Career Success for Construction Project Managers:

A Qualitative Study of Construction Project Managers Coping with Stress to Complete Successful Projects

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William R. Mincks

Major Professor: James Gregson, Ed.D.

Committee Members: John Cannon, Ph.D., Michael Kroth, Ph.D., David Gunderson, Ph.D.

Department Administrator: Kathy Canfield-Davis, Ph.D.

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Authorization to Submit Dissertation

This dissertation of William R. Mincks, submitted for the degree of Doctor of Philosophy with a Major in Education and titled **"Career Success for Construction Project Managers: A Qualitative Study of Construction Project Managers Coping with Stress to Complete Successful Projects**," has been reviewed in final form. Permission, as indicated by the signatures and dates below, is now granted to submit final copies to the College of Graduate Studies for approval.

Major Professor: _____ Date: _____
James Gregson, Ed.D.

Committee Members: _____ Date: _____
John Cannon, Ph.D.

_____ Date: _____
Michael Kroth, Ph.D.

_____ Date: _____
David Gunderson, Ph.D.

Department
Administrator: _____ Date: _____
Kathy Canfield-Davis, Ph.D.

Abstract

Construction project managers (CPMs) are responsible for the successful completion of projects and implementation of organizational requirements as well as innovation within their project team. Their workload is large and they are held accountable for the timely completion, financial success, and customer satisfaction for the entire project. As projects are constructed in restrictive time frames, have tight budgets, and must meet high quality standards, CPMs often experience a great deal of pressure from construction owners, construction organizations, communities, subcontractors, suppliers, and the workforce. These pressures can create a stressful environment for the construction project manager. The construction project manager needs to develop skills and strategies to build a successful project within this stressful environment.

This study was conducted to examine the perspectives of current construction project managers in the U.S. about how they execute their responsibilities in a stressful environment. The study involved interviewing successful construction project managers to learn about skills and strategies they have developed to help them with project-related stress and the emotions produced by this stress, so they are able to successfully complete construction projects and progress in their careers. Identifying these skills and strategies can provide educators and human resource managers with information that will help them better prepare and guide individuals pursuing the construction project manager career path.

Successful construction project managers were interviewed in this qualitative research study. They described their responsibilities and their work environment. They also described the skills and strategies they have developed to persevere and be successful in their projects and their careers. The list of skills described was comprehensive and extensive, but could be

consolidated into two categories: soft skills, or people skills, and hard skills, or technical skills. Strong emotional intelligence, team leadership, and professional technical skills provide construction project managers with the tools to be successful. Through academic education, professional development, and experience, construction project managers are able to develop the skills and strategies to be successful in their careers.

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I want to thank the participants and their organizations for their time and effort into participating in this study. These individuals and their colleagues are responsible for many recent advances in the construction industry.

Dedication

I dedicate this dissertation to my wife, Dr. Rena Mincks, who has supported me throughout a long and occasionally frustrating journey to obtain advanced degrees. She knew that I could complete this goal despite the obstacles.

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CHAPTER I

Introduction

Introduction to the Study

In this study, experiences of construction project managers successfully executing their assigned responsibilities despite heavy workload and life pressures are examined. Through intensive interviews with successful practicing construction project managers, participant insights revealed techniques used to effectively manage discrete and functional responsibilities despite working in a stressful environment.

The purpose of this study is to understand the way construction project managers (CPM) cope with stress to successfully implement discrete and functional responsibilities. These positions involve attempting to succeed in implementing functional organizational innovations directed by upper-level management and executing discrete day-to-day project-related responsibilities managing a successful project in a stressful environment. It is hoped that the findings from this study will benefit construction organizations in preparing their construction project managers to manage their responsibilities in stressful conditions. The participants in this study also provide insight into appraisal and coping under stressful conditions in any endeavor. Qualitative study design provides rich and authentic information from successful project managers. Selection of participants in this study was purposeful. The population of construction project managers is large, and the sample is reduced to 13 interviews using purposeful selection. The participants were selected from both men and women, from different geographical regions and from varied size of organizations to match the characteristics of the population. This process selected construction project managers who manage all of their responsibilities successfully.

This chapter introduces an overview of the context and background that help frame the study. The second part of the chapter deals with the problem statement and research questions. Also discussed are the author's rationale and significance of the research. Conclusion of the chapter includes my background, biases, and control of biases to minimize influence on the findings.

Why Improve the Construction Organization?

The construction industry is faced with the need to improve production, increase efficiency, have internal cooperation, improve quality and address environmental conditions, sustainability, safety, organizational consolidation, and miscellaneous operations enhancement (Lowstedt & Raisanen, 2012). The customers of the built-environment expect construction organizations to be efficient, controlling cost, time, and quality of each project (Mincks & Johnston, 2011). Construction organizations strive to optimize cost, time and quality for their customers and to be the most efficient in very competitive markets. Most industries have implemented changes and innovations to improve the efficiency and effectiveness of their operations (Loosemore, 2014). The construction industry has been slow to implement innovative programs to enhance operations to reduce cost, minimize duration of construction and optimize the quality of the constructed product (Santorella, 2010). For the purposes of this study, the term *innovation* will be used to describe new non-trivial changes to the organization, rather than technical changes necessary for the individual project (Koskela & Vrijhoef, 2000). Non-trivial changes to the organization include new programs or organizational emphasis on broad areas of performance, such as quality management, safety management, lean construction, and other innovations applied to the entire organization. Technical changes for the individual project are specific applied changes to individual

projects for time, quality or productive improvement to solve problems within the project (Drejer & Vinding, 2006).

Innovation Does Not Always Work

Despite the need for innovation in construction organizations, several factors make innovation difficult to implement. The construction industry differs from other industries making it difficult to implement innovations directly from other applications. Construction is based on projects, varying in composition, environment and workforce, which require more flexibility in innovations than in manufacturing industries (Manley & McFallen, 2006). Innovations for productivity savings and quality improvement used in manufacturing industries need to be substantially altered to apply to the construction industry, due primarily to the one-of-a-kind nature of the constructed product (Sexton & Barrett, 2003). Unless the innovation is substantially altered to meet the application conditions, the innovation does not work (Fernie, Leiringer, & Thorpe, 2006).

Many contractors and construction employees feel that change and innovation may not be necessary (Loosemore, 2014). They operate within a competitive environment with similar operations to their competitors. They adapt to the particular project, but feel no compulsion to innovate. They see innovation as not being worth the bother (Drejer & Vinding, 2006). Innovations are seen as temporary modifications of behavior which reverts back to the original behavior after its initial appeal wears off.

Major innovation is difficult even with complete consensus for the changes within the organization. Upper management needs to be totally committed for the change, willing to analyze and appropriately prepare the change for the organization and willing to sell the innovation to the entire organization (Winch, 1998). Major innovation is difficult and

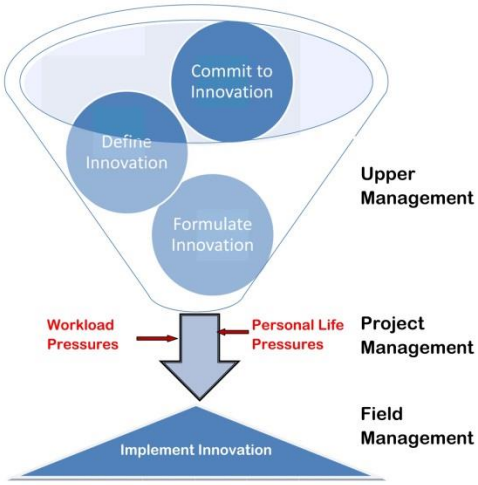
expensive. The amount of effort and cost needs to be less than the gains from the innovation. The construction organization expects a return on investment for these innovations (Winch, 1998).

Can the Construction Project Manager Implement Innovations?

When the upper management of construction organizations decides to implement an innovation to the organization, it is not always a success. The preparation of the innovation plan and its implementation strategy is the first step to implementing the innovation (Winch, 1998). The second step involves the translation and encouragement of the innovation program for the field crews (Bresnen, Goussevskaia, & Swan, 2005). This step is usually delegated to construction project managers, the mid-level managers responsible for the organization's projects. This step adds tasks and actions to the construction project manager, who has a large workload already managing assigned projects. The construction project manager has two major responsibilities: (a) *discrete responsibilities*, relating to the management of the project, and (b) *functional responsibilities*, to administer organizational requirements to the field workforce (Stevens, 2007). The daily duties of managing the project can be overwhelming and contain strong pressures. These conditions produce long work hours, resulting in time away from families and added stress (CIOB, 2006). Between the workload, pressures and stress, the construction project manager simply does not have the time and energy to pursue every responsibility, which affects the implementation of periodic innovations (Leung, Chan, & Olomolaiye, 2008; Stevens, 2007). The purpose of this study is to understand the way construction project managers cope with stress to successfully implement discrete and functional responsibilities, as the combination of both duties can be overwhelming. CPM's are forced to make decisions and strategies that satisfy their perceived goals.

Figure 1 is an exploratory model for explaining innovation implementation in construction organizations. Upper management commits to, designs and formulates the innovation, and the process flows through the construction project manager to be implemented by field forces. This sole path to implementation in operations is fairly unique to the construction industry, due in part to the remote location of construction projects. The project pressures and work-life pressures produce stress which constrains the CPM's capabilities to properly implement these periodic innovations. Construction project managers need to adapt coping strategies to choose actions appropriate to their situation, enabling them to implement innovations while tending to their discrete responsibilities. Some CPMs choose to not implement new innovations and some choose to implement the innovations. This study examines the coping strategies of CPMs that have successfully implemented these innovations.

Figure 1-1. Exploratory model for explaining innovation implementation in construction organizations. Workload and personal life pressures create a bottleneck for the implementation of the change initiative.



