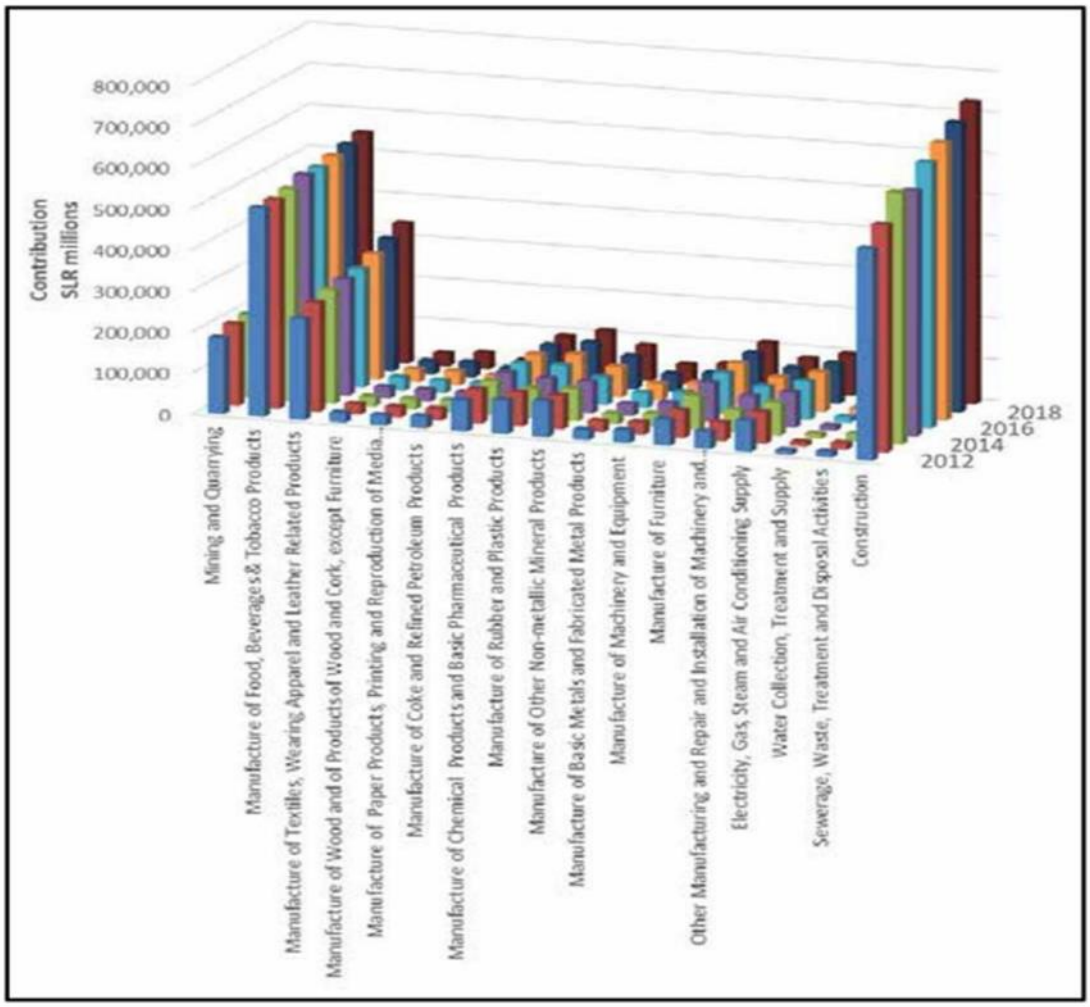

Figure 2.2: Comparison of Contributions to the national economy from each industry

Source: Adapted from (Central Bank, 2019)

Central Bank of Sri Lanka's annual report released in 2019, depits that the 17 industries have been designated as contributing to the national economy. According to the Figure 2.2, the construction industry is the one that contributes the most among them.

In the first quarter of 2020, the global Covid-19 epidemic had a negative effect on overall industrial activity, with a 7.8% reduction. The construction sector has decreased by 16%. The post-COVID-19 economic crisis has decreased real estate and construction sector trust, but observers expect that when the economy recovers, demand will rise, and low pricing may give opportunities for investors.

2.3 Concept of Stress

“Stress” prepares the individual to early find of something disagreeable, terrifying and beyond the assistance of persons. Anyhow, the word “stress” can be practised generally in day-to-day life (Treven and Potocan, 2005). Stress is described as a mental and physical imbalance caused by a mismatch between situational demands and an individual's willingness and desire to satisfy certain demands (Gupta, 2013). Leung, Chan and Yu (2012) expressed, a "flight or combat reaction involving the release of adrenaline to react to stress" is the natural chemical response of the human body to a danger or demand. Furthermore, “Stress” cannot be touched and not tangible. It makes a multifaceted phenomenon (Ekundayo, 2014).

According to the finding of Looker and Gregson (1993) and Treven and Potocan (2005), nobody is protected totally against to the “stress”. It can act anyone since it is a vital and important share of our lives. Stress is an unavoidable consequence of our relations' continuously changing situations; we must adjust. Mihaela (2010) stated, that the organisations have programmers specially planned to support mental and physical fitness of the employees to avoid and reduce the difficulties of occupational stressors.

As per Tijani, Jin and Osei-kyei (2020), stressors are possible threats to a worker's psychological or physical well-being, such as social support, job analysis, and poor organizational management. Organizational pressures are a result of organizational dynamics, which result in a range of stressors that have a detrimental influence on mental health. Pressures include domestic conflict, a lack of organizational assistance, professional guidance and a poor organizational body. Stress is characterized as “a dynamic pattern of emotional states, physiological responses and related thoughts in response to external demands” (Greenberg and Baron,

2000). Accordingly, the demands coming from the location referred to as stressors. Stressors are the stresses of one's relationships, job responsibilities, social duties and intimate relationships between workers with one's spouse and baby. The third word applies to the cumulative consequences of stress manifested as variations from normal behavioural behaviours or stress linked to stress and stressors, thereby constituting a meaning for stressful procedures to be revealed.

2.3.1 Definition of Stress

Rajan, Premkumar, Rajkumar and Richard (2005) described, that stress represents challenges that stimulate us and keep us on our toes, and without which many people's lives would become uninteresting and finally unlivable. Stress describes certain situations at the other end of the spectrum in which people have demands made on them that they cannot satisfy physically or mentally, leading to a failure at one or another of these stages. Stress may then be represented as a mixture of a life saver and a life killer at the other end of the continuum.

Stress is a fluid situation in which a person faces what the individual criteria and what consequences are expected to be both relevant and unpredictable in a demand, incentive or resource connected with them. The involvement of threats or opportunities that persons observe as important and also observe they had contract or handle with successfully (Robbins, 2015).

Stress is defined by Loosemore, Phua, Teo, and Dunn (2012) as an unwanted reaction people have to excessive pressure or other types of demands placed on them, as well as a state created by a change in the environment that is regarded as demanding, unpleasant, or harmful to a person's dynamic balance or equilibrium.

2.3.2 Types of Stresses

Stress is not a corrupt or bad thing. A definite quantity is required without some pressures to encourage somebody; natural life would become boring without intention (Wahab, 2010). According to Cohen (2002), how a person responds to stress be subject to whether one understands they self in manage of a condition or devastated by it. Occupational stress is described as an emotional and physical

phenomenon that happens in a variety of work situations, such as when workers are in danger, when someone has a confrontation with their employer or co-workers, when they are in charge of a crucial or highly tough task, when their abilities are not recognized or they feel they lack them, or when they are in charge of a critical or tough task (Rajan, Premkumar, Rajkumar and Richard, 2005). In contemporary times, stress performances are an important part of, how successful or unsuccessful we have been in our hard work and overall enjoyment of life. Stress can be expressed when our precursors were needed to fly or fight for their survival.

According to Kenny and Cooper (2003) the main causes of a change are the comfortable impact of change, the experience of threatening, and the sense of loss of control.

As cited by Strutton and Tran (2014), the stress is required to physical or emotional strain, a natural consequence of change, and a sense of mental. Accordingly, it will also be a positive or negative change. Stress can also be established as positive or negative stress (Selye, 1976). Then, emphasizing how to steer it is a self-response that allows a change in how it impacts the person. Therefore, stress is not a bad phenomenon all the time. Selye (1976), who repeatedly under as, the "father of stress". It was the first to distinguish between eustress (good stress) and distress (bad stress).

2.3.2.1 Eustress (Positive or Good Stress)

As per the view of Oladinrin et al. (2014), eustress is a type of positive stress that occurs when a person encounters a scenario that inspires or motivates them. Seaward (2004) highlighted those cases could be categorized as eustress are enjoyable, and these causes are not considered to be a hazard. As cited by-Besides and Selye (1978) and Lim (2009), enjoyable satisfactory performs are originated from eustress. Eustress enhances behavioural performance, awareness and expands often leads and mental alertness to greater cognitive. Eustress arises when the gap between what one has and what one wants is pushed slightly but not completely closed. The goal is not insurmountable, yet it is still a little too much for most people. Because the objective is in sight, it generates challenge and motivation. The

purpose of a challenge is to encourage someone to work toward a goal or improve themselves (Logasakthi and Kumar, 2016).

As cited by Ornelas and Kleiner (2003), highlighted that eustress stress (positive or good stress) has features; for example, focus energy over and above is short term supposed as within personnel coping ability, motivates, develops performance and feel exciting to name a few.

2.3.2.2 Distress (Negative or Bad Stress)

Distress and stress, of course, were concerned as substitutable words (Rice, 1999). Perhaps this is a rational indication that stress is sort of evil. Distress, along with Selye (1978) and Lim (2009), is "damaging or unpleasant stress." Distress may also be defined as the negative effects of stress that deplete one's endurance and limit one's capacity to cope. Logasakthi and Kumar (2016) stated that the distress is the most common variety of stress, and it has harmful consequences. It's a wide term that refers to uncomfortable feelings or emotions that affect your ability to function, or, in other words, psychological anxiety that interferes with your daily activities. Negative attitudes toward the environment, people, and oneself can result from psychological distress.

According to Seaward (2004) and Olpin and Hesson (2007) acute stress and chronic stress are the two forms of distress. Acute stress, which is frequently rather intense, arises and then vanishes quickly. The effect of short-term stresses is acute stress. Chronic stress is a type of long-term stress caused by unrelenting stressors and expectations that last for an indefinite period of time. As a result of chronic stress, some people get accustomed to it, lost confidence, and stop seeking for alternatives.

As cited by Leung et al. (2004), highlighted that negative stress (negative or bad stress) has the features. For example, cause concern or anxiety can be perceived long term or short term as external of feels distasteful, decrease performance, and coping abilities can lead to physical and mental complications.

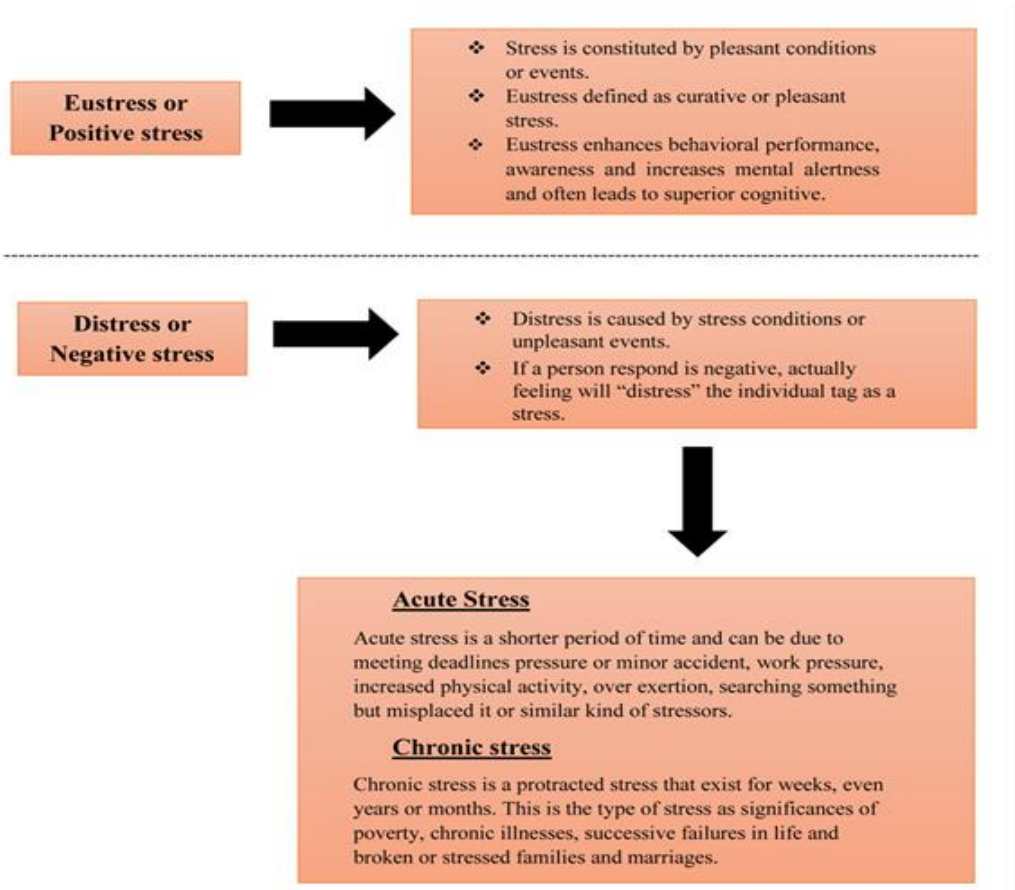

Figure 2.3: Types of stresses

Source: Adapted from (Leung et al., 2004)

Therefore, positive and negative stresses can be demonstrated in Figure 2.3 with the intrinsic characteristics of each category. According to Figure 2.3, the eustress derives to the increased behavioural performance and enhancement of mental awareness. However, the distress makes unpleasant atmosphere while creating two settings: acute stress and chronic stress.

2.4 Stress Process or Response Stages

The degree at which individuals exercise stress varies from person to person (Ekundayo, 2014). As per the view of Maslach, Schaufeli, and Leiter (2001) stated, that "Stress" can be tacit as together with a three-dimensional condition of depersonalization, decreased individual accomplishment, and emotional exhaustion.

According to (Butto, 2019) the subsequent three phases can be recognized in the growth of stress.

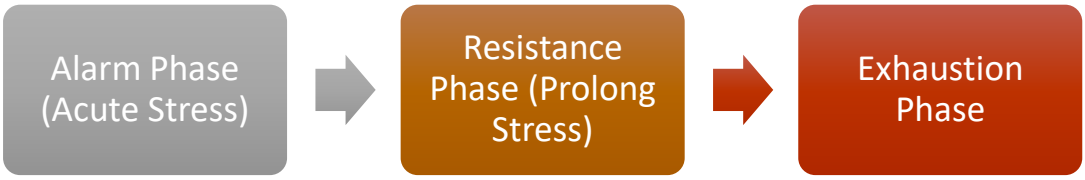

Figure 2.4: Three-dimensional syndrome

Source: Adapted from (2004), (Seyle, 1978)

The concept of stress response model is introduced by Seyle in 1978. As indicated in Figure 2.4, there are three phases: the alarm phase, the resistance phase, and the exhaustion phase. The alarm phase is constituted with small differences. The resistance phase is wherever the body has to agree to battle or running away and when the protection device breakdown from top to bottom, this will guide to the 3rd phase of exhaustion (Ekundayo, 2014). According to Butto (2019), the body begins to heal itself after the first shock of a stressful event and the fight-or-flight response. If the resistance/adaptation phase is extended without breaks, sufferers grow fatigued. If a stressor continues to be present, an organism's physical, psychological, and cognitive resources may be reduced to the point that the body is unable to cope. Adaptation failure will become apparent in the organism.

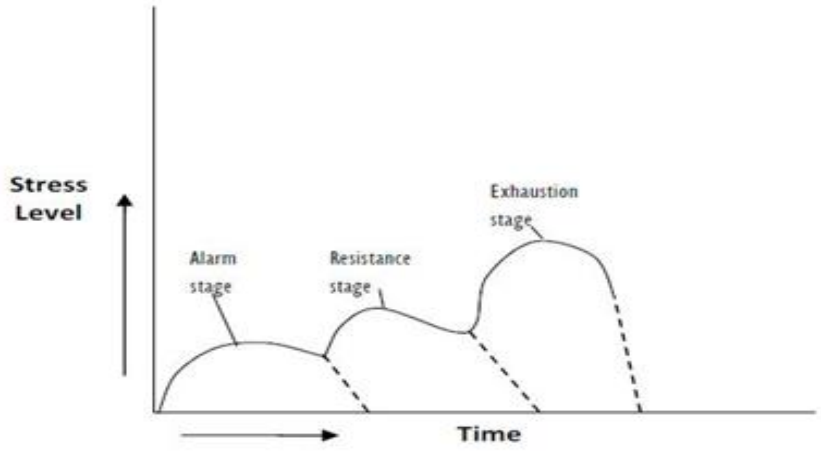

Figure 2.5: Relationship between time and stress level

Source: Adapted from (Selye in Oyetimein,2009)

According to Selye in Oyetimein (2009), the stress level is increased phase to phase with the time as shown in Figure 2.5. A rapid rice of stress occurs after second stage. The drop of stress may occur during any stage of this model, and it decreases drastically with the time.

2.5 Impacts of Stress

As stated by Mahajan (2012), when employees are confronted with job demands that aren't matched with their knowledge, talents, or capacity to deal, they experience job stress. Thus, Wahab (2010) researcher finding, which the majority of artists are practiced a lot of stress in their place of work than by residence, and Stress has a negative impact on their work output while also causing health issues in their bodies.