Overload and Stress Affect the Construction Project Manager's Performance

Several factors in project management produce stress in the construction project manager. Work overload, time pressures, and work-life pressures produce stress, which has several influences on the project manager (Leung et.al, 2008). Health problems are common in these situations (Chartered Institute of Building [CIOB], 2006). Basically, the construction project manager is often not capable of performing all responsibilities, and those responsibilities without established priorities will not be pursued sufficiently (Leung et.al, 2008). The construction project manager does not always successfully facilitate the implementation of innovations.

Overload affects most construction project managers, creating a need for construction industries to address solutions (Haynes & Love, 2004). Work overload and pressures produce

stress and related deficiencies in performance. Stress often influences incomplete execution of duties. Stress also contributes to burn-out in construction project managers. Overload affects most construction project managers, creating a need for construction industries to address solutions (Haynes & Love, 2004). Construction organizations would like to be able to effectively implement innovations, keep their project managers productive and have enhanced project success (Loosemore, 2014). These issues relate to profitability and success of the construction organization.

Some successful construction project managers have been able to use emotional intelligence, coping strategies, and other methods to diffuse the pressure and accomplish goals (Love, Edwards, & Wood, 2010). What have they done to achieve success? What training, social support or other factors help CPMs be successful in these situations? What coping strategies are effective in construction project management?

Conceptual Framework: The Theory of Stress and Coping

Lazurus and Folkman (1984) developed the theory of stress and coping in 1984, and it has been amended and refined since then. The theory of stress and coping describes the process that an individual goes through in stressful situations or conflict to determine the action that will be taken. This theory applies to the construction project manager when pressures are great and additional responsibilities are added to an overwhelming workload. Stressful situations are viewed by Lazarus as occurrences, but continuing stressful conditions could be viewed as a series of occurrences within the stressful environment (Lazarus, 1991).

Lazarus' theory of stress and coping concerns the course of action that the individual takes when confronted by a conflict. Lazarus states that the individual will first cognitively appraise the situation. Two appraisals take place: the primary appraisal and the secondary

appraisal. The primary appraisal concerns what is at stake and the secondary appraisal deals with the individual's capability to cope with the situation (Lazarus & Folkman, 1984). Initially, the individual classifies the situation into hazard, threat, or challenge (Lazarus & Folkman, 1984). In 1991, Lazarus added to the theory the activation of emotions after the appraisal phase. Emotions, then, directly affect the choice of coping strategies (Fugate, Kinicki, & Prussia, 2008). Two methods are used in coping: emotion-focused coping, involving regulation of emotions and emotional reaction to the situation and problem-focused coping, directed at solving the problem or cause of the stress (Lazarus & Folkman, 1984). Further classification of coping strategies divides them into escape and control strategies (Fugate, Kinicki, & Prussia, 2005). The individuals can decide whether they will avoid the situation or control the situation with a number of strategies.

An exploratory conceptual framework was developed for this study considering the construction project manager's responsibilities, factors affecting the responsibilities, and the theory of stress and coping. Figure 1.2 illustrates this exploratory conceptual framework. This framework was compiled from several articles and concepts explored in the literature review. It has been deductively assembled to accurately describe the flow of responsibilities and the factors that affect the decisions made by construction project managers as they fulfill their responsibilities. Within the framework, added innovation implementation responsibilities are shown in relationship to the overall organization change process. The diagram shows stress as a result of the responsibilities, work overload and life pressures (CIOB, 2006; Macdonald, 2003; Lingard & Francis, 2009). Emotions are affected by the stressful condition and need some influence to be positive (Lazarus & Folkman, 1984). Mitigating effects, such as coping strategies, emotional intelligence and organizational measures can modify the stressful

condition and emotions to be able to provide success for both discrete and functional responsibilities (Lazarus, 1991; Love, Edwards & Wood, 2010). The organizational change process can combine the innovation effort with stress management to provide ultimate implementation of change, and successful change management (Bresnen, et al, 2005). Success within the context of the exploratory conceptual framework indicates completion of both the discrete and functional responsibilities. Although there are different incremental levels of success in construction project manager responsibilities, the result indicated by success in this context is achievement judged to be satisfactory by upper management.

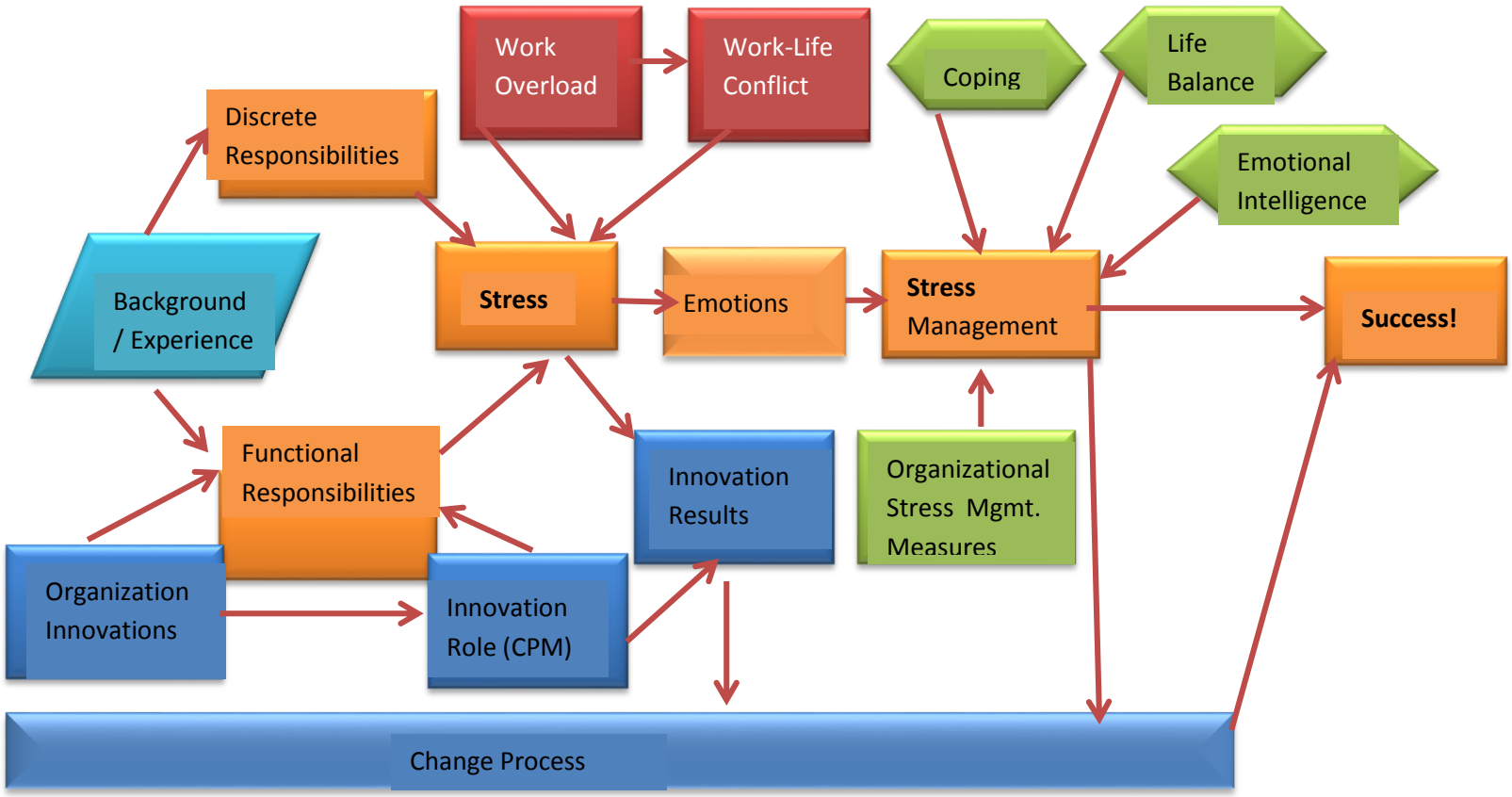
This exploratory conceptual framework can be applied to the strategies in construction project managers' situations. Construction project managers are confronted with situations in the context of overload, considerable pressure, and stress. They need to appraise their role in the situation, classify it by its severity, use emotions to decide what coping strategies will be used, and adapt those strategies to the situation.

For example: The construction project manager is overloaded with project responsibilities. The organization has decided to implement a new quality management program throughout the organization. This particular program will require the project manager considerable time to implement. The project manager considers the conflict between managing the project responsibilities and implementing the new program. In this case, the CPM sees the implementation process as a threat to the goal of successfully managing the project, which is considered as a priority. Several emotions affect the individual and the decision, such as fear, anxiety, and disrespect for upper management. The construction project managers also feel that they do not have the time to implement the new program. The CPM,

in this case, sees the situation negatively. The coping strategy chosen is to concentrate on the project related duties, and not actively implement the new program.

If the CPM appraises the situation positively, the situation would be viewed as a challenge. If the CPM understands that the implementation of the new program is also an important part of the position goals, then positive coping strategies will be used.

Figure 1.2: Flow of responsibilities and factors in construction project management



There are several positive and negative coping strategies that can be used after appraisal. If viewed negatively, the individual might use escape strategies to avoid a hazard or a threat, such as distancing or avoidance. Using a positive viewpoint the individual may consider the situation as a challenge and apply control strategies (Lazarus & Folkman, 1984). Several strategies can be used, such as social support, confrontive coping, self-controlling, accepting responsibility, planned problem solving, and positive problem solving (Haynes & Love, 2004). Other theories may affect the coping process. Emotional intelligence has been tied with the ability of construction project managers to cope with conflicts and stress (Love, Edwards, & Wood, 2010). Emotional intelligence consists of a group of abilities developed from self-awareness, managing emotions, self-motivation, recognizing emotions in others and handling relationships (Goleman, 1995). High levels of emotional intelligence should help the individual in determining effective coping strategies.