As stated by Amankwah, Agyemang and Martin (2015), symptoms and signs of stress, and divided into four types, for example, physical, psychological, behavioural, and cognitive. Those types are detailed, as mentioned below.

2.5.1 Physical Consequences

According to Ekundayo (2014), the single physical replies are the “flight or fight” response, which occurs by the level of unplanned worried. Rewords, persons attack the body awake because to reply to the face by them, also by a quick tactical withdrawal or standing or hitting back. As stated by Amankwah et al. (2015) can be included, which are often most willingly recognizable comprise weight loss from sleeping and eating at irregular times, cardio-bronchial pains, headaches, eating disorders, breathlessness and hyperventilating, hair loss, flat serious illnesses, aridness of mouth and throat, muscle ache, stomach ulcers, indigestion, diarrhoea, sweaty palms to name a few.

Furthermore, it proposes that stress indications can have an important impact on a person’s acuities, response, and encouragement to dispute circumstances within the organisation (Cooper, 1978). According to Oladinrin et al. (2014), if the behavioural and psychological indications combine together, it might transfer

substantial power to bear on possible dispute circumstances seeing as the indicators can manage the judgment and value state of a separate (Oladinrin et al., 2014).

2.5.2 Psychological Consequences

As stated by Oladinrin et al. (2014), the optimal rank of stress is in good physical shape (healthy). Nevertheless, the level of stress is as well much high, it gives the idea in such a method that illustrates psychological power, be likely to provide sensitivity to persons similar to ineffective, deteriorates the act of the separate and underrated with decreasing determination and hopeless unattainable aims.

According to Gupta (2013), these comprise a lack of nervousness, attentiveness, and other indications, which are considered conceivable diseases, such as distrust and depression. As cited by Ekundayo (2014), it can be created with psychological troubles, for example, blood pressure and heartbeat, increased irritability, chest discomfort, palpitations, to name a few. Islam et al. (2012) stated, that it similarly shows psychological indications, for example, moodiness, overestimation of danger, memory problems, terror and tension, anxiety, depression, only seeing the negative, dissatisfaction, fears and catastrophic ideas, poor judgment, a feeling of solitude or loneliness, physical trauma to name a few.

2.5.3 Behavioural Consequences

Excessive stress will caution to an upsurge of doubt regarding employers and others. It similarly will be a vast reason for poor performance (Chowhiu, 2009). Ekundayo (2014) expressed, that further it can display behavioural problems for example; eating more or less, impulsive behaviour, speech glitches, sleeping excessively or little, simply distracted, change in personality, drugs and alcohol, grinding of teeth, irritable or aggressive, lack of concentration, nervous habits, burnout, absenteeism, increased errors, expanding smoking to name a few.

2.5.4 Cognitive Consequences

As per the study of Oladinrin et al. (2014) specified, that cognitive consequences are related to knowing and thinking. The high stress of first cognitive consequences

is an improvement in distractibility and decreases to a considerable extent. According to Ibem et al. (2011), there is a progress in error rate in cognitive and control missions. This is very risky for the persons at the executive level; meanwhile, it straight has a key consequence on the decision-making procedure. Gupta (2013) detailed that the worsening of long-term and short-term reminiscence is measured as a second cognitive outcome. Hereafter, high stresses will principal to the reduction of reminiscence extent.

Moreover, Smith (2000) exposed, the managers of 16% can be obtained leave caused by stress in one year. Therefore, it can be mentioned that every year, overall, 91.5 million days are not present because of stress-linked grievances, and they cause up to 60% of work absence. Thus, Oladinrin et al. (2014) recommended, that talking about the trouble of high-stress stages and visualisation the resolutions can support the business to keep the upturn and cost the efficacy of business's procedures.

2.6 Definition and Causes of Occupational Stress

Occupational stress is described as physical, mental, or emotional strain or tension experienced by employees as a result of perceived demands and expectations at work, according to Occupational Stress and the Workplace Communications Workers of America, (2022). Their interactions with coworkers, supervisors, and managers also have an impact. Stress affects dissimilar persons in dissimilar ways. Work stress practice can lead to uncommon and dysfunctional work behaviours and give to poor psychological and physical healthiness. In stressful situations, it is hard to maintain an unhealthy balance among private and work life (Ajayi, Jones and Unuigbe, 2019).

Continuous changes in the construction process, the speed and complexity of the job, and the growing demand for increased productivity have all become typical in this business (Ibem, Anosike, Azuh and Mosaku, 2011). As a result, the experts and employees in this field operate in a highly competitive environment where projects must be designed, developed, and delivered under strict budgets and timelines. All of these factors have helped to make construction labor emotionally and physically

demanding. (Ibem, Anosike, Azuh and Mosaku, 2011). Bowen et al. (2013) highlighted, furthermost of professional's practice in the high level of stress on the job because of necessities of the developments such as long working hours, strict deadlines to name a few, which type the construction work psychologically and emotionally demanding with stressful. Moreover, they elaborated that, the occupational stress impact straight organisational responsibility in addition to physical and psychological health wellbeing of employees.

The work stress problem has been lengthily studied, largely owing to its negative impacts on the organisation and workers (Mihaela, 2010). As a result, few organisations have set up programmers specifically planned to help the physical and psychological fitness of employees to decrease and avert occupational stress difficulties. The study attempted to show how occupational stress affects organisational performance in Sri Lankan public and construction project managers. As per (Mihaela, 2010), *Workload and workplace-related stress, organizational-related stress, and working-time-related stress* are the three main types of stress.

Mihaela (2010) stated that, Work overload, work under load, time constraints and deadlines, loss of influence about the speed of work, inequitable allocation of workload and the issue of workload and adaptability to the nature of the work are important *workload and workplace stress* causes. Indicators of *organisation related stress* causes are the ambiguity of roles, struggle in title role assignment and task performance, lack of promotion opportunities and unmet wage scale. Indicators of *working time related stress* causes are inflexible work agenda, unpredictable work times, lengthy working hours, inadequate recess (leave/vacation) and unstable work times.

As a result, Occupational stress is a major problem in construction industry and a major aspect of working in this profession, and if not managed effectively, the benefits to family and personal lives can exceed the problems.

2.7 Causes for Occupational Stress

Ibem et al. (2011) and Kenneth (2005) cited that project stress is the pointer to elements including stress elements in the building industry, which harmfully grinds down expectations as of the project and thus produces an unachievable goal. Ibem, Anosike, Azuh and Mosaku (2011), Table 2.2 shows the most common types of construction industry related stresses;

Table 2.2: Causes of Occupational Stress

WORKING CHARACTERISTICS	STRESSORS
Organisational function and culture related factors	Poor communication, task environment, problem-solving environment and poor development practices.
Participants related factors	Low participation in decision making
Career development and job status related factors	Career uncertainty, stagnation, poor pay and work status and job insecurity or redundancy.
Role in organisation related factors	Role ambiguity and conflict in role assignment and performance of task.
Job content related factors	High uncertainty in job process, lack of variety, fragmentation of work, under-utilization of skills and physical constraints.
Workload and work place related factors	Work over-load, work under-load, time pressure and deadlines, lack of control over pacing of work.
Work time related factors	Inflexible work schedule, unpredictable hours of work, long hours of work.
Interpersonal relationship at work related factors	Social or physical isolation, lack of social support from other staff, conflict among staff, poor relationship with supervisors and managers.
Preparation and training related factors	Inadequate preparation for dealing with more difficult aspect of a job, Concern about technical knowledge and skill.
Other problems related factors	Lack of resources and staff shortages, poor working environment (e.g. inadequate temperature control, poor lighting, poor ventilation to name a few.)

Source: Adapted from (Ibem, Anosike, Azuh and Mosaku, 2011)

Although there are many different types of workplace stress, many experts believe that job overload is the most common source of occupational stress amongst construction professionals (Love, Edwards and Irani, 2009; Francis *et al.*, 2013; Ajayi, Jones and Unuigbe, 2019). Increased workloads in the workplace without concern for the availability of employees to fulfil the duties can lead to

occupational stress. As a result, work load expansion should be coordinated with labor availability in each organization. Regardless, an unfit physical working environment, an incorrect job design, a poor management style, poor relationships, an unknown future, and conflicting loyalties are all significant contributors of occupational stress (Ongori and Agolla, 2008). Thereby Al-Omari and Okasheh (2017) claimed that organization related stressors are also a crucial stress factor compared to other stress factors. Furthermore Ng, Leung and K.C. (2005) stated that construction projects always run behind the scheduled time period compared to projects of other sectors. Therefore, all the construction professionals have to face a massive stress related to working time. Thereby this study has identified workload and Workplace Related Stress Causes, Organisation Related Stress Causes and Working Time Related Stress Causes as more related to stressors in public sector construction professionals including construction project managers. Thereby these three factors represent the causes that affect organisational performance of public sector projects. Hence, later at chapter 03, these three factors have been assigned as the independent variables of this study.

2.7.1 Causes for Workload and Workplace Related Stress

Task stressors are stress that are implicit in the characteristics of the work of an individual. Stress may be induced by unnecessary or scarce jobs, time pressure and deadlines, making a number of conclusions to make (Ibemet al., 2011), exhaustion from the physical pressures of long working hours, work conditions, having to cope with job shifts and the expenditures (career and monetary) of development errors (Ng et al., 2005; Wahab, 2010).

Job (task) stressors are commonly used to describe the function of work and load stresses in the workplace (Leung et al.,2008; Leung and Chan, 2010). Work overload exists, although the task specifications and the ability of an individual to crack it are contradictory (Leung et al., 2005b; Leung et al., 2008). In actual fact, among construction experts, job overload is typical (CIOB, 2006; Djebarni, 1996; Leung et al., 2005b; Leunget al., 2008). As said by Ibem et al. (2011), it is accepted that overload is consciously important to a variety of stress signs and indicators,

such as the lack of jobs, entertainment, low desire to work, lower self-esteem, and non-attendance of employer proposals. He went on to say that in a professional context, transferring through workload may be stressful and serve as sources of stress for employees. There are three characteristics of workload that might be stressed:

- Qualitative workload / overload (work that is very difficult)
- Quantitative workload / overload (There is more work than can be comfortably served)
- Underload (work that fails to practice an employee's capabilities and skills)

As per Schiff and Leip (2018) Workplace stress affects people in all professions, but as a result of their nature of employment, health-care workers are a particularly vulnerable group. High workloads are thought to generate emotional tiredness and stress at work because they deplete individuals' resources, which are needed to justify family commitments, according to previous research. Individuals believe they have lost important resources needed to function at work, which could lead to worse outcomes (Birhanu, Gebrekidan, Tesefa and Tareke, 2018).

Workplace stress among physicians has negative consequences such as decreased psychological well-being, occupational burnout, and a higher rate of suicide attempts, alcoholism, and other psychosocial issues (Kawada and Otsuka, 2011). Stress has been proven to reduce professional efficacy by lowering attention, focus, decision-making abilities, and physicians' capacity to develop intimate connections with patients. Burnout is a stress-related symptom of loneliness, emotional exhaustion, and a low feeling of personal achievement (Salilih and Abajobir, 2014).

Therefore, the present research was designed to analyse the impact of the workload and workplace related features in view of the subsequent characteristics. Such as; overwork, underwork, time limitations and deadlines, and a lack of control over work pace, disproportionate workload distribution, and adaptability problems to the nature of employment.

2.7.2 Causes for Organisation Related Stress

Organizational stressors mention the sources of stress that an institution itself causes and includes, along with the structure of the organization and the level of employee freedom (Andrews et al., 2009; Leung et al., 2008; Chan and Leung, 2010). A company's structure and scale have an evolved relationship with people during the stage of stress (Ibem et al., 2011; Ng et al., 2005; Haq, Iqbal, and Rahman, 2008). Chan and Leung (2010) and Vigoda (2000) cited that poor organisational structure consists of being present of hierarchies and bureaucracy in construction organisations. Furthermore, the level of difficulty of an organization's bureaucracy and guidelines can cause internal conflict. Both bureaucracy and a person's lack of strength are connected to increased stress. People working in more politicized settings are more likely to have lower task standards, negligent behaviour, a weaker career outlook, lower job satisfaction, and commitment, as well as a higher intention to leave, among other factors.

According to Michie (2002), work that is confusing or conflicting in terms of tasks and restrictions, as well as having responsibility for others, can induce stress. Under-promotion, a lack of training, and job insecurity are all stressful situations; therefore, advancement options are essential stress relievers. Workplace relationships and corporate structure are two more sources of stress, or stress buffers. Organizational change may be stressful, especially when there isn't enough consultation. Long working hours, job overload, and pressure, as well as their impact on personal life, a lack of control over work and decision-making, a lack of social support, unclear management and performance responsibilities, and bad management style all contribute to organizational stress (Michie, 2002).

2.7.3 Causes for Working Time Related Stress

Working long hours, more than 08 hrs per day, relates to role demands, and it’s related to pressures located on an individual as a function of the specific role, who plays in the organisation. Role impacts make expectations, which may be difficult to satisfy or reconcile. Role overload happens when the worker is anticipated to do more than time authorizations (Timoth, 2013).

Long hours of work appear to have a negative impact on workers' health and well-being, according to a growing body of evidence. Overtime and prolonged work hours have been related to increased rates of asthma, fatigue, stress, cardiovascular disease, musculoskeletal disorders, depression, diabetes, general health complaints, respiratory infections, and all-cause mortality, according to studies. More than a few meta-analyses and journals have been written, offering information on these study results. Methodical appraisals usually can be resolved that long working hours is potentially unsafe for worker's healthiness. Nevertheless, current research is rare and inconsistent in several areas.

According to Influence of Selected Work-Related Variables on Occupational Stress Among Teachers in Kenya (2021) Job-related stress is a sequence of behaviours that arises when employees are confronted with work expectations that are incompatible with their expertise, skills, or talents, and which put their resilience to respond to the test. These demands might be connected to time restrictions, the quantity of labour necessary, the complexity of the task, the sensitivity needed, or even the incapacity to convey one's feelings at work (qualitative demands). Work stress has been noted as a concern for both management and staff, with high-stress occupations being more common among women, young, shift, part-time, and non-white collar workers (Ben Saad and Abbas, 2018).

2.8 Effects of Occupational Stress

As per the view of Ng et al. (2005), "Stress" is not restricted to any specific occupation. Nevertheless, Statt (1994) expressed that construction is 3rd mainly stressful occupation afterward police and mining job. Ibem et al. (2011) and Linda et al. (2003) recognised that the nature of the manufacturing procedures in the construction business because of attendance answerable for creation construction jobs is stressful and hazardous.

According to Greenberg (2002) stress is the characteristic that associations stress reactivity and stressor. There is no stress without these characters. Then according to Leung et al. 2005a; 2005b; 2008; Leung, Sham, and Chan, 2008; Leung, Chan and Chen, 2011; Leung, Chan and Yu, 2008, a stressor has the capacity to produce a

stress response and a critical stress component. The term stressor can be used to denominate the stimuli born on work, which have negative psychological or physical significance for an important percentage of the persons exposed to them. It is a stressful condition or incident, which produces a physical or psychological response in an individual that is generally disagreeable and, from time to time, sources symptoms of a physical or emotional disability.

Generally, stressors can separate keen on four key types as a personal, task, organisational, and physical. The workload is the highest-ranking stressor, according to Haynes and Love (2004), and thus works long hours and job and personal conflicts. Leung et al. (2008) specified that four serious stressors, along with job overload, poor work atmosphere, weak interpersonal relationships, impact both objective and poor non-work environment, and subjective stresses. In addition, Leung et al. (2005) explored the major causes for the tension faced in Hong Kong by construction cost estimators: task conflict, work overload, work climate, and job uncertainty.

The causal relations between the stressors and pressure of cost engineers and customers of the contractor are in Hong Kong. They assume that social assistance may be the only stressor that adversely affects both the customer and the contractor's stress of cost engineers (Leung et al., 2008). Standardised focus groups investigate and recognize the several kinds of stressors because of stress practiced by Hong Kong emigrant construction experts. Those outcomes can be breaking down into four key types; interpersonal stressors (job qualities of the locals, personal traits, lack of language fluency, home-work conflict, and poor workgroup relationships), duty stressors (role ambiguity, role conflict, and qualitative and quantitative work overload), organisation stressors (organisational supports, centralisation, formalisation, and complexity) and physical stressors (crowded transportation, living standards, and pay differentials) (Leung et al., 2012).

Stress may occur when the equilibrium in a man's mechanism environment shifts, resulting in the delivery of make stress among the mechanisms of a produced structure. As a result, a person is designated as the weakest link in the work

environment's structure. More widespread indicators of stress include sobbing, overeating, smoking, rapid conversing, drinking alcohol, anxiousness, terror, wrath, comforter, repulsion, and sad melancholy (Lazarus, 1966; Leung et al., 2005; Yip et al., 2005; Wahab, 2010). According to Yip et al., (2005), high levels of effort have been highlighted as a source of weariness by Hong Kong construction specialists.

Officially, lack of opportunities to research careers, family disputes, new talents, and a separate perspective from their bosses were the most troublesome stressors to contend with (Ng et al., 2005). The main sources of stress were a lack of feedback, painful office projects, a high volume of work, and differences in the job's capacity (Ibem et al., 2011).