Problem: How Successful Project Managers Can Successfully Manage All of Their Responsibilities in a Stressful Environment

Many construction project managers do not use effective coping methods and are not able to complete their responsibilities, particularly in implementing added organizational innovations (Haynes & Love, 2004). Some construction project managers are able to successfully complete their discrete duties and functional duties, and continue to progress their careers within the construction organization. The problem, then, is how successful project managers can successfully manage all of their responsibilities in a stressful environment. Successful construction project managers will share their insights and experiences, suggesting methods to be able to complete all of the position responsibilities.

Methods of appraisal, control of emotions, and coping strategies should facilitate the CPM to control the effect of stress and emotions with successful completion of responsibilities, according to Lazarus' theory of stress and coping (Lazarus & Folkman, 1984; Lazarus, 1991). If the practicing construction project manager, construction organization, and other professionals involved in the process understand how to cope with the stress and pressure, both projects and innovations can be successfully executed.

Purpose of the Study

The purpose of this study is to understand the ways construction project managers cope in a stressful environment to successfully implement discrete and functional responsibilities. These positions involve attempting to succeed in implementing functional organizational innovations directed by upper-level management and executing discrete day-to-day, project-related responsibilities managing a successful project in a stressful environment influenced by overload, work-life conflict, and severe pressures.

In this study, the theory of stress and coping was used as a guide to examine the actions and coping strategies of multiple cases of construction project managers. The role of emotional intelligence and other factors needed to successfully complete all position tasks was also investigated.

Research Questions

1. What perspectives do construction project managers have about managing their discrete and functional duties in a stressful environment?
2. What skills and coping strategies do construction project managers use to manage projects and implement innovation simultaneously and successfully?

Research Objectives

Responses to the first research question provided information from the participants relating to the importance of innovation implementation as compared to construction project management. The responses to this research question indicated whether CPMs consider innovation implementation as a threat or a challenge while working in a stressful environment (Lazarus & Folkman, 1984). The responses should also be compared to the theory concerning appraisal in the coping process. The CPMs' responses indicated their emotional response to their environment and their values. Their responses also indicated to construction organizations the impact of construction project managers' responsibilities and if mitigating measures are appropriate.

Responses to the second research question indicated the most effective coping strategies used in the construction project management situation. The responses indicated the relative use of effective training, emotional intelligence, social coping, and other successful coping methods. This information will help organizations determine appropriate skills, training, and awareness needs for their project managers.

Research Rationale and Significance

Information about coping in stressful conditions to construction project managers, construction organizations, and individuals in stressful work conditions is included in this study. The methods used by successful construction project managers might be adapted by other CPMs and construction organizations. Although considerable research has been done to establish that these positions are very stressful, little research has been published regarding solutions to the problem (CIOB, 2006).

This study evolved initially from my desire to understand why major organizational innovations are not consistently implemented within the construction industry. If innovations are properly prepared by upper management, the weak implementation point appears to be at the construction project management position. When I examined construction project managers' workload, it was obvious that workload and related pressures overload CPMs to the point that some of their responsibilities are not completed. As innovations were periodic and seemed to be secondary to project management responsibilities, the innovations received less of the project manager's attention, resulting in unsuccessful implementation of the innovation.

The literature indicates several coping methods, emotional intelligence training, and other methods that individuals working under stressful conditions can use to reduce stress and complete their responsibilities (Clarke, 2010; Fugate et al., 2008; Haynes & Love, 2004; Love et al., 2010). There are also human resource management methods available to determine potential overload and augmentation of staff (Loosemore, Dainty, & Lingard, 2003). The literature suggests techniques to avoid the effects of stress, but not in the context of the construction project manager's environment.

Some of the coping strategies may not be effective in reducing stress and improving the situation (Yip, Rowlinson, & Siu, 2008). There is a gap in the literature concerning what coping strategies and use of emotional intelligence construction project managers implement. In this study, I have examined effective coping strategies and possible methods to develop capabilities to positively control these situations.

Much of the literature concerns construction project manager positions in countries other than the United States, which have different delivery systems for the construction

organization to provide their product to their customers. The construction organization culture is also different in the United States, requiring pertinent data in the United States to provide a complete description (National Research Council, 2009). The condition of overload, where responsibilities exceed the capacity to complete them, and stress are common in construction project manager positions. Individuals in these occupational positions in the United States are interested in techniques used by successful construction project managers in similar situations. In this study, I have explored insights into successful methods of these under-studied situations for both construction project managers and human resources managers.

The literature describes factors that produce overload and stress for the construction project manager (CIOB, 2006; Leung et al., 2008), but does not reflect the emotions, the choices, and the actions of the CPMs themselves. Their view of the conditions and situations can provide a more accurate description of their choices and decisions. A qualitative approach to CPM positions addresses issues of description, interpretation, and explanation (Bluhm, Harman, Lee, & Mitchell, 2011). This qualitative approach is missing throughout the literature, and has been provided in this study. Qualitative research can uncover experience, processes, and causal mechanisms through its approach, providing qualitative beginnings that can be refined and calibrated later by quantitative research (Bluhm et al., 2011).

Although success is a relative term, success indicates intended results of CPMs managing all of their responsibilities project after project. Success for the construction project manager means successful projects, meeting cost-, time-, quality-, and safety project goals, and successful implementation of innovation of organizational programs on a continuing basis (Han, Yusof, Ismail, & Aun, 2012). Success in project goals helps continue the life of the organization, while success in innovation of programs improves the potential for

organizational success. The results of this success for the construction project manager are reflected in continued employment, increases in salary, bonuses, and position advances. Success, then, is the construction project manager's goal.

Prior Pilot Study

I conducted a pilot study to examine the workload of construction project managers. That study included interviews with five construction project managers, which revealed that the project managers experienced overload in work responsibilities. The pilot study examined the extent of workload demands on the construction project manager; the extent of the conflict between the CPM's workload and personal interests; and the extent to which the project manager's workload and personal interests affected facilitating progressive changes in the construction organization. This was a qualitative study using structured interviews with five experienced construction project managers. All of the construction project managers indicated that they were overloaded with project responsibilities and organizational responsibilities. All of the project managers had experienced high levels of stress in their positions. Some of the project managers had continued in the project management track, and some had chosen to go different directions. All of the CPMs had experienced conflict between their personal lives and work responsibilities. The extent of their workload and pressures conflicted with successfully implementing organization innovations. It became apparent that solutions to these situations were needed for both CPMs and their construction organizations.

The pilot study indicated that the stress produced by the overload, work-life conflicts, and long working hours affected the quality of the CPMs' work. As the interviews in the pilot study did not provide suggestions on how to cope with job-related stress, the ideas for this

study were developed. Because the literature does not contain this type of information, further research was warranted.

Research Design Overview

Successful construction project managers use their abilities, skills, insight, and experience to determine their most effective approach in managing all of the responsibilities assigned to them. It is important to understand their approach to their situations. Qualitative research provides the means to explore the insights and experiences of construction project managers in a rich, descriptive form (Creswell, 2007). The findings of qualitative research can enable construction project managers to relate to other construction project managers' experiences. Applicable descriptions of the interviewees' thought patterns and associated experiences can also be of benefit to others in similar positions. These experiences can be furnished through in-depth interviews with successful construction project managers and subsequent analysis (Yin, 2009).

Thirteen interviews were conducted with successful construction project managers. Three additional interviews were conducted with executive managers in construction organizations. This study used participants from different situations to provide a broad perspective of construction project managers' experiences. The construction project managers were purposefully selected, through inquiries with construction organization upper management- and human resource professionals. Purposeful selection was used to locate successful CPMs within a large population. Selected participants were informed of the intent of the study. They were provided with letters of informed consent that they signed prior to the interviews. The interviewees were assured that the interviews and their identification would remain confidential and would not be revealed to their employers.

Delimitation of participant characteristics

1. Participants were purposefully selected by executives in the construction firms to be "successful construction project managers". In the invitation letter, successful was defined as having achieved continued employment and advancement for a substantial period of time. In addition, the construction project manager would be considered as a valuable employee, consistently carrying out their responsibilities. The selected participants should:
    a. Have a college degree or equivalent Be responsible for construction projects and organizational duties
    b. Be located at the project or at the organization's office
    c. Participate in organizational training
    d. Have longevity in employment and advancement in responsibilities
2. Participants were selected from construction project managers employed in the United States.
3. The sample was both purposeful and convenient to the researcher. The contacted construction organizations were within the extended network of the researcher, a construction educator.
4. Telephone interviews were used with all participants. This method was used primarily to easily facilitate contact with participants in several locations in the United States. This arrangement may have limited further insight into the participants than face-to-face interviews.
5. The participants worked in commercial building, heavy/civil, and industrial sectors of the construction industry. Three of the participants worked for a major subcontractor,

while the other participants worked for general contractors. Some types of contractors, such as electrical, mechanical and interior specialty contractors were not included in this sample. Construction project managers in the residential construction sector were not included, as their responsibilities vary and differ in some aspects.

6. As all of the participants have large responsibilities and limitations on their time, the interviews were limited to one hour in length. Adequate discussion of the guide questions was possible in this time.

Transcripts of the interviews were reviewed by the interviewees for accuracy. The transcripts of the interviews were compared for similarities and dissimilarities to determine themes throughout the sample. Creswell (2007) stated that exploration of the discrepancies between interviews can lead to refinement of the findings. Following this verification, the transcripts were analyzed and coded with the exploratory conceptual framework. Colleagues of the researcher reviewed the transcripts and coding to verify interpretation of the data. In this dissertation, I have compiled the case data into a comprehensive, primary resource package (Patton, 2001), conducted analysis between the interviews (Merriam, 2009), and compared the themes discovered in the analysis with the themes from the literature review for the findings.