Individual stressors are the ancestors of stress among construction specialists, as they are linked to a person's individual and/or interpersonal issues (Leung et al., 2007; Leung, Chan and Olomolaiye, 2008). Leung and Chan (2010) find that it relates to the success of the type of individuals in relation to relationships and conflict with homework. According to Leung and Chan (2011), regardless of their particular behaviour, stressors elicit different responses for dissimilar individuals. A few persons are incapable of managing stress-provoking circumstances, while others handle stressors greater than others: they settle in their performance in a method that happens the environmental challenges.

Ibem et al. (2011), mentioned that task stressors refer to causes of stress that are inherent to the essence of one's work. Stress may be triggered by too much or limited jobs, time constraints and deadlines, getting a lot of choices to create and often noted and attempted from the physical pressures of the work situation, having to cope with task discrepancies, long working hours and the expenses of creation defects (career and monetary) (Ng, Skitmore and Leung, 2005; Wahab, 2010). Job stressors typically apply, according to the report, to role stressors and workload in day-to-day jobs (Leung et al., 2008; Leung and Chan, 2010). Work overload arises where there are differences among the capacity of an individual and the work specifications to manage (Leung et al., 2005b; Leung et al., 2008). The overload of work among construction experts is also generally stated as (CIOB, 2006; Djebarni,

1996; Leung et al., 2005b; Leung et al., 2008). According to the Ibem et al. (2011), it is determined that overload is strongly correlated with a variety of stress measures and symptoms: career non-attendance, escapism, lower self-esteem, poor motivation to work, and owners' non-attendance of proposals.

The physical work situation refers to a home background or poor work for construction professionals. This can be included, very high or low room warmth, heavy noise, a lack of confidentiality, unsuitable lighting, sanitation of the place of work, ventilation, the physical setting of the workplace, to name a few (Ibem et al., 2011; Ng et al.,2005; Haq, Iqbal, and Rahman, 2008; Leung et al., 2005a).

Bad workplace conditions encourage stress and impair a person's working performance. Wahab (2010) identified that many psychologists are attentive to physical stressors and consequences under the awareness of stress and resulting injury in near-early job stress education. Dangerous physical environments will primarily be a potential cause of job tension, while individuals face the risk of injury. Greenberg (2002) explained that unsafe tasks, overcooling, unpleasant odors, dust, toxic chemicals, high noise levels and other stressful problems could guide to disease or else illness.

Ng et al. (2005) proved that the common causes of stress between construction sector employees are inflexible time schedule for work, quantitative workload, poor communication among participants, bureaucracy, and lack of career guidance. Fellows engaged because of insufficient space for innovation, inadequate knowledge of project objectives, unsatisfactory remuneration, and uncertainty of job necessity, long working hours, unfavourable working environments, and tight timetables.

Other evidences that cause stress in the construction industry include time limits on working hours that are getting longer, getting shorter, increasing competition, and short-term contracts, as well as stress caused by monetary penalty clauses, industry confrontation, and ongoing efforts to recover productivity (Molen et al., 1998).

The major and main sources of stress were job burden, high workload, lack of cross-functional coordination, lack of on-site provisions, inappropriate management, lack of response to past and continuing construction projects, and final payments in the scope of work for ongoing construction projects (Selvarani and Saikala, 2005).

As stated by Kwaku (2012), an important discrepancy between experimenters, who were leading their find outs about the indirect and direct causes of several assumed stressors. According to Wahab (2010) current learns to illustrate, that construction employees qualified a lot more stress at their place of work than at residence and had unwanted outcomes on their productivity and healthiness on the job.

According to Mimura et al. (2013), occupational stress unwillingly significance low down work performance, work stress even though has a not as much of effect on some organisation and person’s performance. However, it may be formed by awful significances while associated with healthiness. This has jeopardized their relaxation and minimal engineering success and the long-term competition of the construction expert's intonation. One of the reasons of poor productivity for site workers may also be recognized as stress (Dainty et al., 1999; Lingard and Francis, 2004; Wahab, 2010). In contrast, new findings suggest that skilled employees in the building industry had a lot of stress at their jobs than at home and had terrible effects on their job productivity and well-being (Wahab, 2010; Bousinakis and Halkors, 2010).

According to Kenneth (2005) project stress of the construction industry is the display of features, which negatively wear away standards from the project and therefore create the required aim unachievable. According to Sutherland and Davidson (1997), role ambiguity, working long hours, and work overloads are identified as important reasons for stress between professionals in construction projects. Moreover, Statt (1994) stated that time pressure, multi-level subcontracting, unstable work, and constant worker rotation because of provisional contracts can contribute to psychosocial stress amongst employees. Loosemore and Waters (2004) highlighted, that as of a gender view, the male experts in the

construction industry hurt a lot of stress relative to disciplinary issues and suggestions of errors, risk-taking, unemployment, and job cycle than their female equals even though female experts suffer stress because of chances for the rate of pay, individual growth, business travel, keeping through fresh ideas and the accumulative effect of small duties. Earlier findings show, that the overall causes of stress amongst employees of the construction industry.

2.9 Relationship Between Occupational Stress and Performance

As cited in Meneze (2005), Eccentric through organisation, no element within decision-maker attested because key causes of occupational stress as no manage above the personality characters, job background, lack of quiet through unsure guidelines affect workers of performance. According to Kwaku (2012) and Farrell and East (2001), it can be presented a detailed practicing model of performance and working stress. The subsequent Figure 2.6 proves the relation with stress levels and performance.

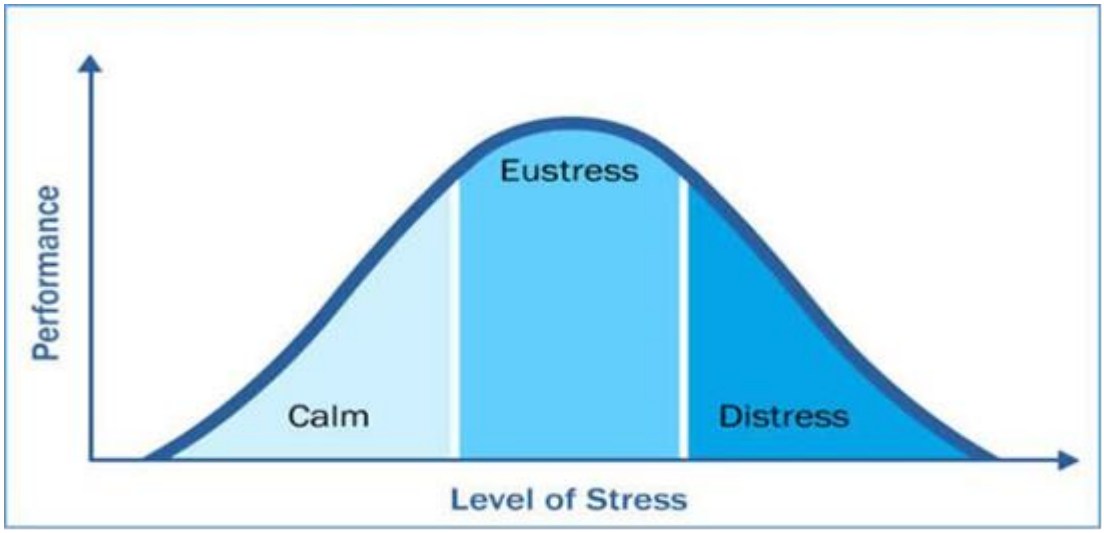

Figure 2.6: Relationship with Stress level and Performance

Source: Adapted from (Gupta, 2013)

According to Figure 2.6, there are three stages of relationship between performance and level of stress. With the rise of level of stress, the performance is increased in calm and eustress phases. But when the level of stress is rather increased beyond,

the performance starts to decrease. At distress phase, the level of stress is higher, and performance is lower than other phases.

By merging emotional trauma, work satisfaction, and enthusiasm into a wider framework of personnel well-being, work - related stress researchers and practitioners may be able to demonstrate a significant association between personnel' degrees of well-being and organizational performance (Ajayi, Jones and Unuigbe, 2019). However, concentrating on a broad range of organizational performance measures, such as behaviours like organizational outcomes, as well as behaviours directly related to human resource costs, such as employee absenteeism, revenue growth, health costs, and legal insurance claims for stress-related damage, is perhaps the most effective way to achieve this link. Researchers and practitioners will be able to show that workplace stress is a critical factor in influencing a company's profitability of the company (Cotton and Hart, 2003).

Nevertheless, some earlier studies have noted that task variations are important in predicting the relation between success and stress. According to the Zajonc (1965) and Meglino (1977) results, the link between success and stress is a positive relationship for a basic, well-learned and monotonous assignment, whereas the overturned U-shape connection is only intended for compound missions (tasks) wherever a lot of reminders are involved. They competed, that the alteration in way afterward the finest happens for the reason that high stress causes reasoning contraction and inflexibility of performance.

This takes especially grave outcomes on multifaceted responsibilities requiring original replies, attention to various elements, or problem solving of the task. As a reminder, excessive stress in a few cases raises depresses the probability of new responses and the likelihood of habitual behaviour, therefore assisting a negative linear association to be forecasted among performance and stress. According to the study of Construction sector productivity drops as workforce skills fail to improve (2005), Employee’s experience job stress on a regular basis, but it may be reduced by improving working environment and benefit reliability. Increasing job stress became a problem for companies, according to Seibt, Spitzer, Blank, and Scheuch

(2008), and an increased level of job stress results in lower productive output, absenteeism and turnover, and a diversity of other employee issues such as alcohol addiction, drug problems, high blood pressure, and a variety of cardiac disease.

According to Leung et al. (2005), stress is a source of negative opinion performance (ensuing in poor relational associations, unsuccessful procedure, and unawareness through organisation) even though; at once it's advantageous to the performance of professional estimation. In addition, a U-shaped organizational relationship between stress and efficiency has been upturned.

According to Wahab (2010), it can be focused on the performance and construction employee's behaviour because project production management; maintenance, estimating tasks and management are mainly relying and unstructured on top of the subjective view, which the problem-solving performance and capability of the construction employees concerned with work stress. Stress can be also reduced or directed; this is for the reason that stress can't be fully eradicated as of the life of a grown human being. Therefore, it has been hypothesised that there is a relationship between organisation performance and occupational stress.

According to Ahadzie et al., (2008), Figure 2.7 demonstrates the hypothetical model of the performance and stress of CPMs. The primary determining factor that decides whether CPMs maintain the role and importance of a company is mission performance.

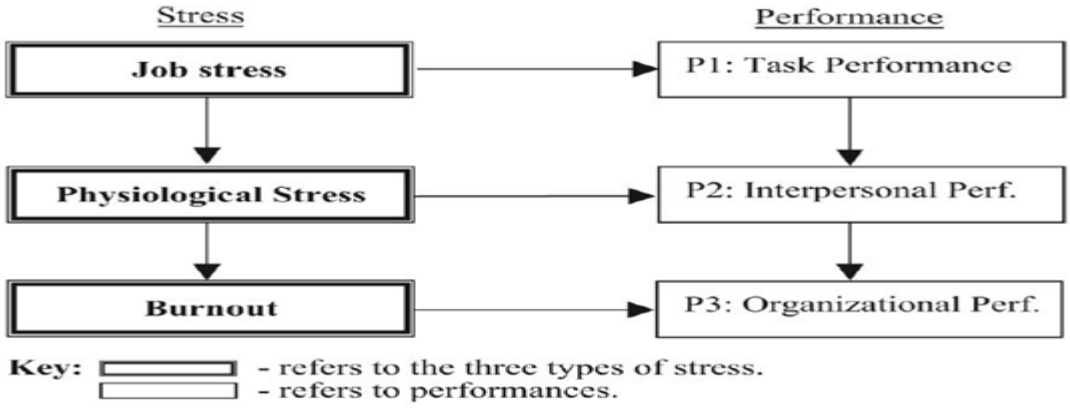

Figure 2.7: Hypothetical model of the Stress and Performance

Source: Adapted from (Sampanthan, 2012)

When CPMs fail to perform their tasks properly, there may be conflicts between supervisors, colleagues, and/or subordinates because of various difficulties and problems, which occur through the project for example; claims, long working hours, and delays of the project.

Alternatively, respectable task performance can have a positive impact at that time can lead to a more combined air and to greater high morale and sense of reliability between persons within the organisation (that is a high organisational performance) and on the person wise contacts among CPMs and others at work (that is person wise performance) (Jiang and Cheng, 2008; Botha et al., 2008). Nevertheless, various forms of stress influence different characteristics of the performance of CPMs in the field.

Lim (2009), Richmond and Skitmore (2006) stated, that can be identified key stressors of projected in construction developments as; workload, technology, role conflict, uncertainty, and boundary spanning. According to Gallstedt (2003) determined in findings, which doubt affected a high stress-inducing factor and longer working hours. According to Therese (2001), the stress can be feeling at the start and ending stages of the project. Furthermore, a stressor may be described as "a condition or situation, which elicits a response such as anger/frustration or anxiety/tension". Therefore, a dangerous (negative) incentive refers to the causes of the stressors.

Richmond and Skitmore (2006) highlighted, that provide some methods for decreasing stress. Those absorb as duplicating tactics (risk, time, planning, and communications management), keep informed technology and executive skills, with assist networks, that offer instructing and consultation and admittance to high levels of authority. Advanced stress levels are practiced with project managers likened by management as a result of the opposing project stakeholder’s demands (Haynes and Love, 2004). Broadbridge (2002) cited, that stress impact is high and regularly a concealed cost in companies together in terms of job satisfaction and worker turnover. According to Gallstedt (2003), turnover and burnout are not only the

impacts from construction industry encouraged stress and top levels of stress affect the output of construction project employees.

2.10 Developing Hypothesis

2.11.1 Workload and Workplace Related Stresses and Organisational Performance

As per Ajayi (2018), the degree of stress that an individual experience is decided by his or her own evaluation of the demands of their employment. A variety of socioeconomic circumstances that aren't necessarily directly tied to employment might impact such a subjective evaluation. Occupational stress boosts mental alertness and motivation, and pressure can boost employee productivity and satisfaction. Employees' stress levels tend to alter when their workload changes, which has an impact on their performance (Syed Saad Hussain Shah, 2012).

Jamal and Badawi (1995) stated that work overload is the root cause of a lot of stimulated difficulties and one of them is stress, which has a high impact on work as a result, which one cannot make up to mark, that outcomes lower job satisfaction.

The effect of a sudden increase in workload is more sensitive and has a bad impact on employee performance (Daniel, 2019) states that, employees who considered leaving because they believed their employer didn't care about them showed a significant level of dissatisfaction, which impacted the organization's performance. Hart and Staveland (1988) defined that workload as, the understood bond among the sum of psychological processing ability or resources and the sum necessary with the task. If one person has much work to do under unreasonable pressure and inadequate time to finish on deadline, they are going to feel stress.

This research is therefore designed to analyse the effect of workload and workplace related stress causes on the following aspects. Such as; work overload and underload, lack of control over work speed, time pressure and deadlines, unfair assignment, adaptability problems with the working environment, and the performance.

Therefore, the hypothesis can be developed as follows;

HA_1 – There is a relationship between workload and workplace related stress and organizational performance.

HA_0 – There is no relationship between workload and workplace related stress and organizational performance.

2.11.2 Organisation Related Stresses and Organisational Performance

Wu, Hu and Zheng (2019) stated that, organizational stress occurs due to a lack of knowledge regarding the job's duties and the ambiguity of the employee cause decreasing the performance of the construction company as well as the individual. According to Ongori and Agolla (2008), insufficient physical working environment, inadequate job design, poor management style, poor relationships, an unpredictable future, and fractured loyalties are some of the common causes of workplace stress. According to Tehrani (2002), insufficient resources, an indifferent organizational culture, constant or rapid change, poor communication between managers and employees, a lack of engagement in decision-making, bullying and harassment, conflicting priorities, and the absence of obstacles are all factors that contribute to stress. Further its impact to the organizational performance is stated by De Silva, Samanmali and De Silva (2017) reduced efficiency, decreased capacity to operate, stifled initiative and passion in the workplace, increased rigidity of thought, a lack of concern for the company and coworkers, and a loss of responsibility are only some of the consequences.

Therefore, the hypothesis can be developed as follows;

HB_1 – There is a relationship between organizational related stress and organizational performance.

HB_0 – There is no relationship between organizational related stress and organizational performance.

2.11.3 Working Time Related Stresses and Organisational Performance

Aini (2013) specified that technological change, work reorganisations, budget, and worker power alterations cuts have powered employees to do more work by fewer sources. The employee was needed to work harder, to the point where they do not longer do their work in ordinary business hours especially, its occupational increases stress, absenteeism, illness risks and more significantly lowers job performance.

Time limitations and/or a difficult assignment may produce anxiety or unhappiness, which can detract from or impede performance even more. Because it's so important in identifying stress, we may suppose it's also important in assessing whether workload, time pressure, or other allegedly stressful events have both direct and indirect consequences (Ajayi, 2018).

Employees are required to work long shifts in an extremely competitive economic setting, according to Noblet (2003). This looks to be having a bad impact on people's health and causing you to be stressed out. Employees working lengthy hours with hardly any rest or sleep may suffer the consequences, lowering their quality of life. There's also a lot of volatility and danger involved. Working in a job that exposes an individual to risk and danger puts them under a high level of stress (Sinambela, 2020). Furthermore, this research shows that workplace stress has a detrimental impact on organizational performance. Negative outcomes include decreased efficiency, reduced potential to perform, repressed initiative and enthusiasm in the workplace, enhanced resistance of consciousness, a lack of compassion for the company and work classmates, and a loss of obligation (BenBakr, AlShammari, and Jefri, 1995), (Dua, 1994), and (BenBakr, AlShammari, and Jefri, 1995). (Fairbrother and Warn, 2003).