The Researcher

I have spent over 20 years working in the construction industry and about 20 years as a university professor in construction management programs. I have an understanding of the dynamics of construction projects and construction organizations. I have been involved in increasing the efficiency and effectiveness of the construction industry. I was involved in training for quality management programs for subcontractors and builders in the production

residential construction industry. During this quality training, I observed construction organizations that seemed sufficiently prepared to implement innovative quality programs but were not able to fully implement the program. Through several studies, I decided to investigate the role of the construction project manager in the innovation process, as it appears that the workload and stress experienced by construction project managers limits their abilities to fully implement innovations. To further this investigation, I needed to know what methods and techniques are used by successful construction project managers to be able to implement these innovations.

I intimately understand the responsibilities of the CPM in managing the project and in implementing innovations. I am able to speak construction vernacular and can relate to the CPMs. I am aware of the importance of reflecting the true intent of the interviewees, without slanting it to any particular conclusion. Interview questions were formed to avoid leading interviews in a particular direction. Specific review for detection of bias was made after the data was coded. It was important to reveal effective management methods and compare them with commonly known methods. I held two biases related to this study: concern for construction project managers' well-being in their stressful environment, and concern for the construction industry's ability to progress with innovations to improve the industry's efficiency and effectiveness. I felt that both of these biases provided positive outlooks toward improving the industry. They motivated me to find viable methods to enable construction project managers to successfully complete their responsibilities. I reviewed the coding and analysis to assure that I utilized critical analysis with the participants' interviews.

As my role in the construction industry is currently in construction education, I no longer have a direct professional relationship within the industry. I have been involved in

construction project management and understand the extent of the pressure and stress in managing and constructing construction projects, but I am interested in obtaining current perspectives from construction project managers.

Definition of Key Terms

The construction industry uses particular terms to describe situations that may vary some from other uses. This study includes some psychological and sociological terms to describe the actions of individuals. Definitions of key terms follows:

- *Appraisal*: In the coping process, appraisal is an immediate cognitive determinant of emotion. Appraisal is the process to examine the situation that determines the emotion to be used by the individual (Lazarus & Folkman, 1984).
- *Budget*: In construction, the budget is the estimated cost of the project. If the project is performed under a lump sum contract, the budget is the estimated cost of construction and the contract amount. When in a guaranteed maximum price (GMP) contractual arrangement, the estimated cost plus a predetermined contingency establishes the budget for the project.
- *Built environment:* The built environment indicates constructed communities – the human-made space in which people live and work.
- *Change order*: A written order to the contractor signed by the owner and engineer/architect, issued after the execution of the contract, authorizing a change in work or an adjustment in the contract sum and/or the contract time (NAWIC, 1996).
- *Composure*: A calmness or repose especially of mind, bearing, or appearance.

- *Construction owner* (*customer, client*): The construction owner is the customer of the contractor on the project. The construction owner is the entity that owns and pays for the constructed facility.
- *Construction project*: A unique change to the physical environment that is a separate entity from other work that is constructed on a site.
- *Construction project manager*: The individual responsible for the successful completion of a construction project. The term *construction project manager* can refer to a specifically defined position within a construction organization.
- *Continual professional development (CPD):* Training provided by the organization to assist managers in growth in their positions.
- *Coping:* "Constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p. 141).
- *Development (sales, marketing*): Development is marketing, sales, and efforts to acquire additional projects for the firm.
- *Emotional intelligence:* The ability to identify, use, understand, and manage emotions in positive ways to relieve stress, communicate effectively, empathize with others, overcome challenges, and diffuse conflict.
- *Field:* As used in construction, the field is the location of the construction project. Construction of the project is accomplished in the field, as opposed to in the office.
- *Financial forecasting*: Financial forecasting involves analysis of current costs and progress to project the ultimate cost and profitability of the project.

- *Hard bid projects*: Projects that have been awarded to the contractor for a specific contract price. The contractor is obligated by the contract to complete the defined scope of work for a specific financial amount, regardless of actual cost of construction.
- *Hard skills*: Technical skills for the project manager, such as estimating, scheduling, cost control, or land-surveying techniques.
- Heavy-civil construction: A sector of the construction industry that is primarily concerned with roads, highways, and engineering-construction, as opposed to constructing building structures.
- *Historical cost information:* Compilation of actual construction costs from previous projects that are used to determine costs and productivity information for project estimates.
- *Joint venture:* An arrangement between two or more construction organizations to combine efforts as a single contracting agency to the construction owner for a construction project.
- *Operations:* That division of a construction organization that is responsible for the actual construction of a project.
- *Pre-construction:* The period of time preceding the start of construction. This period has traditionally been solely dedicated to design; however, many contractual arrangements utilize the contractor for value analysis, constructability review, estimates, schedules, and compilation of bid packages.
- *Project stakeholders*: Entities that are affected by the construction project, such as owners, inspectors, the community, suppliers, subcontractors, and other project participants.

- *Request for Information (RFI):* A document generated during the construction process by the project management team to clarify the construction documents. This can be the first step in the change-order process.
- *Request for Proposal (RFP):* A request from the construction owner for proposals from contractors. The response document by the contractor is often referred to as the RFP.
- *Risk management*: The process of mitigating, transferring, or eliminating financial risk in the construction process.
- *Soft skills*: Skills used by project managers that are not technical skills, such as communication skills, coping skills, emotional intelligence, public relations skills, and other skills that help the project manager survive in the stressful environment.
- *Soil conditions*: Soil conditions relate to the composition of the soil and the situation that allows it to be excavated or used in construction. Water can significantly affect the behavior of most soil types.
- *Stress (psychological):* "Psychological stress is a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (Lazarus & Folkman, 1984, p. 19).
- *Subcontract/subcontractor*: A business entity that has contracted to perform a portion of the project scope to the prime contractor.
- *Teamwork:* Collaboration by two or more team members to accomplish portions of the project contract requirements.

Chapter I Summary

The construction project manager has many responsibilities. In addition to the myriad project responsibilities, the construction project manager has organizational responsibilities, including implementing organization innovations. As the construction project manager is overloaded with work responsibilities and life obligations, additional responsibilities, such as periodic implementation of organization innovations, may not be executed thoroughly and successfully. The overload causes stress that can influence emotional choices in the conflict between responsibilities.

Construction project managers have choices on solutions to these conflicts. Some construction project managers utilize negative approaches, such as avoidance, in solving these conflicts. Other construction project managers are able to positively solve these problems and successfully manage their responsibilities.

The theory of stress and coping can be used to visualize the decision path for the construction project manager. An exploratory conceptual framework has been developed for this study using the theory of stress and coping as a basis. There is little information available about what skills the CPM uses and what coping techniques are applicable to their situations. This study would fill the gap of information for the construction industry to be able to define preferable skills and knowledge for construction project managers. Insights from successful construction project managers can help construction organizations prepare applicable training programs to deal with conflicts and stressful situations. Construction organizations can also use this information to determine proactive measures to avoid conflicts in job responsibilities.

Figure 1.2 shows the flow of the construction project manager through execution of work responsibilities developed by grouping concepts from the literature review. It indicates

the innovation implementation responsibilities involved with change process. The diagram shows stress as a result of the responsibilities, work overload, and life pressures. Mitigating effects, such as coping strategies, emotional intelligence, and organizational measures, can modify the stressful condition and resulting emotions to be able to provide success for both discrete and functional responsibilities.

Detailed description of the process used by construction project managers, and their approaches to solutions, can provide this valuable information. In-depth interviews, using qualitative research methods, can provide this rich, detailed information. This study was used to obtain a varied look at construction project managers' strategies in stressful environments. As an experienced constructor, I was able to communicate with successful construction project managers to elicit useful information. I then analyzed and compared the information to previously published information and within the exploratory conceptual framework.

CHAPTER II

Literature Review

The purpose of this study is to understand the ways construction project managers (CPMs) cope in a stressful environment successfully implement discrete and functional responsibilities. These positions involve attempting to succeed in implementing functional organizational innovations directed by upper-level management and executing discrete day-to-day project-related responsibilities managing a successful project in a stressful environment influenced by overload, work-life conflict, and severe pressures.

In this study, I compare perspectives of construction project managers to the theory of stress and coping to examine their actions and coping strategies. I also look at the perspectives of construction project managers relative to their responsibilities.

Introduction of Topics Covered in the Literature Review

The literature review will start with a description of construction project managers' responsibilities and their working environment. This discussion establishes the characteristics of construction project managers for selection in study. A discussion follows concerning innovations in the construction organization, indicating the importance to construction organizations of implementing improvements to the organization. Several studies have been completed concerning overload and the resulting stress in construction project management, and will be discussed in this section (CIOB, 2006, Love & Edwards, 2005). The theory of stress and coping describes the appraisal, emotional involvement, and coping strategies involved with conflicts during stressful conditions (Lazarus & Folkman, 1984). The literature also addresses factors and methods involved in these stressful conditions, such as emotional

intelligence, immunity to change, and human resource methods (Goleman, 1995, Kegan & Lahey, 2009, Loosemore et al., 2003).

Construction project managers have two primary tasks. The first are their discrete duties, which relate to the success of the project. The second primary task is performing functional duties, which relate to organizational management and improvement (Stevens, 2007). The literature explicitly describes details of project management, but is less explicit about functional responsibilities (National Center for O*NET Development, 2013). The amount of functional responsibilities a project manager is charged with tends to vary from firm to firm. Functional responsibilities are periodically increased by organization-wide implementation of innovations intended to increase the efficiency and effectiveness of the organization.

The literature describes innovations as they relate to construction organizations (Winch, 1998). Description of the types and relative impact of these innovation changes have been extracted from the literature (Lowstedt & Raisanen, 2012). To understand the impact of these innovation implementation initiatives on the construction project manager, the process of change implementation within the construction organization is examined in the literature (Winch, 1998). The combination of duties and pressures often results in work overload for the construction project manager. The literature describes the effects of the pressures on construction project managers and the results caused by those stressors (CIOB, 2006; Love and Edwards, 2005). Decreased performance, incomplete performance, conflict between work and life interests, and immunity to change are some of the results indicated in the literature (Love & Edwards, 2005, Kegan & Lahey, 2009). Although the stress and pressure drive some

construction managers away from the position, many individuals develop methods and strategies that enable them to successfully complete all of their responsibilities.

The literature suggests several strategies for situational survival from stressful conditions (Goleman, 1995, Lazarus & Folkman, 1984). Some of the literature suggests hiring highly emotionally intelligent individuals and providing emotional intelligence training for construction project managers (Love et al., 2010). Other literature suggests adopting several different coping strategies for the construction project manager (Fugate et al., 2008). Human resource management strategies (HRMS) are also suggested for changing the environment to enable the construction project manager to successfully efficiently and effectively manage responsibilities (Loosemore et al., 2003).

Much of the literature covers research in the U.K. and Australia (CIOB, 2006; Clarke, 2010; Dainty, Raiden & Neale, 2004; Lindebaum & Jordan, 2012; Love & Edwards, 2005); Australia (Lingard et al., 2010). The research in this study is intended to broaden the literature to include construction project manager experiences in the United States.

The Construction Project Manager Position

The construction project manager position is a common position in most commercial and heavy-civil construction organizations. As each construction organization has its own unique characteristics, the experience level and duties of construction project managers vary from organization to organization (Stevens, 2007). For this study, the general characteristics of a construction project manager in the United States are:

- College degree, usually in engineering or construction management (*Occupational Outlook Handbook,* 2012). Several other bachelor's degrees, such as business administration and architecture, are applicable qualifications, usually depending on the

interests and abilities of the individual. Occasionally, individuals from the trades work into the project management track. Master's degrees and advanced degrees are rarely required qualifications for the project management position.

- A minimum of five years in progressive employment in construction industry management. In some organizations, the track to project management is much longer, and some firms allow accelerated experience. Typically, college graduates start as project engineers or office engineers, and rise in rank accordingly with experience and success with projects (Knutson, et al., 2009, Volpe & Volpe, 1991).
- Project management of one or more construction projects. As this study looks at the methods project managers have developed to be able to handle their tasks and pressures, the construction project managers in the study need to have experienced the full project management environment. Some project managers will be in charge of several projects simultaneously, depending on the project size and the CPMs' associated responsibilities (Volpe & Volpe, 1991).
- Hierarchically between upper management and field management (Mincks & Johnston, 2011). The project manager is a middle manager, with organizational management providing the environment to manage the project, and field organization, including superintendents, foremen, trades people, and subcontractor employees. In some organizations, the project superintendent is a parallel position to the construction project manager, rather than a sub-position. Some organizations will include project management duties under the superintendent title.
- Located at either the organization office or at the jobsite, depending on the size and nature of the project (Stevens, 2007). Particularly when construction project managers

> manage several projects at the same time, the home or branch office may provide the project managers environment and resources to facilitate their responsibilities. Larger projects furnish administrative and information resources that provide support to the construction project manager on the jobsite.

The project manager's responsibilities have increased in recent years, as the construction project has grown more complex due to more sophisticated construction systems and increased regulations (Stevens, 2007). The construction project manager is responsible for the ultimate success of the project. Usually, the objectives of successful project management are: minimizing cost, thus optimizing profit; completing the project within the customer's time frame; and meeting or exceeding the quality expected by the customer (Han, Yusof, Ismail, & Aun, 2012, p. 92). Many U.S. construction organizations also include maintaining a safe working environment as one of the objectives of the project (Mincks & Johnston, 2011). Traditionally, the construction organization is not in control of the design of the project and is required to meet the design prepared by a separate business entity, often a consulting architect/engineer to the project owner (Mincks & Johnston, 2011). Design-build, construction management, and other delivery systems are requiring involvement of the project manager, estimators, and schedulers during the design process, as well as during the construction phase (Stevens, 2007).

Construction project managers must have multiple skills and abilities to be successful in their tasks (Gharehbaghi & McManus, 2003). The Employment and Training Administration, U.S. Department of Labor (National Center for O*NET Development, 2013) described the tasks for "construction managers" as:

> "confer with supervisory personnel, owners, contractors, or design professionals to discuss and resolve matters, such as work procedures, complaints, or construction problems; plan, schedule, or coordinate construction project activities to meet deadlines; prepare and submit budget estimates, progress reports, or cost tracking reports; inspect or review projects to monitor compliance with building and safety codes, or other regulations; inspect or review projects to monitor compliance with environmental regulations; plan, organize, or direct activities concerned with the construction or maintenance of structures, facilities or systems; study job specifications to determine appropriate construction methods; investigate damage, accidents, or delays at construction sites to ensure that proper construction procedures are being followed; prepare contracts or negotiate revisions to contractual agreements with architects, consultants, clients, suppliers or subcontractors; develop or implement quality control programs" (p.1).

Stevens (2007) described the tasks of the construction project manager as: project start-up, client relations, financial performance management, change-order management, major material expediting, billing/accounts payable, troubleshooting, and project closeout. Knutson, et al. (2009) summarizes the construction project manager's function as being "in overall charge of the project, responsible for the rate of progress, financial control, safety and ultimate profitability of the job" (p.73).

The construction project has become very complex, due to continuous demands for speed, cost control, quality control, and safety on the jobsite, avoidance of disputes, technological advances, economic globalization, environment regulation, and fragmentation of the construction industry (Gidado, 1996). In a study where construction experts were interviewed, complex projects have:

> …a large number of different systems, with a large number of interfaces between the systems and elements; a confined site, with difficult access, with several trades working in close proximity with each other; difficulty in specifying how to achieve a desired goal or the duration of that goal, due to the great deal of intricacy of the process; many details concerning project execution; a need for efficient coordinating, control and monitoring during the entire process; a series of encounters of revisions during construction, which make it difficult to predict completion duration. (Gidado, 1996, p. 214-215)

The combination of project complexity and the broad management tasks and responsibilities assigned to the construction project manager present a full work load. The construction project manager, however, has further responsibilities to implement, monitor, and manage organizational policy and innovations. Within construction industry research, innovation has been defined as new, non-trivial change and improvement in a process, product, or system that is novel to the organization developing the change (Koskela & Vrijhoef, 2000). Stevens (2007) states that the construction project manager has two primary responsibilities. Stevens describes the responsibilities relating directly to the construction project as "discrete" (or project-related) responsibilities. "The other is functional, which translates into the continuous activities that relate more to the business operation…. Functional activities can be recruiting, continuous improvement, supervising others, and so forth" (p. 150).

Dulaimi and Langford (1999) conducted a study to determine which construction project manager characteristics affect the CPMs' behavior and effectiveness. The study also examined if the project manager's characteristics were associated with project performance.

They used Fiedler's contingency theory as the basis for developing the appropriate instruments for measuring the situational and personal variables. They also utilized Behaviorally Anchored Rating Scales (BARS) in their evaluation. This study examined nine personal and situational variables within five dimensions of construction project managers' responsibilities: managing the project's environment and its resources; organizing and coordinating; information handling; providing for growth; and motivating and conflict handling. These responsibilities compared fairly closely to the critical success factors compiled from current literature: human-related factors, project-related factors, project procedures, project management actions, and external environment (Chan, Scott, & Chan, 2004).

Dulaimi & Langford's (1999) study to determine which construction project manager characteristics affect the CPMs' behavior and effectiveness found a varied effect of the characteristics on CPM behavior. Project situations determined the situational/ environmental characteristics that most affected CPM behavior were: PMs' experience and background; PMs with high academic qualifications tended to be more technically oriented; the amount and nature of training received by PMs improve control and influence; and PMs tend to be socially independent, less concerned about how others evaluate them. Situational power and authority also affected behavior. These characteristics define the background and experience of CPMs.

Dainty, Cheng and Moore (2005) conducted a study using a competency-based model for predicting performance of construction project managers. Their study identified eleven competency factors: achievement orientation; initiative; information seeking; focus on client's need;, impact and influence; directiveness; teamwork and cooperation; team leadership;

analytical thinking; conceptual thinking; self-control; and flexibility. The findings of that study indicated that superior-performing managers will evidence higher levels of specific key behaviors that influence effective management performance than average-performing managers. The two prominent factors that influenced successful project management were self-control and team leadership (Dainty, Cheng & Moore, 2005).

Organizational Innovations in the Construction Industry

The construction industry is under pressure from its stakeholders to improve its product, efficiency, cost, and time to complete projects (Sexton & Barrett, 2003). Other industries have implemented several effective programs that have improved their operations to meet their business goals; however, the construction industry has lagged behind other industries (Santorella, 2010). The construction industry is seen by construction customers to reflect low levels of innovation by not adopting current management trends (Manley & McFallen, 2006). Construction organizations are interested in innovations to improve their operations (Winch, 2002). This trend to improve construction operations is aimed at efficiency and effectiveness, as well as satisfying the customer.

Slaughter (1998) further divided innovation into incremental innovation, modular innovation, architectural innovation, system innovation, and radical innovation. Incremental innovation is a small change that produces limited impact to surrounding elements. Modular innovation is a more significant change, but still with limited impact. Architectural innovation is a small change that has strong connection to other elements. System innovation indicates multiple, linked innovations. A radical innovation is based on a breakthrough in science or technology, resulting in changes to the industry. Slaughter reflected that the implementation of the different levels requires increasing levels of management and supervision.