In current years, more attention has focused on the use of performance testing to evaluate the effects of the fatigue presumed to consequence of long working hours. In a controlled laboratory experiment, undergraduate volunteers performed reasoning tests for dissimilar periods. Furthermore, Spurgeon, Anne, and Cooper,

and Cary (2001) suggested that performance worsened with the time consumed on task and was 6% healthier with arranged rest breaks than without such breaks.

Ibem, Anosike, Azuh and Mosaku (2011) stated that, working time related stress is a result of a person's contact to conflict with co-workers, the breakdown of job processes into isolated routines, and shift work arrangements. Further their study revealed that, role ambiguity, long hours, and work overloads are acknowledged to be primary causes of stress among construction project personnel. Quantitative workload and a tight work schedule are common sources of stress for construction employees (Sutherland and Davidson, 1989). As per Premkumar and Rajkumar (2015), the construction workers were working long hours and their payment was not sufficient. The labors are forced to work by their supervisors and it led to poor performance of employees which contributes to lack of performance of the construction company. Employees who are overworked with activities will be unwilling to participate in any tasks, which may result in poor performance (Sunindijo and Kamardeen, 2017).

Therefore, the hypothesis can be developed as follows;

HC_1 – There is a relationship between working time related stress and organizational performance.

HC_0 – There is no relationship between working time related stress and organizational performance.

It is of utmost importance to conduct a study that based upon the empirical evidence, in order to find the truth behind the built-up hypothesis.

2.11 Chapter Summary

Occupational stress is a key issue in the present industry of construction. Therefore, in this industry, stress is part of the work environment, and if not handled properly, family and personal lifestyles can outweigh the negatives. Stress can be seen in the form of positive or negative stress. Thus, the individual's response to stress varies depending on the person's consequences for how to handle stress. Although, stress is not at all times viewed as a poor or bad thing. As a result, 02 stress levels, such as Eustress and distress, can be introduced. The current chapter presents a general description of occupational stress, work stress causes, and consequences for construction project participants. Organisational stability is also discussed.

CHAPTER 03

RESEARCH METHODOLOGY

3.1 Chapter Introduction

Kothari (2004) cited that the methodology of research is a methodical method of attaining the objectives and aim of the research. The goal of this chapter is to lay out the steps for reaching the research's goals and objectives using a methodological view. Mainly, this research aim is to expand an outline for handling the occupational stress on the role of construction project managers in public sector construction organisations through calling the research problem even as in Chapter 01 outlined. The study design, accessible research approaches, strategies, procedures, and data analysis techniques are all discussed in this chapter. This chapter also contains the relevant reasoning for each chosen criterion. The section on research techniques includes easy-to-understand pictures that illustrate the study approach, as well as a chapter summary at the end.

3.2 Conceptual Framework

A conceptual framework was developed based on a literature review and knowledge of relevant previous papers and theories of stress, as shown in Figure 3.1. Organizational performance is the dependent variable; occupational stress, including workload and workplace-related causes, organization-related causes, and working time-related causes are the independent variables.

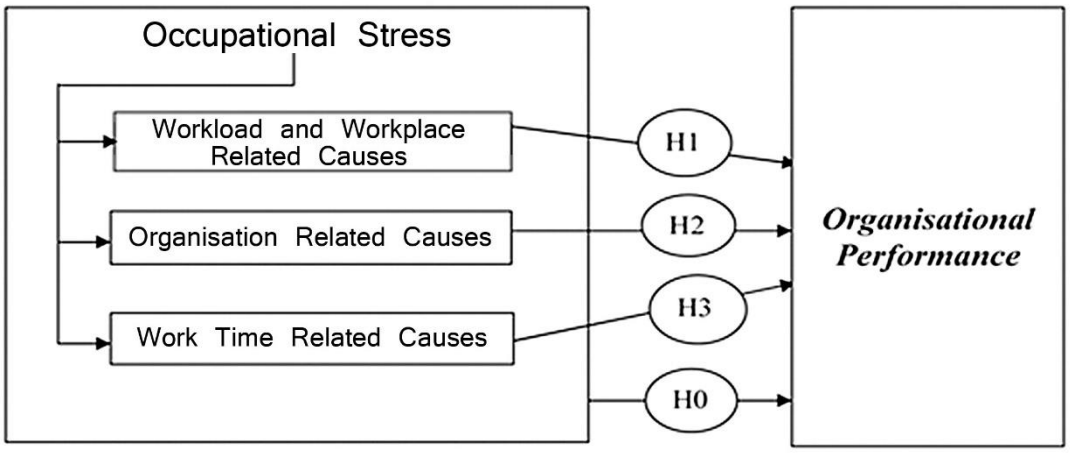

Figure 3.1: Conceptual Model

3.3 Hypothesis

HA_1 – There is a relationship between workload and workplace-related stress and organizational performance.

HA_0 – There is no relationship between workload and workplace-related stress and organizational performance.

HB_1 – There is a relationship between organizational related stress and organizational performance.

HB_0 – There is no relationship between organizational related stress and organizational performance.

HC_1 – There is a relationship between working time-related stress and organizational performance.

HC_0 – There is no relationship between working time-related stress and organizational performance.

3.4 Research Design

The "overall strategy" used to answer the research question(s) is referred to as research design. It includes the study purpose, data collecting sources, and, most importantly, how the researcher handled the usage of a specific research design (Saunders, Lewis, and Thornhill, 2017). The methodology, methods, instruments, and procedures utilized to achieve the aims and objectives of a research project are referred to as "research design" (Maxwell, 2004). A logical organization (Wickremasinghe, 2012) and strategic framework to hold all the pieces in the research are known as a research design (Akhtar, 2016).

Accordingly, commenced with the study of the background which wants to recognize the research problem, aim, and objectives. According to that a detailed literature survey was continued. Data collection started by way of a preliminary survey and question survey. The data analysis was then completed based on the survey findings. Finally, based on the data presentation and analysis, conclusions and recommendations were generated.

The research process for this study is shown in the flow chart below.

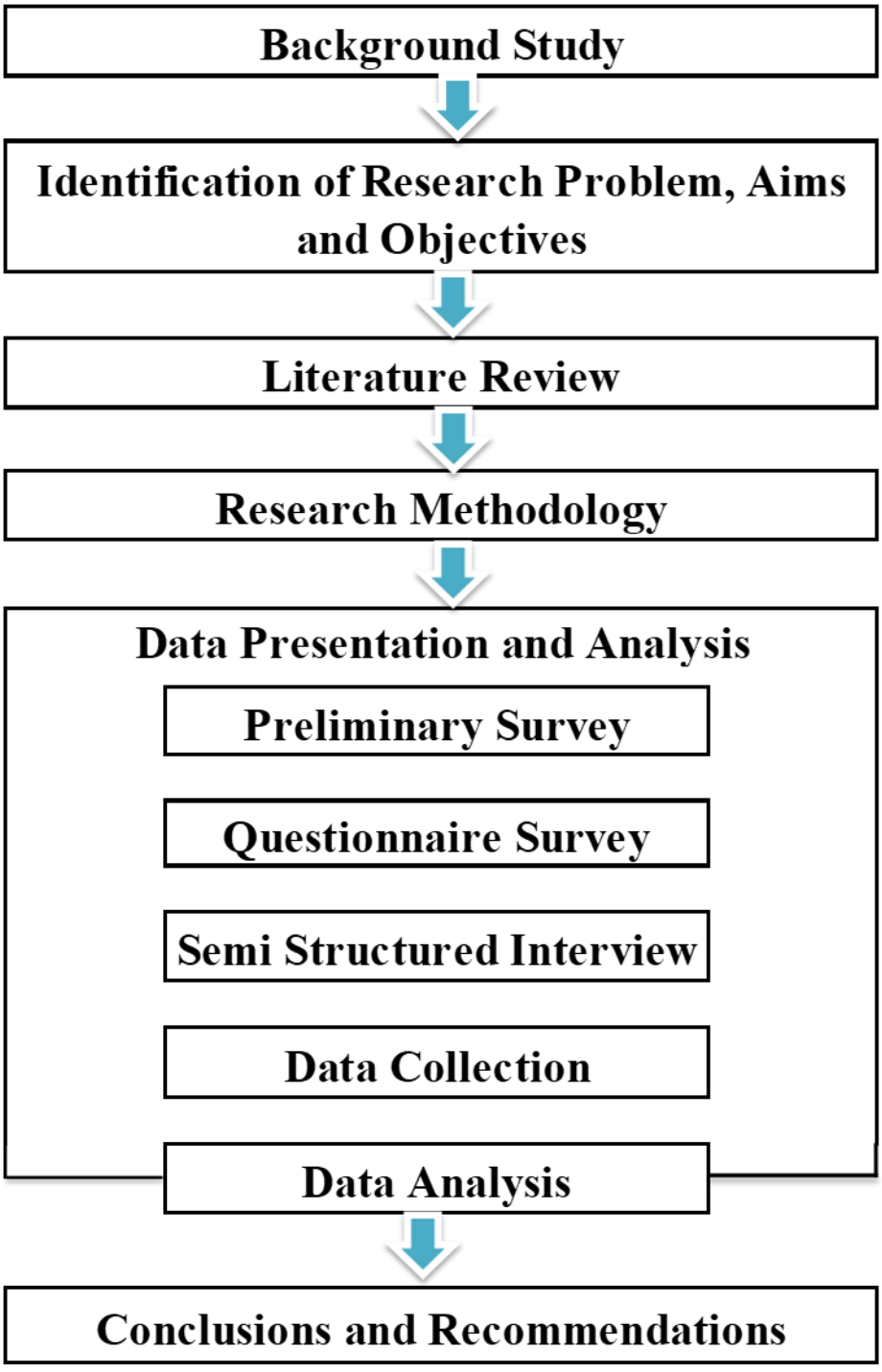

Figure 3.2: Research Design

Accordingly, occupational stressors were selected as a conceptual research group conducting empirical research. Organisational performance is a theoretical vision,

and a large theoretical background is set chronologically in Chapter 2, and the theoretical framework is developed accordingly.

3.5 Research Approach

According to Creswell and Clark (2011), a research approach is a plan and procedure for performing research that will help investigators to go beyond more efficient data gathering, analysis, and interpretation to more thorough techniques of data collection, analysis, and interpretation. Furthermore, research approaches are described as a systematic method for arranging research tasks and data in such a manner that the goals and objectives are fulfilled (Tracy, 2020).

3.5.1 Available Research Approaches

3.5.1.1 Qualitative Research Approach

Qualitative research is non-numerical, descriptive, reasoning-based, and uses words to investigate qualitative phenomena (Hammarberg, Kirkman and De Lacey, 2016). Qualitative investigators employ "participation observations," interviews, analysis of documents, and focus groups to gather and analyze data (Naoum, 2007). Researchers can utilize strategies like framing, projection techniques, and drawing exercises to ask open questions or employ other approaches like framing, projection techniques, and drawing exercises (Tracy, 2020). Understanding, describing, interpreting, authorizing, deconstructing, querying, questioning, and interrupting are all aims of the qualitative approach (Basias and Pollalis, 2018).

3.5.1.2 Quantitative Research Approach

Quantitative research is focused on quantity or quantity measurement, with one or more quantities reflecting or describing the process (Wang *et al.*, 2021). Furthermore, Tashakkori and Teddlie (2002) pointed out that quantitative research is concerned with "how and why study phenomena evolve," whereas qualitative research is concerned with "how and why questions are posed." Quantitative research, on the other hand, employs mathematical models and statistical data for effective analysis, resulting in numerical conclusions that are more objective (Naoum, 2007). Qualitative research findings define interpersonal interactions and

offer answers to whether a relationship is satisfying, good, or bad (Hammarberg, Kirkman and De Lacey, 2016).

3.5.1.3 Mixed Approach

Mixed method research integrates quantitative and qualitative research, as opposed to the multi-method investigation, which employs numerous methodologies of a single study type (Guest, 2013). Multi-method research, for instance, could compare two quantitative techniques, making it a quantitative study. As a result, mixed-method research, which employs both qualitative and quantitative methodologies concurrently or sequentially, is more popular (Johnson and Onwuegbuzie, 2004).

3.5.1.4 Selected Approach for this Study

The sort of data to be collected in the research study decides the approach is taken (Creswell and Clark, 2011). In this study, a qualitative approach was used in the first part of the study to identify occupational stress-related factors of Construction Project Managers in public sector construction organizations in Sri Lanka and to propose solutions to handle occupational stress faced by Construction Project Managers. Furthermore, since the validation of the literature findings and suggestions of any additional factors were required in this first part of the study, a qualitative study was identified as suitable. However, in the latter part of the study, a quantitative approach was adopted to identify the relationship between the stress factors and their impacts on the performance of the Construction Project Managers. Furthermore, ranking of the identified solutions was identified as possible through the results of the quantitative approach. Furthermore, studies of Francis *et al.* (2013) have used a mixed approach for their study on Work-Family and Construction: Public and Private Sector Differences. As a result, in order to meet the study's other aims, this research employed a mixed methodology.

3.6 Research Method

Research methods are the instruments that are utilized to deliver the correct answers to questions (Walliman, 2011). There are several research techniques under primary data gathering methods, such as preliminary interviews, expert interviews, observations, and case study methodologies (Fàbregues, Molina-Azorin and Fetters,

2021). In addition, the questionnaire survey, which consists of a list of several questions posed by the researcher and the replies supplied by the respondents, may be recognized (Naoum, 2007). Interviews, observations, document surveys, participation, and questionnaires are the most widely utilized practical approaches (Azungah, 2018).

3.6.1 Selected Method for this Study

3.6.1.1 Survey Strategy

The survey research method concentrates on massive and minor segments of the population by choosing and analysing samples drawn from these communities. The primary goal of this method is to determine the relative frequency, distribution, and interdependence of variables (Kumar, 2018). Furthermore, surveys are powerful instruments for gathering data on a wide range of perspectives in big communities (Guest, 2013). The primary goal of survey research is to learn about the characteristics of the respondents who are being queried. As a result, due to the sheer large number of factors that were examined utilizing the choice of Construction Project Managers in public sector construction organizations in Sri Lanka, this research was done using questionnaires.

3.6.1.2 Preliminary Questionnaire Survey

The preliminary questionnaire was prepared based on a comprehensive literature review. A preliminary questionnaire survey was distributed among ten (10) professionals to validate the preliminary questionnaire survey. Further, the experts were asked to provide their opinions about the questions raised in the questionnaire survey while adding new or missing factors to the list. This initiative focuses on construction project managers with more than 15 years of experience in the Sri Lankan construction industry.The preliminary questionnaire was sent to ten (10) construction project managers who have fulfilled the above criteria. Few insertions were disallowed and two new reasons can be comprised of the detailed questionnaire. As stated by the answers, none of the recommended stressors can be disallowed however one new factor was included. That is called “frequently changing of staff members”.

3.6.1.3 Questionnaire Survey

Data were collected through a well-structured questionnaire consisting of 26 questions. Sixteen (16) questions collect data on stress factors, and the last 10 collect data on performance. The questionnaire was used as a research tool because it is an effective and powerful tool for data acquisition. Some statistical data are requested of the respondent at the beginning of the questionnaire. The sample was selected as follows to administer the questionnaire about the current research.

The occupational stress on the role of construction project manager's performance is developed on basis of a literature review and preliminary survey details. Then, the questionnaire was then structured to get public sector perceptions about Sri Lankan construction organizations. This research questionnaire was divided into Section A and Section B.

Section A: General Information

Section A, was developed with the purpose of collecting information on the respondents' profiles.

Section B: Subject Information

Section B, was planned to increase the occupational stress of construction project managers in Sri Lanka's public sector construction organizations. The questionnaire is delivered as the main 04 points under occupational stress and organisational performance. Those are,

1. Workload and workplace-related causes
2. Organisation related causes
3. Working time-related causes

} Occupational Stress

4. Performance-related causes ⟶ Organisational Performance

3.6.1.4 Semi-Structured Interviews

Participants' experiences, ideas, opinions, and motives can be revealed through interviews (Tashakkori and Teddlie, 2002). Interviews can be conducted in both real and virtual settings. Physical interviews assure excellent answer quality, high

collaboration, and low rejection rates, but internet interviews allow for greater control and monitoring of interviewers and can be utilized when physical interviews are not possible (Johnson and Onwuegbuzie, 2004).

Further, occupational stress-related factors have also been identified through the literature review for this research. Thus, the purpose of having expert interviews is to determine the solutions to handle occupational stress faced by Construction Project Managers. Thus, physical interviews were carried out for the effectiveness of data collection.

3.6.1.4.1 Expert Selection Criteria

The expert selection criteria are critical in semi-structured interviews since they are used to identify the most appropriate interviewees for the research. Purposive sampling was therefore utilized to choose all of the experts, allowing them to be picked based on their experience, competence in the core study topic, and basic background knowledge of the construction business. According to Creswell and Clark (2011), purposive sampling is also utilized when a researcher has a specific purpose in mind and only includes individuals who are relevant to the study's aims. Six (6) specialists, who have more than 20 years of work experience in the public sector projects in the Sri Lankan construction industry were interviewed for the attainment of solutions to handle occupational stress faced by Construction Project Managers.

Table 3.1: Profile of Respondents

Respondents	**Profession**	**Project Sum (SLR)**	**Industry Experience**	**Academic / Professional Qualification**
R1	Project Manager	850 M	25 Years – Building and Civil Projects	B.Sc./M.Sc.
R2	Project Manager	750 M	23 Years – Building and Civil	B.Sc./M.Sc.

			Projects	
R3	Project Manager	980 M	28 Years – Building and Civil Projects	B.Sc./PGD/MBA
R4	Project Manager	1500 M	30 Years – Building and Civil Projects	B.Sc./M.Sc./PGD
R5	Project Manager	580 M	22 Years – Building and Civil Projects	B.Sc./M.Sc.
R6	Project Manager	1200 M	27 Years – Building and Civil Projects	B.Sc./M.Sc.

3.7 Sampling Procedure and Technique

There are many sampling strategies currently available for research purposes. The respondent selection of semi-structured interviews and questionnaire survey distribution for this study was done using the purposive sampling technique. The research was limited to the public sector organisations and through considering all the time limitations and the factors, the questionnaire was distributed as a hard copy among 40 construction project managers. However, only 32 re-condensates were obtained by demonstrating a response rate of 80%. In addition, six (06) experts, who are practicing in the public sector projects in Sri Lankan construction industry, were interviewed for the attainment of solutions to mitigate occupational stress faced by Constriction Project Managers.

3.8 Method of Data Analysis and Interpretation

Data analysis is intended to validate, clean, convert, and restructure data in order to draw precise conclusions for a given circumstance (Kalpesh, 2013). According to Kapur (2018), data analysis is the act of converting acquired data into ordered and organized information. This is a hazy, time-consuming, resource-intensive, and

intriguing process. Searching for answers concerning the link between multiple data categories is referred to as data analysis. Because this research is based on a hybrid method, both qualitative and quantitative analysis must be performed in order to properly analyze the data. Moreover, this study aims to create a relationship between the organizational success of construction project managers and factors related to workload, time, and organization, as outlined in the conceptual model and hypothesis. The data clustered on a Likert-type scale from the questionnaire were entered into SPSS statistical tools. Hypotheses were only checked using 'Cronbach's alpha' after checking the reliability of the data for each element. The alpha of Cronbach is an intrinsic accuracy calculation and it is known to be a durability calculation of size. Through a regression analysis conducted from SPSS results, the relations between variables were obtained.

3.8.1 Descriptive Statistics Analysis

Descriptive statistics are used to explain the basic characteristics of learning data and one of the significant characteristics of any data collection. Descriptive statistics consist of data processing, description and results according to Taylor (2010), to produce easy-to-read images to facilitate decision-making over graphical tools such as charts, graphs, tables, percentages and descriptive contacts, with the standard deviation, mean, median and mode to name a few. According to Kaur, Stoltzfus, and Yellapu (2018), descriptive statistics are used to organize data by highlighting the relation among variables in a sample or population. Calculating descriptive statistics is a critical first stage in any research project, and it should always be completed before proceeding on to inferential statistical comparisons. Variable types, as well as dispersion/variation, frequency, central tendency, and position measures, are all included in descriptive statistics. Because descriptive statistics compress data into a more reasonable form, they allow construction sector decisionmakers to examine specific populations in a more manageable manner. As a result, a descriptive statistical approach was used to identify the relationship between stress factors and their effects on the performance of Construction Project Managers in this study. By following the approaches used by Fisher and Marshall

(2009), this study has been utilized correlation test and regression analysis for finding the relationship between the stress factors and their impact.

3.8.2 Reliability Test

The validity of the data was tested before the hypothesis was tested. Cronbach's alpha was used to measure the dataset's consistency and reliability. Cronbach's alpha (or coefficient alpha) is a measure of reliability or internal accuracy developed by Cronbach (1951). The term "reliability" refers to how well a test should be performed. In order to perform reliability analysis and internal accuracy of data obtained from respondents, the SPSS statistical software package was used. The following formula is used to do the analysis.

The formula for the standard Cronbach's alpha can be stated as follows:

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}}$$

Equation 3.1: Standardized Cronbach's Alpha

Where,

N = Number of items

$\bar{c}$ = Average covariance between item-pairs

$\bar{v}$ = Average variance

The meaning of α could take as follows as a commonly accepted rule.

Table 3.2: Interpretation of Cronbach's alpha

Cronbach's Alpha	**Internal Consistency**
$\alpha \geq 0.9$	Excellent
$0.8 \leq \alpha \leq 0.9$	Good
$0.7 \leq \alpha \leq 0.8$	Acceptable
$0.6 \leq \alpha \leq 0.7$	Questionable
$0.5 \leq \alpha \leq 0.6$	Poor
$\alpha \leq 0.5$	Unacceptable

Source: Adapted from (Cronbach, 1951)

Although some authors recommend values ranging from 0.90 to 0.95, generally greater than 0.7 are considered acceptable internal consistency.

3.8.3 Content Analysis

Data analysis is used to validate, filter, convert, and restructure data in order to draw precise conclusions for a given circumstance (Johnson and Onwuegbuzie, 2004). Moreover, data analysis is the act of converting acquired data into ordered and organized information (Creswell and Clark, 2011). This is a hazy, time-consuming, resource-intensive, and intriguing process. Searching for answers concerning the link between multiple data categories is referred to as data analysis (Perera and Dewagoda, 2020). Computerized content analysis is a text categorization approach, whereas manual content analysis draws conclusions based on the psychological moods and features of the speaker or writer (Tracy, 2020). The computerized content analysis would not be appropriate since it uses standard criteria and Artificial Intelligence (AI) to analyze data (Fàbregues, Molina-Azorin and Fetters, 2021). As a result, the manual content analysis approach was employed to aid in the summarization of data from semi-structured interviews.

3.8.4 Method of Data Presentation

Data is the opinion of respondents. Respondents' comments were obtained on Likert scales, with values ranging from negative 2 to positive 2 (2, 1, 0, -1, -2). The data are presented in the table. Percentage as a comparative measure was used to indicate the nature of the comments. In the first part, the profile data of the respondents is displayed in the following format. The response classification is tabulated by gender, marital status, age, and work experience.

Table 3.3: Specimen table for demographical data representation

	S	**No of Respondents**	**Percentage (%)**
1	Gender		
2	Marital Status		
3	Age		
4	Working Experience		
Total		**32**	**100**

Table 3.4: Categorization of demographical data

S;	S1:	**Gender**	Male	
			Female	
	S2:	**Marital Status**	Married	
			Unmarried	
			Divorced	
	S3:	**Age**	21-30;	Category1
			31-40;	Category 2
			41-50;	Category 3
	S4:	**Working Experience**	0-5	
			10-May	
			20-Oct	
			Over 20	

The sample table indicates the different groups involved in the research and presented their opinion. For example, taking the table with the S2 factor, it shows how many respondents are married, unmarried, or divorced and expressed as a percentage. The second part of the presentation provides the project managers' answers to each question. How many of the respondents are; Yes: it is affected, how many of them Yes: it is affected up to some extent, Neutral, no: it is not affected or No: it is not affected at all, and the 0 answers indicated that many of them knew nothing about the stated factor. Data are tabulated as in the following sample table.

3.9 Operationalisation of Variables

As elaborated in the conceptual model (research model) organisational performance depends on occupational stress and it is associated with workload and workplace-related causes, organisation related causes and working time-related causes were recognised as the causes of occupational stress. It means increasing the occupational stress of project managers and it caused organisational performance. Three factors were selected workload and workplace-related causes, organisation related causes, and working time-related causes to measure the organisational performance. Each factor was developed on several indicators.

Table 3.5: Operationalisation of Variable associate with Questionnaire

Dependent variable	**Independent variable**	**Co - variables**	**Indicators**	**Q.No.**
Organisational Performance **(Y)**	Occupational Stress **(X)**	Workload and Work place Related Stress Causes **(X1)**	1.Work overload	Q1
			2.Work under load	Q2
			3.Lack of manage over the pacing of work	Q3
			4.Time pressures and deadlines	Q4
			5.Unfair assignment of workload	Q5
			6. Adaptability problem with work nature	Q6
		Organisation Related Stress Causes **(X2)**	1. Conflict in role assignment and performance of the task.	Q7
			2.Lack of suitable promotion	Q8
			3.Unsatisfied salary scale	Q9
			4.Role ambiguity	Q10
			5.Frequently changing of staff members	Q11
		Working Time Related Stress Causes **(X3)**	1.Unpredictable hours of work	Q12
			2.Long hours of work	Q13
			3.Inadequate recess (leave/vacation)	Q14
			4.Uneven working hours (out of scheduled)	Q15
			5.Inflexible work schedule	Q16

3.10 Chapter Summary

The chapter describes the general research approach that was used to successfully attain the study goal. Essentially, this chapter highlighted the study methodologies, research methods, and data processing tools that are accessible. Following that, appropriate study terms were determined. As a research methodology, a mixed approach is used, and a questionnaire survey and interviews have been used as research methods in this study. The gathered data was analysed using the content analysis approach and descriptive statistics method. Finally, to summarize the study, the research procedure is illustrated.

CHAPTER 4

RESEARCH FINDINGS AND ANALYSIS

4.1 Chapter Introduction

The fourth section of the study focuses on the interpretation of the research findings, which were obtained by questionnaire surveys and semi-structured Expert interviews. Furthermore, it concentrates on the findings analysis. All obtained data is assumed to be in one place and will be put into multiple procedures in order to obtain useful information. All data acquired from the literature survey, questionnaire survey respondents, and six semi-structured interviews were evaluated using descriptive statistical analysis and qualitative data quantification methodologies, respectively. They are presented in categorized forms, graphs, and other visual aids in order to give a clear picture of the results and compare them to the literature synthesis. This analysis is focused on achieving each target of the research, which improves the overall flow of the chapter.

4.2 General Details about the Respondents

All questionnaire responses obtained from construction project managers working on public sector projects in the Sri Lankan construction industry (Table 4.1). The questionnaire was distributed to 40 construction sector experts. However, only 32 re-condensates were obtained by demonstrating a response rate of 80%.

Table 4.1: Distribution of respondents according to the work experiences

	Work experience	**No of Respondents**	**Percentage (%)**
1	0-5	5	15.6
2	5-10	8	25
3	10-20	13	40.6
4	Over 20	6	18.8
Total		32	100

The above Table 4.1 illustrates the respondents with work experience less than 5 years are 15.6% and 25.0% of the correspondents with 5-10 years' experience. As indicated in table 4.4, 40.6% of correspondents are having 10-20 years of work experience while there are 18.8% of respondents with over 20 years of work experience.

In addition, six experts took part in the semi-structured interview. Despite the fact that the interviews were supposed to be conducted by 20 construction industry project management professionals. However, due to the Covid 19 epidemic, only six experts were able to be questioned.

4.2.1 Reliability Analysis

According to Saunders et al. (2017), reliability can be referred to as consistency and the questionnaire would be both reliable and valid. However, the researcher means one thing the respondents now and then reliably interpret from a different angle. Then, reliability and validity are two elements fundamental in the evaluation of measuring a tool such as a questionnaire. The tool not be valid if it is reliable but then does not go vice versa with reliability. Tavakol and Dennick (2011) highlighted that the reliability of a tool will not depend on validity.

Although some authors recommend values ranging from 0.90 to 0.95, generally greater than 0.7 are considered acceptable internal consistency. The 16 causes analysed to find the internal consistency of the questions (Listwise deletion based on all variables in the procedure). The outcomes are presented in Table 4.2.

Table 4.2: SPSS Test Results for Reliability Statistics

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.747	0.761	16

According to Table 4.2 above, the Alpha value of Cronbach is around 75% with "Acceptable" internal consistency. Internal accuracy assesses how much a test calculates what it should measure. Thus, the questionnaire can be acceptable.

4.3 Analyses the Data for the Research Objectives

4.3.1 Occupational stress- related factors for construction project managers in public sector construction organizations in Sri Lanka.

The findings of the literature indicated nine (09) occupational stress- related factors of construction project managers in public sector construction organizations. According to the findings of the literature, the respondents acknowledged all nine (09) occupational stress- related factors of construction project managers in public sector construction organizations. Moreover, respondents of the preliminary questionnaire survey proposed seven (7) occupational stress- related factors of construction project managers in public sector construction organizations, which were depicted in bold letters (E.g.: **Inadequate recess (leave/vacation)**). The occupational stress- related factors of construction project managers in public sector construction organizations after the preliminary questionnaire survey were illustrated in Table 4.3 below.

Table 4.3: Occupational stress related factors

Item No.	**Causes of Stress**	**Occupational stress- related factors**
1	Workload and Work place Related Stress Causes	Work overload
		Work under load
		Lack of manage over the pacing of work
		Time pressures and deadlines
		Unfair assignment of workload
		Adaptability problem with work nature
2	Organisation Related Stress Causes	Conflict in role assignment and performance of the task.
		Lack of suitable promotion

		Unsatisfied salary scale
		Role ambiguity
		Frequently changing of staff members
3	Working Time Related Stress Causes	Unpredictable hours of work
		Long hours of work
		Inadequate recess (leave/vacation)
		Uneven working hours (out of scheduled)
		Inflexible work schedule

According to Table 4.3, the participants identified 7 more occupational stress-related factors of construction project managers in public sector construction organizations at the end of preliminary questionnaire survey. With the feedback from preliminary questionnaire survey, all of the occupational stress- related factors of construction project managers in public sector construction organizations, including the newly added occupational stress- related factors, were rated as critical by more than 80% of respondents.

4.3.2 Relationship between the stress factors and their impact on the performance of the Construction Project Managers.

4.3.2.1 Correlation Analysis

The correlation coefficient (r) was calculated to determine the relationship between two variables, such as the dependent variable (Y) and the independent variable (X). Association between occupational stress on the role of construction project managers (X) and organisational performance (Y) of them. Organizational performance (Y) was calculated using secondary data that was accessible to the researcher at the time of the research methodology. It was found, that there was organisation performance of the construction project managers during the last few years. The independent variable (X) was measured in terms of workload and workplace related factors, organisation related factors and working time related factors to measure the organisational performance. These three factor areas were considered as X1, X2 and X3.

The degree of a linear relationship between two variables is measured by Pearson Correlation. The term "linear relationship" refers to a relationship that may be represented by a straight line. Correlation ranges from -1 to +1. The "r" refers for Pearson correlation. Relationships can be divided into three categories., which are;

1. Positive – higher X scores correlate with higher Y scores.
2. Negative - higher X scores correlate with lower Y scores.
3. No relationship – no predictable relationship between X and Y

Decision rule for assessing if the test is significant (for $\propto = 0.05$);

- If $p \leq 0.05$, the test is *significant* – there is a significant relationship between organisational performance (dependent variable, Y) and occupational stress (independent variable, X).
- If $p > 0.05$, the test is *not significant* – there is a not a significant relationship between organisational performance and occupational stress.

Table 4.4: SPSS output for Correlation Analysis Y and X1

Correlations

		Y	X1
Y	Pearson Correlation	1	-0.653
	Sig. (2-tailed)		0.000
	N	32	32
X1	Pearson Correlation	-0.653	1
	Sig. (2-tailed)	0.000	
	N	32	32

Table 4.4 indicates, the correlation between the workload and workplace related stress (independent variable X1) and the organisational performance (dependent variable Y) with a Pearson correlation coefficient of -0.653, it was statistically significant at the 0.01 level. It shows that workload and workplace-related stress have a negative impact on organizational performance. Moreover, workload and workplace related stress (independent variable X1) has been able to obtain a significance level of 0.0000 which is less than 0.05 and it supports the HA_1. It also

demonstrates that it supports the hypothesis of (HA_1) of there is a relationship among workload and workplace-related stress and organizational performance.

Table 4.5: SPSS output for Correlation Analysis Y and X2

Correlations

		Y	X2
Y	Pearson Correlation	1	-0.495
	Sig. (2-tailed)		0.000
	N	32	32
X2	Pearson Correlation	-0.495	1
	Sig. (2-tailed)	0	
	N	32	32

As per the results of Table 4.5, the correlation between the organisation related stress (X2) and the organisational performance (Y) with a Pearson correlation coefficient of -0.495, it was statistically significant at the 0.01 level. Its demonstrations that there is a negative relationship between organisation related stress and organizational performance. Moreover, organisation related stress (independent variable X2) has been able to obtain a significance level of 0.0000 which is less than 0.05 and it supports the HB_1. It also demonstrates that it supports the hypothesis of (HB_1) of there is a relationship among organisation related stress and organizational performance.

Table 4.6: SPSS output for Correlation Analysis Y and X3

Correlations

		Y	X3
Y	Pearson Correlation	1	0.443
	Sig. (2-tailed)		0.000
	N	32	32
X3	Pearson Correlation	0.443	1
	Sig. (2-tailed)	0.000	
	N	32	32

Table 4.6 indicates, the correlation between the working time related stress (X3) and the organisational performance (Y) with a Pearson correlation coefficient of +0.443, it was statistically significant at the 0.01 level.

Its illustrations that there is a positive relationship between working time related stress and organizational performance. Moreover, working time related stress (independent variable X3) has been able to obtain a significance level of 0.0000 which is less than 0.05 and it supports the HC_1. It also demonstrates that it supports the hypothesis of (HC_1) of there is a relationship between organisation related stress and organizational performance.