The most common of these innovation divisions in construction are incremental and modular innovations (Slaughter, 1998). Architectural and system innovations are implemented in broad organizational systems, such as a quality management system. Radical innovation is rarely used in construction organizations, but such innovations may be occurring with major electronic systems, such as Building Information Management (BIM) and creation of paperless documentation systems.

For the purposes of this study, the term *innovation* will be used to describe new, non-trivial changes to the organization, rather than technical changes necessary for the individual project. Changes to the project involve other contractual parties, particularly the architect/engineer, to solve technical problems solely within the project. These changes are included within the construction project manager's project, or discrete, responsibilities, described by Gidado as "a series of encounters of revisions during construction" (Gidado, 1996, p. 214-215). Innovations, then, are changes to organizational procedures, assigned to CPMs under their functional area of responsibilities.

Many construction organizations have addressed innovations to improve their effectiveness and efficiency. Lowstedt and Raisanen (2012) conducted a case study of an international construction organization examining organizational change over a 10-year period. The corporate board of the construction organization decided in 2000 to adopt a program to increase its efficiency and strive toward standardization and specialization. Their strategy was twofold: first, to improve performance in the current organization and, second, to develop significantly more efficient building projects. During the next ten years, the construction organization undertook organization-wide programs to increase operational efficiency; implement best practices to increase performance for customers; implement a

quality management program, customized to company operations but similar to International Organization for Standardization (ISO) 9000, a manufacturing standard for quality management; implement an environmental protection program for environmental work, compliant to ISO 14001 certification standards; increase cooperation internally; implement an advanced safety program; and perform organizational consolidation. Although other construction organizations may not pursue the exact list of innovations, this list is representative of improvement emphasis measures for construction organizations interested in improving their efficiency and profitability.

Sexton and Barrett (2003) found that small contractors were motivated to innovate by survival, stability, and development of their organizations. In a competitive environment, survival means being able to compete in the marketplace or selected market niche. After surviving, the construction organization looks to stabilize its position. After achieving stability, the construction organization looks to developing the organization for growth and sustainability. Successful innovation enables the contractor to advance in its growth. Some of the innovation outcomes in Sexton and Barrett's study were client relationship development, organization and management efficiency, and technical advancements. They grouped the outcomes into two areas: improving effectiveness and improving efficiency of the firm.

Regardless of the specific improvement innovation, the innovations were directed at improving the company and implementing changes to project construction management methods. In most construction organizations, the foci for innovation is directed by upper management and implemented by mid-management. Some innovation in construction organizations initiates from the bottom-up, primarily in problem-solving project situations. Some bottom-up innovations are adopted by upper management and initiated in a top-down

procedure. The top-down innovations typically lack full support from mid-management and field operations (Koskela & Vrijhoef, 2000). Lowstedt and Raisenen (2012) found that there was a difference in the top-down innovation strategies, purporting to be proactive, and the bottom-up innovation strategies, producing a reactive strategy. Some organization participants advocate the top-down strategy and some participants prefer the bottom-up strategy; this difference of opinion within the organization stalls innovation effectiveness. An organization's success depends on top-driven strategic intent, while balancing bottom-up internal experimentation and selection processes (Burgelman, 1991).

The construction organization needs to be a learning organization to thoroughly implement innovations. Senge described learning organizations as "organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together" (2006, p. 3). Learning is necessary within the organization to assimilate the top-down innovation into the organization, and also necessary to integrate the bottom-up experiences with problem solving (Winch, 1998).

The Change Process within the Construction Organization

As upper management adopts an idea for change in the organization, detailed examination is often found to be necessary to determine the need and the impact of the change relating to the organization and its stakeholders. If upper management intends the change to be transformational, transforming the organization to a different level or goal, they need to be diligent in preparing the implementation process for the innovation for acceptance and implementation (Winch, 1998). Prior to adopting the change, upper management needs to determine if the change is appropriate for the organization. If mid-management (construction

project management) is not fully supportive and does not create an insightful plan, the innovation will fail (Palmer, 2004). Palmer (2004) described seven critical steps in making an innovation work: leading change, creating a shared need, shaping a vision, mobilizing commitment, monitoring progress, finishing the job, and anchoring the change. The first three steps of leading change in the innovation, creating a shared need, and shaping a vision are usually the responsibility of upper management (Bresnen, Goussevskaia, & Swan, 2005). Upper management needs to support and prepare the innovation initiative prior to implementation in the organization. Mobilizing commitment involves both upper management and mid-management. Mid-management in the construction organization is typically construction project managers. Construction project managers have a strong role, if not a controlling role, in monitoring progress, finishing the job, and anchoring the innovation (Winch, 1998). Different degrees of involvement from the construction project manager are required, depending on the relative impact of the innovation. The incremental innovation may be a small change to previously implemented measures, but incremental innovation is more frequent than the more extensive innovations (Slaughter, 1998). Numerous incremental innovations require considerable attention by the CPM.

Most construction organizations have a hierarchical system that is split between the overall organization management and construction projects (Mincks & Johnston, 2011). Policy is made in the upper management segment of the organization, while the product is manufactured at the project, commonly referred to as the field. As construction projects are in remote locations from the general office, the potential for conflict between the two organizational segments exists. Innovation, usually generated by upper management, flows through the construction project management to interpret, encourage, inform, and implement

the innovations to the field organization (Applebaum, 1999). The CPM often finds that the project personnel, including direct employees and subcontractors, may present barriers to the innovations, based on resistance to change, perception of undesirable culture, and fragmentation (Fernie, Leiringer, & Thorpe, 2006). When upper-level, management-directed innovations call for containing new uses of knowledge and expertise between groups, they also have implications for the work tasks and professional identity of individuals and groups affected by the innovation. Consequently, the introduction of the innovation can create the basis for disagreement, conflicts, and political positioning at the jobsite (Bresnen, Goussevskaia, & Swan, 2005). The project manager, then, needs to educate the field personnel about the change, to embed the knowledge into the practice (Bresnen et al., 2005). In their study of innovations in an international construction organization, Lowstedt and Raisanen (2012) found that project managers often had a different version of the reason for the innovation than management's version. These versions immediately gave a different level of importance to the initiative, resulting in impartial or unsuccessful implementation.

Project Management Workload

One of the primary effects of the innovation implementation process is the addition of time-consuming tasks. Extra paperwork, additional meetings, additional inspections, and general increase of the bureaucracy create additional burdens for the construction project manager (Andersen & Vaagaasar, 2009). As previously discussed, the scope and process of project management are consuming and demanding. The combination of discrete and functional responsibilities produces a large workload for the construction project manager, overwhelming construction project managers with duties, limits, time, and focus, resulting in them not completing all of their responsibilities (Stevens, 2007).

High workload relates not only to the number and size of tasks, but also relates to the pressures that accompany the work tasks. “Workload is closely related to the demand experienced and effort expended during work performance, and to the perceived adequacy of performance; it is also affected by motivation factors” (Macdonald, 2003, p.105). Sources of these pressures that build into the workload have been identified as home-work balance, managerial role, daily hassles, personal responsibility, organization climate, relationships, and recognition (Macdonald, 2003). Further detail of job pressures include factors on meeting deadlines, frequent interruptions, excessive paperwork, frequent change, critical on-the-spot decisions, assigned increased responsibility, assignment of new duties, insufficient personal time, dealing with crisis situations, and performing tasks not in job description (Macdonald, 2003). All of these pressures occur at times within the construction project manager’s total responsibilities, including both discrete and functional responsibilities (Haynes & Love, 2004). Unwelcome work hours evolve into overwork. Overwork results as fatigue and stressors accumulate, resulting in mistakes, deletion of responsibilities, reduced productivity, reduced quality of work, and health problems (Lingard & Francis, 2009).

“The greater the level of task demands, the greater the required effort expenditure and consequent decrease in capacity” (Macdonald, 2003, p. 105). Macdonald (2003) also includes other factors, such as lack of support, job security uncertainty, and excessive hours worked as contributing factors in occupational stress. As additional responsibilities occur, the workload and job demands increase, causing stress to the construction project manager. In a study conducted by Haynes and Love (2004), workload was found to be the greatest high-pressure stressor with project managers. The second highest stressor was long work hours, and the third was insufficient time spent with the immediate families.

Stress and Coping in Construction Project Management

A study conducted by the Chartered Institute of Building (CIOB) in 2006 examined occupational stress in the construction industry in the U.K. The survey was directed at construction project managers. The authors of the study defined stress as "the adverse reaction people have to excessive pressure or other types of demands placed on them," and further explained occupational stress, or workplace stress, as stress directly related to a person's occupation (CIOB, 2006, p.4).The authors of the study confirmed the high stress level for construction project managers, with the majority of the respondents (68.2%) indicating that they had suffered from stress, anxiety, or depression as a direct result of their work in the construction industry. The three highest common causes indicated for workplace stress were too much work, ambitious deadlines, and pressure. Other factors indicated by over 50% of the respondents were lack of feedback, poor communication, inadequate staffing, and conflicting demands.

A study in the Australian construction industry found that construction project managers worked an average of 56 hours per week at the site office and an average of 49 hours per week when assigned to the head office (Lingard, Francis, & Turner, 2010). The time spent at work, combined with job pressures, produces stress. The result of this stress is often seen in construction project manager's health, indicated by increased sick days and, eventually, by total burnout (Macdonald, 2003). Stress can cause or exacerbate heart disease, depression, anxiety, and burnout. Stress can manifest itself in drug abuse, alcoholism, insomnia, nightmares, relationship problems, and sexual difficulties (Love & Edwards, 2005). Stress can also impact the individual's work performance, resulting in poor decision making, defensive reactions, and selectively not taking on further responsibilities (Djebarni, 1996).