4.3.2.1.1 Summary of Hypothesis

Table 4.7: Summary of hypothesis testing

Variable	Whether supported or not	Values
Workload and workplace-related stress	Supported	β = -0.085 (t=-0.171, p<0.05)
Organizational related stress	Supported	β = -0.116 (t= -0.975, p<0.05)
Working time-related stress	Supported	β = 0.139 (t=1.095, p<0.05)

4.3.2.2 General Overview of the Impact Analysis

Regression analysis is a collection of statistical procedures for determining the relationships between a dependent (also known as "outcome variable") and one or more independent (also known as "predictors") variables. Analysis of regression generates a regression equation where coefficients represent the relationship between each independent variable and the dependent variable. To make predictions, you can also use the equation. Regression analysis provides the benefit of assisting in the determination of which variables are most important, which may be ignored, and how those variables are related to one another.

4.3.2.2.1 Multi Collinearity Diagnostic Test

Before proceeding the regression analysis, it is required to do a **Multi collinearity Diagnostic test.** A high number of interrelationships between independent variables characterizes multicollinearity. This is a major concern in the analysis of regression

variances. It can have a major impact not only on the predictive capacity of the regression model, but also on the estimation of regression coefficients and statistical significance tests. A researcher's ideal circumstance would be to have a number of independent variables that are significantly associated with the dependent but have low correlation with one another. There are two phases to the Multicollinearity test.

Step 1: Using the inter-correlation matrix, compare the Pearson correlation coefficients of each independent variable. There is a **high risk of multicollinearity** if the inter-correlation Pearson coefficient between any two independent variables is strong, that is, **0.9 or higher**. The risk of multicollinearity is very low if the Pearson coefficient is weak (about 0).

Step 2: Tolerance values and the Variance Inflation Factor are compared (VIF). **Lower Tolerance** numbers **(0 ≤ Tolerance ≤ 0.2)** and **Higher VIF** values **(VIF ≥ 5)** represent higher degrees of multicollinearity. The tolerance value ranges from 0 to 1. Any value can be given to VIF. Check to see if the **VIF values are less than 5** and the **Tolerance values are more than 2**. If this is the case, there is no risk of multicollinearity.

Multicollinearity is avoided if the Tolerance and VIF values are within the predicted range. As a result, multi-regression analysis may now be completed in only a few steps.

Table 4.8: Multicollinearity Statistics Model

Independent Variable	Tolerance	VIF
Workload and Workplace Related Stress Causes (X1)	0.795	1.257
Organization Related Stress Causes (X2)	0.699	1.431
Working Time Related Stress Causes (X3)	0.834	1.200

a. Dependent Variable: Y (Occupational Performance)

The multicollinearity diagnostic was used to determine whether the independent variables were strongly corrected among themselves. The inter-correlation matrix's

Pearson correlation coefficients were less than 0.90, and when Tolerance values and Variance Inflation Factors (VIF) were examined, Tolerance values were higher than 0.2 and VIF values were less than 5. Multicollinearity is avoided as a result of the Tolerance and VIF values being within the predicted range. As a result, a multi-regression analysis may be carried out.

According to the current research model, it studied the relationship between an organisation performance (dependent variable - Y) and occupational stress (independent variables - X), which are measured under three variables such as, workload and workplace related causes (X1), organisation related causes (X2) and working time related causes (X3).

Regression is a mathematical practice for overcoming the linear relationship of 02 variables or more. Regression is used mainly for causal inference and forecasting. In its simplest (bivariate) form, regression shows the relationship between one independent variable (X) and a dependent variable (Y), as shown in the formula:

$$Y = \beta_0 + \beta_1 X + u$$

Equation 4.1: Relationship between dependent and independent variables

The gradient (slope) parameter (β1) and the rank of the dependent variable are provided with the position and magnitude of that relative, while the independent variable is not present and the intercept parameter (β0) is given. The amount of variance not expected by the gradient and intercept terms is captured by an error term (u). The coefficient of regression (R2) indicates how well the values fit into the results. As a result, regression shows how variance in one variable is caused by variation in another. For the Multiple Regression Analysis, the stages are as follows.

Step 1: The minimum and maximum values of the "Standard Residual" shall never exceed -3.29 or +3.29. There are outliers in the collected data if they exceed. If outliers are found, they must be removed from the database, and the regression test shall be repeated.

Step 2: The value of **"Durbin-Watson"** must be between 1 and 3 **(1 ≤ Durbin-Watson ≤ 3)**. Consider R squared (Coefficient of determination) value and statistical significance of P<0.05 if the data are independent within the specified range.

Step 3: When all other independent variables are held constant, the "Unstandardized Coefficients" indicate how much the dependent variable varies with an individual variable. The + or – sign before the "B" can be used to interpret and report the "B" values as follows: "For each one unit rise in "independent variable," there is an increase/decrease in "dependent variable," of "B" times.

The significance value P for the Standardized Beta values must be P<0.05, indicating that the variable makes a significant unique contribution to the prediction of the dependent variable. If P>0.05, the variable is not making a significant unique contribution to the dependent variable's prediction.

4.3.2.2.2 Multi-Regression Analysis

Table 4.9 present the findings of the SPSS Multi-Regression Study. The independent variables were obtained as workload and workplace related stress, organisation related stress, and working time related stress whereas dependent variables can be taken performance related causes.

Table 4.9: Model Summary

R	R Square	Adjusted R Square	Std. The error of the Estimate	Sig. (p-value)	Durbin-Watson
0.829	0.675	0.664	0.594	0.000	1.669

a. Predictors: (Constant), X3, X2, X1

b. Dependent Variable: Y

Analysis: Table 4.9 shows a summary of the model, with R square statistics of 0.675 and a statistical significance of P<0.05 as the item of interest. This suggests that kinds of pressures predicted 67.5 % of the variations in organizational

performance. The Durbin-Watson value was 1.669 and between +1 and +3, indicating that the observation was independent.

Table 4.10: SPSS Test Results for Regression Analysis (Coefficients)

Model (Variable)	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig. (P-value)**
	B	**Std. Error**	**Beta**		
(Constant)	4.657	0.173		14.373	0.000
Workload and Workplace Related Stress	-0.085	0.202	-0.035	-0.171	0.005
Organization Related Stress	-0.116	0.119	-0.214	-0.975	0.000
Working Time Related Stress	0.139	0.127	0.220	1.095	0.020

Considering the Table 4.10, For workload and workplace-related stress, the unstandardized coefficient B1 equals -0.085. This means that for every one unit increase in workload and workplace related stress, there is a -0.085-item unit decrease in organizational performance. The unstandardized coefficient for organization related stress, B2 is -0.116. This means that for every one unit increase in organization related stress, the organizational performance decreases by -0.116 items units. Working time related stress has an unstandardized coefficient of 0.139. This means that for every one unit increase in working time related stress, 0.139 item units increase in organizational performance.

The unstandardized coefficients for workload and workplace related stress, organization related stress, and working time related stress are -0.085, -0.116, and 0.139, respectively, as shown in the above results, and the following regression equation can be derived from the available data for predicting organizational performance from occupational stresses.

Y = 4.657 - 0.085 X1 -0.116 X2 + 0.139 X3

Y = Organisational Performance

X1 = Workload and Workplace Related Stress

X2 = Organization Related Stress

X3 = Working Time Related Stress

4.3.3 Identifying the most critical stress factors on the performance of the Construction Project Managers

4.3.3.1 Descriptive Statistics Analysis

Descriptive statistics are used to explain the basic characteristics of learning data and one of the significant characteristics of any data collection. They deliver simple summaries around the measures and sample. Descriptive statistics consist of data processing, description and results according to Taylor (2010), to produce easy-to-read images to facilitate decision making over graphical tools such as charts, tables, graphs, percentages and descriptive contacts, with the standard deviation, mean, median and mode to name a few.

4.3.3.1.1 Descriptive Analysis of Workload and Workplace Related Stress

Table 4.11: SPSS output of Descriptive Analysis for Workload and Workplace Related Causes

Ref. No	Factor	Degree %					Mean	Standard Deviation	Under "Afected" - Response Percentage (%)
		-2	-1	0	1	2			
Q1	Have you been stressed by ***work overload*** in your organisation?	-	-	-	20	12	1.38	0.492	100
Q2	Have you been stressors due to ***work under load*** in your organisation?	2	5	9	14	2	0.28	1.023	50
Q3	Does Lack of ***control over pacing*** of work load you to be in stress?	-	3	7	20	2	0.66	0.745	69
Q4	Have you been stressed by ***time pressures and deadlines*** in your organisation?	-	-	1	19	12	1.34	0.545	97
Q5	Have you faced ***unfair assignment*** of workload which leads you for stress?	-	3	5	17	7	0.88	0.871	75
Q6	Have you been stressed due to ***adaptability*** problem with work nature in your organisation?	1	3	6	16	6	0.72	0.991	69

The findings for each instrument in the workload and workplace related stress variable in the analysis are shown in Table 4.11 above. Under the "stress of workload and workplace" component of questions 1 to 6, it seems like most project managers have agreed on this point. Between them, 100% “affected” to that the stressed by work overload in the organisation, 50% “affected” that the stressors due to work underload in the organisation, only 69% “affected” that the lack of control over the pacing of workload in stress, most of the respondents “affected” (97%) that stressed by time pressures and deadlines in the organisation but only 75% “affected” that faced unfair assignment of workload which leads for stress and 69% “affected” that stressed due to adaptability problem with work nature in the organisation is very effective for them. Accordingly, an average of 77% of the project managers has decided on this regard.

4.3.3.1.2 Descriptive Analysis of Organisation Related Stress

Table 4.12: SPSS output of Descriptive analysis for Organisation Related Causes

Ref. No	Factor	Degree %					Mean	Standard Deviation	Under "Afected" - Response Percentage (%)
		-2	-1	0	1	2			
Q7	In your opinion, does the stressor due to ***conflict in role assignment*** performance of task affected you?	1	1	6	20	4	0.78	0.832	75
Q8	In your opinion, does the stress caused by ***lack of promotion*** opportunities affected you?	1	4	7	16	4	0.56	0.982	63
Q9	In your opinion, does the stressor due to ***unsatisfied salary scale*** in your organisation affected you?	1	3	3	16	9	0.91	1.027	78
Q10	In your opinion, does the stressor caused by ***role ambiguity*** in your organisation affected you?	1	3	12	12	4	0.47	0.950	50
Q11	In your opinion, does the stressor due to ***frequently changing of staff*** members’ affected you?	4	4	4	13	7	0.47	1.319	63

Table 4.12 above gives the results for each tool in the organisation related stress variable in the study. Questions 07 to 11 capture for aspect under the “stress of organisation related causes”, it seems that most of the project managers have decided on this regard. Between them, 75% “affected” to that the stressed due to

conflict in role assignment, 63% “affected” that the stressors caused by lack of promotion opportunities, most of the respondents “affected” (78%) that the stressed due to unsatisfied salary scale, only 50% “affected” that stressors caused by role ambiguity in the organisation but only 63% “affected” that the stressors faced due to frequently changing of staff with the work environment in the organisation are very effective for them. Accordingly, an average of 66% of the project managers has decided on this regard.

4.3.3.1.3 Descriptive Analysis for Working Time Related Stress

Table 4.13: SPSS output of Descriptive analysis for Working Time Related Causes

Ref. No	Factor	Degree %					Mean	Standard Deviation	Under "Afected" - Response Percentage (%)
		-2	-1	0	1	2			
Q12	Have you been stressed due to ***unpredictable hours*** of work in your organisation?	-	11	3	13	5	0.38	1.129	56
Q13	Have you been stressed due to ***long hours*** of work in your organisation?	1	4	6	11	10	0.78	1.128	66
Q14	Have you been stressors due to ***inadequate recess*** (leave/vacation) in your organisation?	2	3	13	11	3	0.31	0.998	44
Q15	Have you been stressed due to ***unstable working hours*** (ex: not according to a schedule)	-	11	5	16	-	0.16	0.920	50
Q16	Does the ***inflexible work schedule*** in your organisation caused you stress?	-	9	9	14	-	0.16	0.847	44

Summary of the statistic of tools practiced to measure aspects of working time related stress is recorded in the above Table 4.13. The responses for questions 12 to 16 for the first aspect under the “stress of working time”, it seems that most of the project managers have not decided on this regard as “stress of workload” analysis. Among them, 56% “affected” to that the stressed due to unpredictable hours of work in the organisation, most of the respondents “affected” (66%) that the stressed due to long hours of work in organisation, only 48% “affected” that stressors due to inadequate recess (leave/vacation) in the organisation but only 50% “affected” that stressed due to unstable working hours (example: not along with an agenda) and 49% “affected” that the inflexible work schedule in the organisation caused the

stress is vastly effective for them. The response rate received in general exceeds about 52%.

4.3.3.1.4 Descriptive Analysis for Performance of Related Causes

Table 4.14: SPSS output of Descriptive analysis for Performance Related Causes

Ref. No	Factor	Degree %					Mean	Standard Deviation	Under "Afected" - Response Percentage (%)
		-2	-1	0	1	2			
Q17	I estimated an overrunning budget for projects.	-	2	6	19	5	0.84	0.767	75
Q18	I have made much calculations or transferring mistakes.	-	4	16	9	3	0.25	0.672	38
Q19	I am not get things done on time.	2	5	6	12	7	0.53	1.191	59
Q20	It's harder for me to meet client's requirement at one time.	1	7	5	22	6	0.41	1.043	88
Q21	I have an ineffective schedule during plan.	-	8	12	11	1	0.16	0.847	38
Q22	I don't have an efficient construction schedule planning.	2	2	10	9	9	0.66	1.153	56
Q23	I have an efficient think win/win.	-	-	3	20	9	1.19	0.592	91
Q24	I have efficient tools to monitor progress.	3	2	7	15	5	0.53	1.135	63
Q25	I have the ability to deliver a construction project in a timely manner.	-	-	3	21	8	1.16	0.574	91
Q26	I have good communication and coordinating skill with superiors/subordinates.	-	1	1	18	12	1.28	0.683	94

The summary of the statistic of tools used to measure aspects of performance related causes is listed above in Table 4.14. By observing the tools used to measure performance factors, it seems that most of the project managers have decided on this regard. Questions 17 to 26 capture for aspect under the performance related causes and in question number 17, 75% responded as "affected" that performance-related causes. Likewise, for question 18 - 38% responded, question 19 - 59% responded, question 20 - 88% responded, question 21 - 38% responded, question 22 - 56% responded, question 23 - 91% responded, question 24 - 63% responded and question 25, 91% responded as "affected" that performance related causes. Also, most of the respondents as "affected" (94%) that the performance related causes for

question 26. Accordingly, an average of 69% of the project managers has decided on this regard.

4.3.4 Solutions to handle occupational stress faced by Construction Project Managers

Occupational stress among the Construction Project Managers (CPM) have been identified as a challenging towards the performance of the CPMs through the conducted literature review and initially in this study, occupational stress-related factors of CPMs in public sector construction organizations in Sri Lanka have been identified through a comprehensive literature survey, then through the Semi-structured interviews which conducted an in-depth justification and clarification were received from the experts of the industry in order to identify solutions to handle occupational stress faced by Construction Project Managers. Out of the 32 responses received from the distributed 40 questionnaire surveys, 6 most experienced respondents were considered fit for conducting semi-structured interviews.

Table 4.15: Content Analysis Summary

Type of Occupational Stress	Stress Factors - as per the Level of Importance (with result of Questionnaire)	Interviewee	Proposed Solutions	Short-listed as per the frequency
Workload and Workplace Related Stress Factors	(Q1). What are the solutions for the "***work overload***" related stresses in your organisation?	R1	Prioritize for the most urgent and re-organize	1. Prioritize for the most urgent and re-organize
			Schedule work to be perform	
		R2	Prioritize for the most urgent and re-organize	2. Discuss with management and supporting team
			Discuss with supporting team and seniors	
		R3	Sharing work load	3. Schedule work to be perform
			Discuss with supporting team and seniors	
		R4	Prioritize for the most urgent work	4. Sharing work load
			Get more rest with enough sleep	
		R5	Spend with short break and re-schedule the work	5. Get more rest with enough sleep
			Discuss with management and supporting team	
		R6	Schedule work to be perform	

			Prioritize for the most urgent and re-organize	
	(Q4). What are the solutions for the "***time pressures and deadlines"*** related stresses in your organisation?	R1	Work programming accordingly	1. Re-schedule work to do
			Schedule work to be perform	
		R2	Work programming accordingly	2. Prioritize, adapt and re prioritize
			Re-schedule work to do	
		R3	Re-schedule work to do	3. Work programming accordingly
			List out the work under the priority basis	
		R4	Re-schedule work to do	3. Re-planning
			Prioritize, adapt and re prioritize	
		R5	Positive attitude	5. Positive attitude
			Alternate plan	
		R6	Re-planning	
			Prioritize for the most urgent work	
	(Q5). What are the solutions for the "***unfair assignment of workload"*** related stresses in your organisation?	R1	Discuss with management	1. Discuss with management and supporting team
			Try to avoid and adjust	
		R2	Delegate the work to others	2. Try to avoid and adjust
			Considering as new opportunity	
		R3	Negotiating with management	3. Schedule work plan

			Discuss with supporting team and seniors	
		R4	Try to avoid and adjust	4. Delegate the work to others
			Discuss with management and supporting team	
		R5	Schedule work plan	5. Considering as new opportunity
			Try to avoid and adjust	
		R6	Schedule work plan	6. Negotiating with management
			Discuss with management	
Organisation Related Stress Factors	(Q9). What are the solutions for "***due to unsatisfied salary scale"*** related stresses in your organisation?	R1	Negotiating with management	1. Negotiating with management
			Try to avoid and adjust	
		R2	Inform to management	2. Try to avoid and adjust
			Try to avoid and adjust	
		R3	Negotiating with management	3. Join with part time job
			Find extra income	
		R4	Accept the situation	4. Leave the Organisation
			Leave the Organisation	
		R5	Discuss with management	4. Accept the situation
			Join with part time job	
		R6	Negotiating with management	4. Inform to

			Try to avoid and adjust	management
	(Q7).What are the solutions for "***due to conflict in role assignment performance of task"*** related stresses in your organisation?	R1	Communicate with management	1. Try to avoid and adjust
			Try to avoid and adjust	
		R2	Try to avoid and adjust	2. Communicate with management
			Request a suitable training	
		R3	Discuss with management	3. Request a training
			Try to avoid and adjust	
		R4	Communicate with management	3. Build strong relationship with all
			Build strong relationship with all	
		R5	Request a training4	4. Maintain morale / self-confidence
			Maintain morale / self-confidence	
		R6	Analyse and find the self-justification	5. Analyse and find the self-justification
			Accommodating with all	
	(Q8). What are the solutions for "***lack of promotion opportunities"*** related stresses in your organisation?	R1	Send an official request to management	1. Send an official request to management
			Provide extra value to the organisation	
		R2	Show, capable to promotion	2. Show, capable to promotion
			Discuss with management	
		R3	Send an official request to consider	3.Keep a positive

			Try to give more value	attitude
		R4	Find the route course and try to adjust accordingly	4. Resign
			Keep a positive attitude	
		R5	Show, capacity to promotion	
			Send an official request to consider	
		R6	Send an official request to consider	
			Resign	
Working Time Related Stress Factors	(Q13). What are the solutions for "***due to long hours of work"*** related stresses in your organisation?	R1	Alternate plan	1. Acknowledge and go to Alternate plan
			Discuss with supporting team	
		R2	Discuss with supporting team and management	2. Discuss with supporting team and management
			Have a plan B	
		R3	Acknowledge	3. Flexibility
			Spend more time and finish off	
		R4	Alternate plan	4. Spend more time and finish off
			Flexibility	
		R5	Discuss with supporting team	4. Have a plan B
			Flexibility	

		R6	Request an additional support from management	
			Acknowledge and go to Alternate plan	
	(Q12). What are the solutions for "***due to unpredictable hours of work"*** related stresses in your organisation?	R1	Discuss with supporting team and seniors	1. Accept that unexpected events happen
			Accept that unexpected events happen	
		R2	Discuss with supporting team	2. Discuss with supporting team and seniors
			Expand staff	
		R3	Accept that unexpected events happen	3. Expand staff
			Spend more time and finish off	
		R4	Accept that unexpected events happen	4. Spend more time and finish off
			Make it learning opportunity	
		R5	Expand staff	5. Make it learning opportunity
			Try to avoid and adjust	
		R6	Sharing with a colleague	6. Try to avoid and adjust
			Acknowledge	
	(Q15). What are the solutions for "***due to***	R1	Accept that unexpected events happen	1. Accept that unexpected events
			Discuss with supporting team and seniors	

	unstable working hours" related stresses in your organisation?			happen
		R2	Positive attitude	2. Discuss with supporting team and seniors
			Negotiate with Superior	
		R3	Discuss with supporting team and seniors	3. Positive attitude
			Accept that unexpected events happen	
		R4	Discuss with supporting team and seniors	4. Negotiate with Superior
			Accept that unexpected events happen	
		R5	Negotiate with Superior	4. Flexibility and accept the challenge
			Flexibility and accept the challenge	
		R6	Accept that unexpected events happen	4. Sharing with a colleague
			Sharing with a colleague	

4.3.4.1 Content Analysis for Semi- Structured Interviews

As per the Table 4.15, the highest frequency for solutions related to "work overload" related stresses was obtained by “Prioritizing the most urgent work and re-organize”, and the next highest frequencies were obtained by “Discussing with management and supporting team” and “Schedule work to be perform”. Many experts have proposed “Prioritizing the most urgent work and re-organize”, as a solution to the "work overload" related stresses. R2 stated that,

“Prioritizing the most urgent work and re-organize has been recognized as an effective tool for overcoming the stress that occur among many sectors. Therefore, as a dynamic sector that consists with multiple uncertainties, construction managers can opt to prioritize the work load depending upon the urgency level and then re- schedules the daily work agenda to avoid any daily chaotic situations.”

Moreover, R4 also supported the prioritization of the most urgent work and re-organization by claiming that,

“Prioritizing the most urgent work and re-organizing has been majorly used in manufacturing sector in their work agendas. Therefore, there is no harm in using this method for the services sector since completion of construction project within a limited time, cost and quality is also similar compared to manufacturing a product.”

Despite that, “Discussing with management and supporting team” was supported by many experts such as, R1, R2, R3, R5 and R6 claiming that,

“Good communication is the key to effective group work, since most of the public sector projects are monitored and administrated through a group of individuals, discussing with management and supporting team regarding the work load would bring an understanding regarding the work stress among the management and supporting team. The management and supporting team should also need to empathize regarding the situation and shall make remedial actions sort out the work stress imposed upon construction project managers.”

Despite the above-mentioned solutions, Scheduling the work to be performed, sharing the work load & get more rest with enough sleep have also been suggested by the experts as solutions to "work overload" related stresses. Furthermore, solutions related to "time pressures and deadlines" related stresses have also been similar to the solutions related to "work overload" related stresses. According to the semi- structured expert interviews, the frequency related to solutions related to the "time pressures and deadlines" have been obtained by the "Re-scheduling work to do". Then the next highest ranked solutions were, Prioritizing, adapting and re prioritizing, work programming accordingly, re-planning & positive attitudes. In an aspect of "time pressures and deadlines" related stresses, highest ranked solutions are similar to the solutions given for the "work overload" related stresses. This has been further explained by the R4 as follows,

"Most of the time work pressure occurs as a result of the time pressures and deadlines. Thereby, the stress occurs, when construction project managers face high amount of work load to be completed within a limited time frame. Therefore, there is no surprise of finding similar solutions to co- related stresses because all of them are complementary to each other."

Moreover, work programming accordingly, re-planning and positive attitudes have also been suggested by the experts as solutions to the "time pressures and deadlines" related stresses. According to R2,

"When a crucial situation comes up in a construction project, as construction project managers we have to re-plan the whole process of the construction along with the work schedule, in order cater the expectations of the stakeholders. Otherwise, the situation would become worse. In order to cater these requirements construction project managers should have an internal positive attitude."

According to many scholars, "Unfair assignment of workload" can also be considered as a major stressor to the public sector construction project managers, since there are many politics going inside government sector projects. Some of the construction project managers receive huge adorations from the departmental heads and others have to bear the work load of the ones who receive adorations as well. In

the expert interviews, the highest ranked response was, discussing with management and supporting team, and then the following solutions have given by the experts. Such as, trying to avoid and adjust, scheduling the work plan, delegating the work to others, considering as new opportunity and negotiating with management. In this instance, the first two highest ranked solutions are very similar to the other solutions and delegating the work to others, considering as new opportunity and negotiating with management have been added as new solutions. Thereby, R2 suggested that,

"*Construction Project Mangers acts as leaders of the construction projects, and thereby they don't have to carry the full burden of the construction projects, delegation of the workload in a justifiable manner can result in effective completion of the work load by the due date and thereby labour hours can also be optimized."*

Moreover, considering the work load as new opportunity and negotiating with management have also been suggested by the experts during the interviews by emphasizing several reasons. Moreover, "unsatisfied salary scale" related stresses have also been considered as a major reason for workplace related stress among the construction project managers in public sector organizations in Sri Lanka. The "unsatisfied salary scale" related stresses mainly occurs as a sub sector of the "Organisation Related Stress Factors" and thereby during the semi- structured interviews, negotiating with management have been able obtained highest rank and trying to avoid and adjust & joining with part time job have been able to rank second and third in the set of solutions. Even though, R3 and R5 have suggested joining a part time job as a remedy to "unsatisfied salary scale" related stresses, all the other participants did not agree with that statement. Hence, R6 have stated that,

"Objective of a full- time job is getting paid enough to live comfortably. Moreover, a position of a construction project manager is highly skilled and qualified position. Thereby, the construction project managers' salary should be enough for him/her to live comfortably. If he/she is looking for a part time job that means he/she is living barely enough to survive and by doing a part time job he/she would become further stressed and thereby eventually their performance will decrease drastically"

In addition to the above statement by R6, R4 have suggested that in such a situation, a construction project manager has two possible solutions. That is either to accept the situation and continue the work or to leave the organization for an organization that gives better value for the skills. “Conflicts in role assignment performance of task" related stresses have also been able to draw the attention of the experts during the semi structured interviews. Thereby, trying to avoid and adjust & communicating with management have been able to rank first and second among the numerous solutions that have been given by the experts. Requesting a training & building strong relationship with all have been able to rank third & fourth among the numerous solutions that have been given by the experts. Moreover, maintaining the morale / self-confidence & analysing and find the self-justification have also been mentioned by the experts during the interviews. R5 stated that,

“Maintaining the morale / self-confidence is essential for any construction project manager since he/she is the leader of a massive, millions of worthy construction project. Thereby, he/she must act with self- confidence in order to provide leadership for the project team. Moreover, the morale / self-confidence that he/she has with them is essential to decrease the work stress.”

Experts who took part in the semi- structured interviews have illustrated many solutions to "lack of promotion opportunities" related stresses. Thereby, sending an official request to management have ranked first among all the solutions that they have given. Moreover, Showing, capability to promotions & keeping a positive attitude have also been marked by the experts as second and third highest ranked solutions. Additionally, resigning has also been given as a solution for construction project managers in order to deal with the "lack of promotion opportunities" related stresses. Under the “Working Time Related Stress Factors”, solutions to “long hours of work" related stresses have been emphasized by the experts during the interviews. Thereby, Acknowledging and going to an alternate plan & discussing with supporting team and management have ranked first and second among the solutions. Moreover, flexibility, spending more time and finish off & having a plan B have ranked third, fourth & fifth. Thereby, R6 have stated that,

"Acknowledging and going to an alternate plan is essential for any profession, in any unpredictable situation occurs, they must be able to acknowledge and go to an alternate plan".

Solutions to any "Unpredictable hours of work" related stresses have also drawn the attention of the experts as crucial during their interviews. In this situation, accept that unexpected events happen, discuss with supporting team and seniors, expand staff, spend more time and finish off, make it learning opportunity & try to avoid and adjust have ranked respectively through the responses of the experts. Thereby, R1 stated that,

"Accepting the unexpected events is also another duty of a construction project manager. Through the acceptance of the unexpected events, less stress will occur to any construction project manager because, he/she was already expecting something unexpected thing to happen."

Moreover, many experts have suggested the expanding the staff as a resolution to the "Unpredictable hours of work" related stresses. R5 have stated that,

"Most of the times government projects have plenty of funds available at the initial project planning stages. Therefore, if they can allocate additional one or wo staff to each project through those available funds, it will be huge advantage to all the project team and the construction project manager in such hectic situations."

Furthermore, R2 have also supported this expansion of the project staff during the semi structured interviews. Despite that, R3 have stated that,

"Most of the work are not urgent as it seems therefore construction project managers can spend more time and finish off the work later than working until late night."

Solutions to "Unstable working hours" related stresses have also been able to draw the attention of the experts by claiming several solutions. Thereby, accepting that unexpected events happen, discussing with supporting team and seniors, positive attitude, negotiating with Superior, flexibility and accept the challenge & sharing

with a colleague have been raised the possible solutions to the “Unstable working hours" related stresses of the construction project managers. However, most of the highest ranked solutions that were given by the experts were similar to the solutions that were given for the previous stress factors and the newly added solution for “Unstable working hours" related stresses was “sharing with a colleague”. Thereby, R6 stated that,

“Sharing anyone’s burden or stress with a colleague is always bringing so much of relief to a person who suffers from stress, because it copes us to deal with our insecurities and relief our burden. If there is no such trust worthy person to discuss our problems and share our burden, a counsellor would be the best option for a construction manager”.

However, in conclusion it is visible that most of the solutions that have been provided by the experts are complementary and interconnected to one another. The respondents of the semi structured interviews have provided necessary solutions for construction project managers in order to deal with the excessive amount of work stress.

4.3.5 Framework for enabling the best management of occupational stress faced by the Construction Project Managers.

As per the findings of the previous objectives, the final objective of this study, which is to develop a framework that enables the best management of occupational stress faced by the Construction Project Managers have done. Thereby, the framework has been drafted by only using the Workload and Workplace Related Stress Causes & Organisation Related Stress and not by addressing Working Time Related Stress Factors. Because, as per the values that we have received in the Pearson correlation analysis and the regression analysis, the alternative hypothesis (HC_1 – There is a relationship between working time related stress and organizational performance) have been supported and the relationship is positive. Therefore, working time related stress factors cannot be considered for the framework due its positive relationship with the organizational performance. Because, in the essence, a positive relationship denotes that when working time

related stress factors are increasing, the performance of the construction project managers also increases. Since this study has conducted to provide solutions to increase the performance of the construction project managers, there is no purpose of using the factors that increase the performance. For the preparation of the framework, firstly the three highest mean and deviation values obtained stressors were considered and for the solutions, highest ranked solutions that obtained through the semi- structured interviews were considered. The following Figure 4.1 demonstrates the developed framework by utilizing the findings of the objective, one, two, three and four.

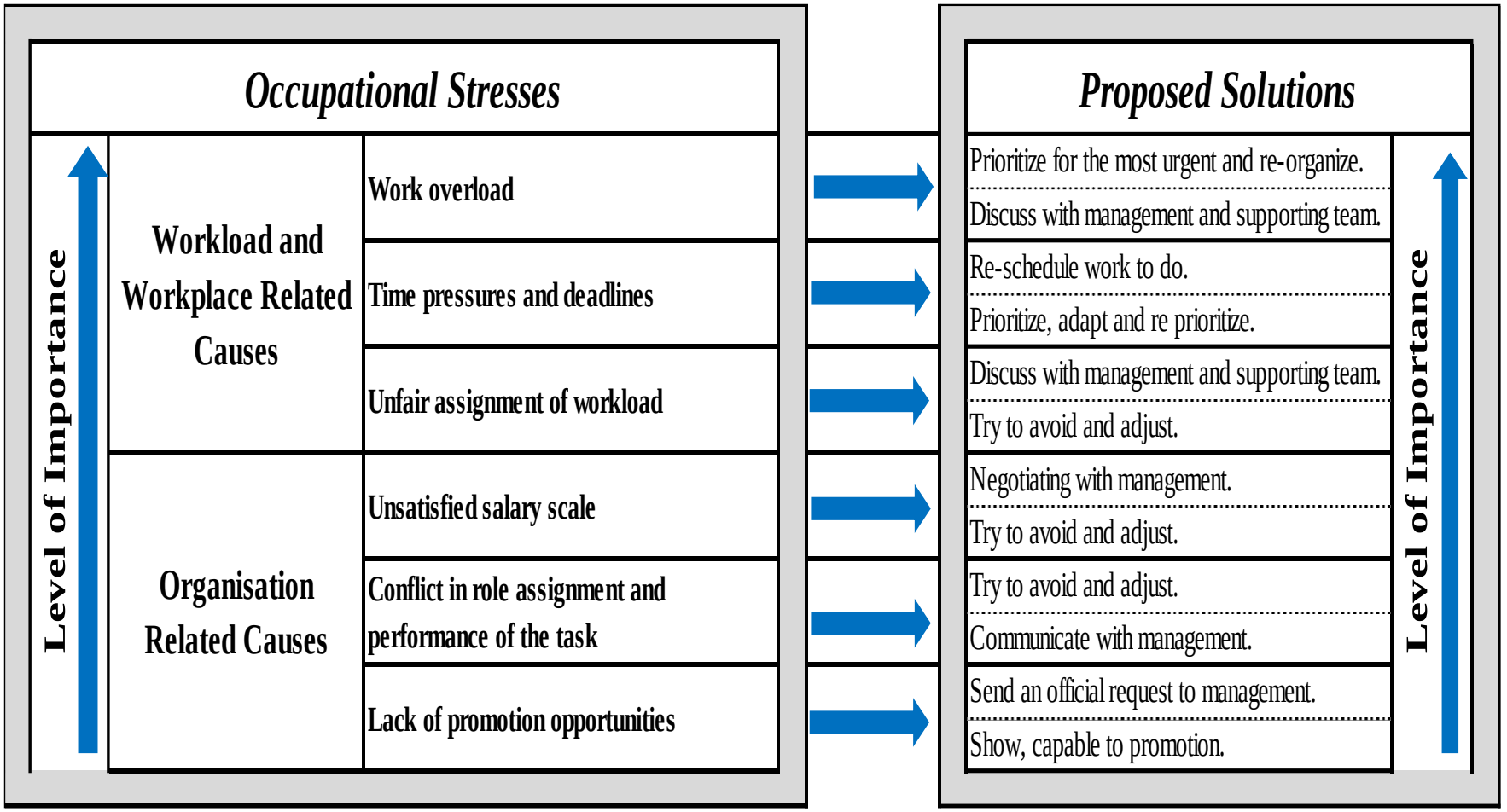

Figure 4.1: Proposed framework for management of occupational stress faced by the Construction Project Managers

4.4 Discussion

The descriptive analysis was done using SPSS software for the data obtained from CPMs of three public sector construction organisations in Sri Lanka, that about 77% of construction project managers were responded as under the “workload and workplace related stress”, 66% of construction project managers was responded as under the “organisation related stress” and 52% of construction project managers was responded as under the “working time related stress”. Accordingly, because of the above founding’s average 65% of the construction project managers have decided on this regard as “under stress”. Therefore, though this study construction project managers of the public sector are more stressed.