The adverse effects of individual well-being have a detrimental effect on an organization, resulting in reduced productivity (Love & Edwards, 2005).

Stress has different impacts, depending on the individuals, the situation, and the level of stress. Some stress can actually enhance productivity and project-management decisions. Djebarni (1996) found the CPM's leadership effectiveness to be stronger under moderate job stress. Stress, at low and moderate levels, can result in more effective work and greater achievement of project goals. Often, though, it can produce negative effects.

Work-Life Conflicts

The long hours, tight deadlines, and project-management characteristics also increase the negative effect of work on family life for the construction project manager (Lingard, Francis & Turner, 2010). The conflict between work and family life, with demands from two different life roles, leads to stress and strain, as well. Three types of conflict can occur between work and life priorities: time based conflict, where time spent in one of the roles prohibits fulfilling responsibilities in the other role; behavior-based conflict, in which the behavior in one role cannot be adjusted to match expectations of the other role; and strain-based conflict, where pressures from one role interfere with the responsibilities of the other role (Lingard & Francis, 2009).

These conflicts occur frequently in the CPM's life (Lingard & Francis, 2009).Whether it is missing a son's or daughter's recital or ballgame, using the same aggressive tone of voice at home as used with subcontractors on the jobsite, or not picking up groceries on the way home, the CPM's work schedule does affect family life. Constructions project managers, whether with families or not, have constant pressure to balance work and life interests. When out of balance, the conflict can cause dysfunctional attitudinal-, physical-, psychological-, and

social outcomes that can harm the organization, individuals, and families (Lingard & Francis, 2009).

Lingard, Francis, and Turner (2010) found that as time demands increased, the CPMs experienced reduced capacity to complete tasks both at work and at home. They found that work obligations tended to supersede home activities. Home life is negatively influenced by demands of the work environment to a greater extent than work life is negatively impacted by the home domain. This dominance of work over family can negatively impact family relationships and cause additional stress to the construction project manager. Conflicts between work and family life influence job satisfaction, organizational commitment, higher level of turnover intention, job withdrawal behaviors, and the willingness to perform tasks above the absolute minimum acceptable level of performance. Work interference with family relates to a myriad of family problems, general health problems, and often drug abuse and alcohol abuse (Lingard & Francis, 2009). Analysis from the National Comorbidity Survey indicated a strong association between work-family associated mental disorders and men aged 26 to 45 years old, which is the primary gender and age range of construction project managers (Wang, Affifi, Cox, & Sareen, 2007). The conflict between work and life responsibilities adds to the many pressures affecting construction project managers, resulting in loss of effectiveness in both the discrete and functional roles (Lingard & Francis, 2009).

In addition to the previously noted conflicts for time commitments, such as project demands and family obligations, most individuals have "hidden competing commitments" that prevent them from embracing and facilitating innovations and changes (Kegan & Lahey, 2001, p. 85). Kegan and Lahey have named the condition where hidden commitments prevent acceptance of innovations and change as *immunity to change.* The hidden competing

commitments are usually not evident to the individual or the people around them. The competing commitments are hidden subconsciously by individuals, as they don't relate directly relate to work responsibilities. These commitments relate to relationships, emotions, self-esteem issues, or other personal reasons. Heifetz, Grashow, and Linsky (2009) discussed two types of changes: technical and adaptive. Technical changes involve making the change work with processes and techniques. Adaptive changes involve a transforming the individual's mindset. These adaptive changes, then, can conflict with the hidden commitments of the individual (Kegan & Lahey, 2009). As these competing commitments are hidden within the individual, an intensive personal examination is necessary to determine the commitments so they can be addressed. Kegan and Lahey (2009) suggested an "X-ray" completed by the individual, examining the intended commitment, the actual behavior, hidden competing components, and major assumptions affecting the commitment. They advocated addressing the newly exposed information systematically to be able to increase the individual's capacity to accept the particular change and the change process.

The factors previously mentioned affect all construction project managers with varying severity. Despite the pressures, the stress, the work-life conflicts, and immunity to change, many construction project managers are able to successfully execute both their discrete and functional responsibilities by managing their relationship to the stresses (Loosemore, Dainty, & Lingard, 2003). Several theories illuminate behavior and techniques to mitigate the effects of the employment environment, optimizing construction project manager performance.

Emotional Intelligence

Several authors have suggested that a high level of emotional intelligence (EI) is necessary for the construction project manager to manage the high amount of stress produced in the dynamic project environment (Love, Edwards, & Wood, 2010; Zhang & Fan, 2013). Emotional intelligence is defined as "the ability to perceive accurately, appraise and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions" (Lindebaum & Jordan, 2012, p. 576). Goleman (1995) describes emotional intelligence as a group of abilities developed from self-awareness, managing emotions, self-motivation, recognizing emotions in others, and handling relationships. Higher emotional intelligence indicates abilities to handle stressful situations, similar to those faced by construction project managers. The four abilities of emotional intelligence are found in most construction project managers. Clarke (2010) compared the four abilities of emotional intelligence in the Mayer and Salovey ability model of emotional intelligence with project manager competencies and transformational leadership behaviors. The four abilities of emotional intelligence are: perceiving emotions; using emotions to facilitate thinking; understanding emotions; and managing emotions in oneself and others. The four project competencies that Clarke examined were: communication, teamwork, attentiveness, and managing conflict. The four subscales of transformational leadership measured were: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Clarke found an association between the emotional abilities of using emotions to facilitate thinking and an overall measure of EI ability to influence project manager competencies of teamwork and managing conflict. The study also found a relationship between emotional intelligence

abilities and transformational leadership. The emotional ability of using emotions to facilitate thinking was found to affect idealized influence and individualized consideration (Clarke, 2010). High emotional intelligence, then, can increase effectiveness in the discrete project management responsibilities and can also increase effectiveness in the functional responsibilities by enhancing transformational leadership.

In a study by Butler and Chinowsky (2006), a strong relationship was shown between emotional intelligence and leadership behavior. The study indicated that as the emotional intelligence level increased, leadership behavior was enhanced. When the individuals had strong personal and social skills, their leadership skills also were advanced.

Construction project managers traditionally focus on technical and practical problem solving (Santorella, 2010). As that approach alone does not address all the construction project manager's challenges, attention is being directed to the human side of construction projects and employee management. Understanding emotions and controlling emotions increases the effectiveness of the construction project manager (Lindebaum & Cassell, 2012). Lindebaum and Jordan (2012) found a connection between the CPM's emotional intelligence and interpersonal tasks, but not in all tasks. Interpersonal tasks are prominent in the CPM's functional responsibilities, particularly in convincing employees to implement innovations.

Love, Edwards and Wood (2011) concluded from the evidence presented in the literature that construction organizations should select construction project managers who are highly emotionally intelligent. They felt that an EI instrument, such as criteria-based selection of construction employees, ,the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Mayer, Salovey, & Caruso, 2002) can be used as a tool in selection of appropriate CPM's. They also felt that training needs to be provided for construction project managers to

be aware and utilize emotions effectively in their responsibilities. They thought that involving emotional intelligence capabilities in the project manager's requirements also would help with hiring CPMs that can function in the job. Goleman (2001) also suggested several improvement measures that managers such as CPMs can learn and use in their duties. Goleman stressed that management and leaders can increase their effectiveness by learning the various techniques of utilizing emotional intelligence.

Coping in the Stressful Environment

Every individual will cope with stress differently, which will determine the extent of the effect of stress on that individual and the resulting success in the job. Coping is the conscious effort by the individual to avoid stress or a stressful event (Haynes & Love, 2004). Coping strategies can include any effort to avoid situations and individuals and confronting the situation to reduce or eliminate the stress. The theory of stress and coping (Lazarus & Folkman, 1984) starts with appraisal of the stress and stressful environment and identification of coping methods appropriate for the individual and the situation. In their seminal book on coping theory, Lazarus and Folkman (1984) identified two coping methods: emotion-focused coping and problem-focused coping. Emotion-focused coping involves regulating emotions and emotional reaction to the situation, while problem-focused coping involves solving or eliminating the problem or cause of the stress. Coping theories typically look at the negative effects of stress and the elimination of distress. The revised Lazarus-Folkman model of stress and coping involves re-appraisal if stress continues and is not initially converted to positive emotion (Folkman, 1997). If the initial coping method does not relieve the stressful situation, then the individual needs to look at the situation again to find the effective coping method. The most effective type of coping strategy will vary, depending on the situation and

individuals involved. (Lazarus & Folkman, 1984; Yip, Rowlinson & Siu, 2008). Haynes and Love (2004) conducted a study to determine the coping strategies of construction project managers, comparing them to the theory of stress and coping. In the study, active coping was identified with events and primarily associated with problem-focused coping. They concluded that construction project managers that used problem-focused coping were better adjusted than those who utilized the more emotion-focused styles of coping, such as cognitive avoidance, social coping, accepting responsibility, and self-controlling coping. The study also concluded that the construction organization should provide their managers with an environment that encourages problem-focused coping, using training and skills development. Yip, Rowlinson, and Siu (2008) conducted a study with Hong Kong construction project managers and found similar results. The use of rational problem-solving methods was the most successful coping strategy for moderating the effects of overload and burnout. They also found that controlled, resigned distancing and social support had some, but a lesser, moderating effect on overload and burnout. Resigned distancing consists of detaching oneself from stressful situations (Yip, Rowlinson,& Siu, 2008).