Gunning and Cooke (1996), who performed a similar analysis of 61 construction professionals employed in Northern Ireland, have found that what segment of the construction specialist is active and engaged in contracting is below the stress level relative to those in local government and private practice. According to the above foundation's opinion, about 30 percent are "regularly under stress" in private practice and the government sector and 60 percent in the contracting experts. In comparison, only 10 percent of construction experts are "always under stress" and yet none of the persons in the private and local government sectors are always under stress. Thus, while this research building professionals engaged with contracting are more stressed, there is similar stress faced in private practice and local government. A similar relationship may be established among construction project managers in the Sri Lankan government sector.

Similarly, in the study done by CIOB (2006), who did a similar study among 847 construction industry professionals (using a web-based questionnaire accessible), most of whom were construction managers. As per the direct results, 68.2% of respondents working in the construction industry had suffered from stress.

According to the regression analysis done using SPSS, there is a negative relationship between workload and workplace related stress and role performance of construction project managers. It also showed that there is a marginal negative association between organisation related stress and performance. The hypothesis

has also supported the relationship between working time related stress and organisational performance. The results revealed, that the ‘F’ value was found as 0.6, which is significant at 62% significance level (p-value, 0.62). The “R2 value” indicates, that 6% of the variation in the dependent variable (performance related causes) is described by the independent variables (workload and workplace related stress, organisation related stress, and working time related stress).

According to Chohen (1992), "low" is indicated by the R-square value 0.12 or below, "medium" is indicated by values between 0.13 and 0.25, and "high" impact size is indicated by values 0.26 or above. In this respect, this model is low. Because it does not express the model's durability or whether you selected the proper regression, a high or low R-square is not necessarily good or bad. For a well-fitting model, a low R-squared is possible, whereas a high R-square is attainable for a poorly-fitting model, and vice versa. So, the dependency between performance and occupational stress has been proved by modelling the relationship using regression analysis.

The findings of the content analysis display that stress that occurs among construction management professionals comes under three main categories; Workload and Workplace Related Stress Factors, Organisation Related Stress Factors & Working Time Related Stress Factors. However, as per the findings of Ajayi, Jones and Unuigbe (2019), communication and information exchange cause the majority of stress among construction professionals, implying the need of developing communication methods early in the project's life cycle in UK context. Moreover, he states that developing successful strategies is an essential skill that should be taught as such for construction professionals. In addition to each company's communication strategy, organizations that plan to engage in collaborative activities must have a comprehensive communication protocol developed at an inter-organizational level. Further according to Hartenberger, Lorenz and Lützkendorf (2013), in order to address the issues associated with a lack of project knowledge, it is advised that the project team's members better understand and integrate one another, guided by the common aim of effective project delivery.

According to the findings of Ibem et al. (2011), the majority of professionals involved in the design and implementation of building projects in Nigeria reported occupational stress from a variety of causes same as in Sri Lankan context. Because people experience stress in various ways, so do specialists in the Nigerian building construction business; as a result, a variety of mitigation strategies may be explored. He continues, "If the goal is to reduce the occurrence of avoidable stresses associated with meeting ambitious due dates, which most often leads to stress, poor quality work, and low productivity, it is critical for building contractors to work closely with architects, cost consultants, and clients to arrive at realistic budgets and deadlines for job delivery at the design stage of building projects by demonstrating similar responses that received during the construction stage." In contrast, it is clearly visible that stress factors are very similar to the construction project managers of various contexts around the world and only the level of stress has minor differences. Thereby, this study has demonstrated the similarities and differences of the suggested solutions by the experts of both developed and developing countries.

4.5 Chapter Summary

This chapter concludes the statistical study of data obtained from project managers of three public sector construction organizations in Sri Lanka using SPSS tools. The process of data analysis begins with a review of demographics, a questionnaire survey, and detailed analyses of the variables with descriptive and multivariate analysis methods. Through the outcomes, it was identified, that there is a negative relationship between workload and workplace related stress and organisation related stress with organisational performance. Moreover, there is a positive relationship between working time related stress and the organisational performance. The next chapters of this study have discussed regarding the conclusions, recommendations, limitations, and directions for further researches that have made based upon this research.

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5.1 Chapter Introduction

The earlier chapter laid down the main analysis and findings in this study and compared those findings with the outcomes obtained in the literature. This chapter was explaining the conclusions and recommendations, given considering the recognised problem and to improve organisational performance over occupational stress in the construction industry given the government sector in Sri Lanka.

5.2 Key Conclusions

5.2.1 Objective 1: Identify occupational stress-related factors of construction project managers in public sector construction organizations in Sri Lanka.

As per the comprehensive literature review conducted, three major occupational stress related factors of construction project managers in public sector organizations in Sri Lanka have been identified. Furthermore, the findings of the literature indicated nine (09) occupational stressors of construction project managers in public sector organizations. According to the findings of the literature, the respondents acknowledged all nine (09) occupational stressors of construction project managers in public sector organizations. Moreover, respondents of the preliminary questionnaire survey proposed seven (07) occupational stressors of construction project managers in public sector organizations.

5.2.2 Objective 2: Identify the relationship between the stress factors and their impact on the performance of the Construction Project Managers.

This research clarifies the relationship among the construction project manager's performance and causes of occupational stress (workload and workplace related stress, working time related stress, and organisation related stress). The study is done focusing on the construction project managers working in the government sector of Sri Lanka. A sample of 32 project managers working in three government

institutes answered the questionnaires and specified their perception on scales representing the variables measured in this research.

According to the results obtained by using the SPSS software to calculate the Pearson correlation, there is a negative relationship between workload and workplace related stress, as well as organization related stress. Moreover, there is a positive relationship between the working time related stress. The outcomes of the regression analysis yielded help for all the hypothesis except for one. The regression analysis found a positive relationship between working time related stress and performance, as well as a negative relationship between workload and workplace related stress and performance. Furthermore, it was shown that there is a marginal negative relationship between organisation related stress and performance.

5.2.3 Objective 3: Identify the most critical stress factors on the performance of the Construction Project Managers

Descriptive analysis was used to achieve this objective. Tools such as mode, median, or mean may be used to quantify the central propensity. The collected data was analysed using questionnaires with a five-point Likert scale to report answers ranging from Yes, it is affected (2) to No, it is not affected at all (-2) as well as the standard deviation and mean for each indicator and its instruments. Through the numerical values that obtained through the calculations of mean and standard deviation, the most critical stressors on the performance of the Construction Project Managers have been identified for each independent variable**.**

5.2.4 Objective 4: Propose solutions to handle occupational stress faced by Construction Project Managers

The occupational stress that faced by Construction Project Managers is crucial for the success rate and the performance of the construction projects. According to Weththasinghe, Gajendran and Brewer (2016) solutions were obtained to mitigate the identified stress factors and it was analysed by utilizing content analysis. Responses of the questionnaire survey were further justified through the semi-structured interviews with the industrial experts. Through a frequency analysis of the responses that received during the semi structured interviews were ranked.

The highest frequency for solutions related to "work overload" related stresses was obtained by “Prioritizing the most urgent work and re-organize”, and the next highest frequencies were obtained by “Discussing with management and supporting team” & “Schedule work to be perform”. Solutions related to the "time pressures and deadlines" related stresses have also been similar to the solutions related to "work overload" related stresses. The highest ranked response for “Unfair assignment of work-load” was, discussing with management and supporting team according to the experts. During the semi- structured interviews, negotiating with management have been able obtained highest rank and trying to avoid and adjust & joining with part time job have been able to rank second and third in the set of solutions for the “Unsatisfied Salary scale”. Considering the “lack of promotion opportunities" related stresses, sending an official request to management have ranked first among all the solutions that experts have given. “Long hours of work" related stresses have been emphasized by the experts during the interviews. Thereby, Acknowledging and going to an alternate plan & discussing with supporting team and management have ranked first and second among the solutions. With considering the “Unpredictable hours of work" related stresses, accept that unexpected events happen, discuss with supporting team and seniors, expand staff, spend more time and finish off, make it learning opportunity and try to avoid and adjust have ranked respectively through the responses of the experts. Accepting that unexpected events happen, discussing with supporting team and seniors, positive attitude, negotiating with Superior, flexibility and accept the challenge and sharing with a colleague have been raised the possible solutions to the “Unstable working hours" related stresses of the construction project managers.

5.2.5 Objective 5: Develop a framework that enables the best management of occupational stress faced by the Construction Project Managers.

The stress management of public sector organizations to improve the performance of construction project managers frame work has been developed using the results of the previous objectives. The level of importance has been used to categorize occupational stress and organizational performance.

5.3 Recommendations

5.3.1 Recommendations for Industry Professionals and Government

According to the research done, it is proved that most of the project managers in the government construction industry are having lower performance, which was caused by occupational stress. The main significance actor identified among three considered factors is organisation related stresses. However, in the modern era organisations that arrange various strategies to achieve this government organisation in Sri Lanka are not able to take such actions due to being constrained by rules and regulations. Therefore, the following measures could be suggested by referring to the finding of this study.

The project managers, who are dealing with the country's main development projects and dealing with services for the public must be the best performing people as they are directly playing a big role in the country’s economy. The waste of time, a simple mistake may cost millions and maybe a huge loss for the organisation and the industry. So being degraded with performance with the effect of occupational stress caused by organisation related causes is a crisis. It is proven, that dis-satisfied nature in organisation guides the project managers to lower performance.

As per the result, the government and the organisations must take actions to create a better environment and facilitating the project managers in construction industry in the government sector to avoid a drop-down in the performance of the professionals.

Secondly, the workload and workplace related stress causes and organisation related stress, which is negatively affecting performance. The organisations must consider the matter and recruit the project managers to compensate for the workload and workplace related stress and increase the organisation’s performance. The organisation related stresses are mostly created with political influences and events in government organisations. Unnecessary pressure, which is being built up as a result is affecting professionals.

Government and organisations should take actions to avoid unnecessary workload per person and organisation related stresses, which stresses project managers and decrease their performances.

5.3.2 Recommendations for Academic Researches

It is recommended to the researchers to develop their researches in the following areas.

- Considerable research into to identify a proper performance measurement and KPIs for measuring the performance of government organisations performances as individual professionals and as organisations.
- The pattern and effect of stress and performances in the construction industry of the private sector.
- Research to recognise the physical and mental consequences of occupational stress.

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ANNEXURE - I

QUESTIONNAIRE FOR INTERVIEW SURVEY

R.K.P.S. Sewwandi (Reg.No: 179036 C),

Student Postgraduate (MSc. in Project Management),

Department of Building Economics,

Faculty of Architecture,

The University of Moratuwa.

Dear Sir/Madam,

Questionnaire for the Research on "A Framework that Offers Solutions to Mitigate the Occupational Stress Faced by the Construction Project Managers in Public Sector Construction Organizations in Sri Lanka.".

I am a postgraduate student at the University of Moratuwa with, M.Sc. in project management. Currently, I am researching the above topic, and the attached questionnaire is to be used in the questionnaire survey to collect data for research success.

Please share your valuable time and thoughts to fill out the attached questionnaire. I firmly believe that the information gathered through this questionnaire is only used for research success. Data confidentiality will always be maintained.

Finally, thanks for the information and time provided for this research. If you are interested to know the outcome of this research, I would be happy to share it with you.

Thank you
Yours faithfully,

R.K.P.S. Sewwandi, Quantity Surveyor,
State Engineering Corporation of Sri Lanka
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Questionnaire:

Section A: General Information

Personal profile

1. Name of the Respondent (Optional).

……..

2. Designation of the Respondent.

……..

3. Experience in large Construction Projects.

< 5years ☐ 5-10 years ☐ 10 -20years < ☐ 20 years < ☐

4. Gender:

Male: ☐ Female: ☐

5. Age

21-30 Years: ☐ 31-40 Years: ☐ 41-50 Years: ☐

6. Marital status:

Married: ☐ Unmarried: ☐ Divorced: ☐

7. Number of Dependencies: ☐

8. Have you ever experienced “occupational stress” in your organisation?

Yes: ☐ No: ☐

9. In your opinion, have you seen “occupational stress” as a health and safety issue in your professional life?

……..….

10. In your opinion, have you seen “occupational stress” as a motivational factor in your professional life?

…….

Section B - Subject information

11. Please indicate the significance of the following factors which experience stressors in your professional life.

Please add ‘X” in the box of an appropriate answer.

Workload and Workplace Related Causes

1. Have you been stressed by work overload in your organisation?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

2. Have you been stressed due to work under load in your organisation?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

3. Does Lack of control over the pacing of workload you to be stress?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

4. Have you been stressed by time pressures and deadlines in your organisation?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

5. Have you faced unfair assignments of workload which leads you to stress?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

6. Have you been stressed due to adaptability problems with the work nature in your organisation?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

Organisational Related Causes

7. In your opinion, does the stressor due to conflict in role assignment performance of task affected you?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

8. In your opinion, does the stress caused by the lack of promotion opportunities affected you?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

9. In your opinion, does the stressor due to the unsatisfied salary scale in your organisation affect you?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

10. In your opinion, does the stressor caused by role ambiguity in your organisation affect you?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

11. In your opinion, does the stressor due to frequently changing of staff members' affected you?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

Working Time Related Causes

12. Have you been stressed due to unpredictable hours of work in your organisation?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

13. Have you been stressed due to long hours of work in your organisation?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

14. Have you been stressors due to inadequate recess (leave/vacation) in your organisation?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

15. Have you been stressed due to unstable working hours (ex: not according to a schedule)

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

16. Does the inflexible work schedule in your organisation cause you to stress?

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

Performance Related Causes

17. I estimated an overrunning budget for projects.

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

18. I have made many calculations or transferring mistakes.

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

19. I am not got things done on time.

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

20. it’s harder for me to meet the client’s requirement at one time.

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

21. I have an ineffective schedule during the plan.

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

22. I don’t have an efficient construction schedule planning.

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

23. I have an efficient think win/win.

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

24. I have efficient tools to monitor progress.

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

25. I can deliver a construction project on time.

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

26. I have good communication and coordinating skill with superiors/subordinates.

	Yes, it is affected
	Yes, it is affected up to some extent
	Neutral
	No, it is not affected
	No, it is not affected at all

SEMI-STRUCTURED INTERVIEW

The purpose of this semi-structured interview is to find solutions to the occupational stress that Construction Project Managers face.

Type of Occupational Stress	Stress Factors - as per the Level of Importance (with result of Questionnaire)	Construction Project Manager (Experience > 20 years)	Proposed Solutions
Workload and Workplace Related Stress Factors	(Q1). What are the solutions for the "***work overload*** " related stresses in your organisation?	CPM - R1	1
			2
		CPM - R2	1
			2
		CPM - R3	1
			2
		CPM - R4	1
			2
		CPM - R5	1
			2
		CPM - R6	1
			2
	(Q4). What are the solutions for the "***time pressures and deadlines"*** related stresses in your organisation?	CPM - R1	1
			2
		CPM - R2	1
			2
		CPM - R3	1
			2
		CPM - R4	1
			2
		CPM - R5	1
			2
		CPM - R6	1
			2
	(Q5). What are the solutions for the "***unfair assignment of workload"*** related stresses in your organisation?	CPM - R1	1
			2
		CPM - R2	1
			2
		CPM - R3	1
			2
		CPM - R4	1
			2
		CPM - R5	1
			2
		CPM - R6	1
			2

Type of Occupational Stress	Stress Factors - as per the Level of Importance (with result of Questionnaire)	Construction Project Manager (Experience > 20 years)	Proposed Solutions
Organisation Related Stress Factors	(Q9). What are the solutions for "***due to unsatisfied salary scale"*** related stresses in your organisation?	CPM - R1	1
			2
		CPM - R2	1
			2
		CPM - R3	1
			2
		CPM - R4	1
			2
		CPM - R5	1
			2
		CPM - R6	1
			2
	(Q7).What are the solutions for "***due to conflict in role assignment performance of task"*** related stresses in your organisation?	CPM - R1	1
			2
		CPM - R2	1
			2
		CPM - R3	1
			2
		CPM - R4	1
			2
		CPM - R5	1
			2
		CPM - R6	1
			2
	(Q8). What are the solutions for "***lack of promotion opportunities"*** related stresses in your organisation?	CPM - R1	1
			2
		CPM - R2	1
			2
		CPM - R3	1
			2
		CPM - R4	1
			2
		CPM - R5	1
			2
		CPM - R6	1
			2

Type of Occupational Stress	Stress Factors - as per the Level of Importance (with result of Questionnaire)	Construction Project Manager (Experience > 20 years)	Proposed Solutions
Working Time Related Stress Factors	(Q13). What are the solutions for "***due to long hours of work"*** related stresses in your organisation?	CPM - R1	1
			2
		CPM - R2	1
			2
		CPM - R3	1
			2
		CPM - R4	1
			2
		CPM - R5	1
			2
		CPM - R6	1
			2
	(Q12). What are the solutions for "***due to unpredictable hours of work"*** related stresses in your organisation?	CPM - R1	1
			2
		CPM - R2	1
			2
		CPM - R3	1
			2
		CPM - R4	1
			2
		CPM - R5	1
			2
		CPM - R6	1
			2
	(Q15).What are the solutions for "***due to unstable working hours"*** related stresses in your organisation?	CPM - R1	1
			2
		CPM - R2	1
			2
		CPM - R3	1
			2
		CPM - R4	1
			2
		CPM - R5	1
			2
		CPM - R6	1
			2