Social support and organizational support are means of mitigating stress and its effects. (Yip, Rowlinson & Siu, 2008; Macdonald, 2003). Social support is defined as "a flow of emotional concern, instrumental aid, information and/or appraisal (information relevant to self-evaluation) between people" (Weiss, 1983, p. 31). Social support has also been defined as interpersonal transactions involving one or more of the following: emotional/esteem support; agreement on the subject; and/or assistance in helping solve the problem (House, 1981). Support, advice, and listening from experienced colleagues, friends, and family can contribute to moderating stress. Social support occurs in relationships with frequent interactions,

involving strong and positive feelings, with emotional advice and assistance (Weiss, 1983). Three types of support appear to affect the worker: supervisory support, family/friends support, and co-worker support (House, 1981). All of these support systems vary considerably between individuals and situations. Peer support can be especially beneficial in stressful situations, but isn't always available in the construction environment. A supportive team-oriented work environment can help buffer stress and burnout tendencies (Yip, Rowlinson & Siu, 2008). Another study, by Haynes & Love (2004), indicated that social support can provide a significant moderating effect on the stress sequence. There is some controversy in the literature, however, indicating that social support may be counterproductive to psychological well-being (Yip et al., 2008). There also is some disagreement on the existing research on defining and measuring social support (Love & Edwards, 2005).

Organizational support can increase coping capacity by providing additional resources, in either instrumental or affective support (Macdonald, 2003). Instrumental support is defined as support to reduce the workload, by adding staff or equipment or by redefining the CPM's tasks. Affective support is defined as interpersonal support, increasing morale and providing motivation (Macdonald, 2003). To provide organizational support, upper management can realize the extent of workload and work pressures and provide an environment that will optimize the construction project manager's work effort (Loosemore et al., 2003). Individualistic approaches in Human Resource Management (HRM) can provide insight into the CPM's workload and capacity to handle the workload. Dainty, Raiden, and Neale (2004) recommend that the construction organization's HRM department employ several mechanisms to enhance relationships with construction project managers. These mechanisms include new recruitment methods; aligning HR policies with social changes;

providing realistic job previews; offering challenging work experiences; balancing professional and organizational relationships; rewarding and recognizing high achievement; and creating or strengthening the firm's staffing system (Dainty, Raiden & Neale, 2008).

Topics for Further Research

The majority of the literature on solutions for the construction project manager to effectively manage problems related to stress, work overload, work-life balance, and capability to successfully complete assigned management responsibilities concerns research in countries outside of the United States. Research cited in this literature was from the United Kingdom (U.K.) (Love & Edwards, 2005; Dainty, Raiden & Neale, 2004); Lindebaum & Jordan, 2012; Clarke, 2010; CIOB, 2006); Australia (Lingard et al., 2010); Hong Kong (Yip, Rowlinson & Siu, 2008; Leung, Chan & Olomdaiya, 2008); Algeria (Djebarni, 1996); Malaysia; South Africa and Sweden (Lowstedt & Raisanen, 2012). Although the dynamics of the construction industry are somewhat similar globally, cultural reactions to influences such as stress vary. This study will add to the existing knowledge base by providing information from construction project managers in the United States.

Several topics for further examination have been noted in the literature, which will be examined to some extent. Love and Edwards (2005) and House (1981) felt that further research be done on the effectiveness of social support groups on reducing stress. The interviews in this study should indicate if social support groups serve as a positive coping strategy. Love and Edwards (2005) indicated that further research be done in practices used to reduce workplace stress in countries other than the U.K., Dainty, Raiden and Neale (2004) suggest further research in human resource management strategies concerning project management. Yip, Rowlinson and Siu (2008) felt that further research needs to be done on the

effectiveness of intervention of coping strategies in moderating the relationship between overload and burnout. Leung, Chan and Olomdaiya (2008) felt that further interviews need to be made to cross-validate the relationship between stress and performance. Clarke (2010) felt there is a need to identify the extent to which project manager competencies are associated with emotional intelligence abilities. Clarke also felt the concept of emotional intelligence remains largely unexplored in the construction industry, and further research needs to be conducted about using emotional intelligence as a hiring indicator and the effect of emotional intelligence training with construction project managers.

Chapter II Summary

This chapter supports the exploratory conceptual framework. In it, the construction project manager's work responsibilities in managing the project, the discrete responsibilities, the organizational responsibilities, and the functional responsibilities are described (Stevens, 2005). The responsibilities are often very demanding, exceeding the CPM's capacity to successfully complete all of them, resulting in work overload, excessive work hours, and conflict between work and personal life. At the same time that construction project managers are managing the project and its many demands, they are also expected to implement organizational innovations within the organization. Stress builds within the construction project managers, with accompanying emotions. The construction project managers need to properly appraise and make decisions in managing all of their responsibilities, providing success for both the projects and innovation implementation in the change process. They need to manage the stress, emotions, and pressures using several methods, such as emotional intelligence, coping strategies, life balance, and other methods. Rather than sacrifice project success or success with innovation implementation, it is possible for construction project

managers to manage the stressful environment and successfully complete their responsibilities.

The interaction of these activities, pressures, stresses, and coping techniques are illustrated in the exploratory conceptual framework, Figure 1.2 on page 10.

This study concentrates on interviews with several current construction project managers in different regions, who are managing different types of projects for different construction organizations in the United States. This is qualitative research observing a variety of approaches to the stressful environment. Chapter III will describe the methodology used in this study.

CHAPTER III

Methodology

Introduction

The purpose of this study is to understand the ways construction project managers (CPMs) cope in a stressful environment to successfully implement discrete and functional responsibilities. These positions involve attempting to succeed in implementing functional organizational innovations directed by upper-level management and executing discrete, day-to-day, project-related responsibilities managing a successful project in a stressful environment influenced by overload, work-life conflict, and severe pressures.

The exploratory conceptual framework in Figure 1.2 was developed from the theory of stress and coping (Lazarus & Folkman, 1984) and is used in this study to examine the experiences of construction project managers to complete their responsibilities in a stressful environment. The study looked at the role of coping strategies, emotional intelligence, and other factors to enable CPMs to successfully complete all position tasks. This study provided insights into the response to the demands and pressures, and revealed methods used by construction project managers to enable successful completion of discrete and functional duties. Current literature concerns the pressures and stress experienced by construction project managers, but little definitive information exists as to the methods used by construction project managers to successfully execute their responsibilities, particularly in the United States.

This study examined two research questions:

1. What perspectives do construction project managers have about managing their discrete and functional duties in a stressful environment?

2. What skills and coping strategies do construction project managers use to manage projects and implement innovation simultaneously and successfully?

In this chapter, I describe the study's research methodology and include discussion around the following areas: (a) research design; (b) data collection; (c) data analysis; (d) issues of trustworthiness; and (g) limitations of the study.

Research Design

This study sought to understand the perspectives of construction project managers in successfully executing their responsibilities. This is applied research, as it was undertaken to provide insight into successful methods used by construction project managers, providing information for construction organizations and construction project managers to improve their approach to their responsibilities. Participants in the construction industry may want to understand the work environment, the pressures, and the ways successful project managers deal with their situations. Insight into how construction project managers respond to the demands of their positions and complete their responsibilities is valuable information that can benefit other individuals in similar positions. Qualitative research provides tools to enter the world of construction project managers, so these insights may be shared with others (Merriam, 2009).

Quantitative methods do not provide the rich description of the construction project manager's situation and decisions necessary to provide insight into the CPM's world. Qualitative methods provide a view into the processes, events, and actions; help develop a contextual understanding; help develop a relationship between the researcher and the participants that provides insightful information; and provide flexibility in examining the topics (Creswell, 2007). Qualitative research methods provide data and interpretative

perspective to enable individuals in the construction industry to be more efficient and effective in their positions.

In this study, construction project managers describe how and why they applied skills and methods to successfully complete all of their responsibilities. Several construction project managers from different construction organizations, different geographic regions, and different construction sectors were interviewed. By examining several different situations, a broader understanding of construction project managers' perspectives and experiences is possible (Mills, Durepos, & Wiebe, 2010). As this study uses a small sample of the population of construction project managers, a variety of regions, types of construction and construction organizations are represented in the interviews.

The environment where construction project managers encounter conflict in trying to address both project and organization demands is definable, bound by job responsibilities in the construction industry. This situation is integral within the context of construction project management, involving stress, environment, and personal attributes (Bishop, 2010). Although projects vary, the responsibilities of construction project managers are generally similar from project to project. The bounded system is the job responsibilities, both discrete and functional, of the construction project manager. This study involves several different factors, which can be exposed in the qualitative method. Examination of methods used to enable construction project managers to complete work responsibilities under the pressures are examined within a bounded system.

In this study, the construction project manager consists has defined job responsibilities. Interviews of construction project managers employed on various sites were made examining the job responsibilities of construction project managers. Although there

were some minor differences in duties from company to company, the position requirements for the construction project managers were consistent. These position requirements included project (discrete) responsibilities and organizational (functional) responsibilities on multiple sites.

Thirteen construction project managers from varying construction organizations and geographical regions were interviewed in this study. This number of interviews permitted detailed interviews of a select sample of successful construction project managers from a large population. By selecting participants from several geographical regions, different sectors of the industry, and different construction organizations, many of the variances in the population were represented. This collective group was bounded by the typical job description for the construction project manager, a mid-management position, between organization management and field (production) operations. The boundaries of this study were the job descriptions for construction project managers within commercial, civil, and industrial construction organizations in the United States. Past research has concentrated on non-construction organizations, and, when targeted at construction organizations, those organizations have been in Europe, Asia, and Australia. The interview participants were purposely selected by construction organizations as being successful in completing their position responsibilities.

Data Collection

Purposeful selection of construction project managers for interviews was made from several construction organizations in different geographic regions to provide a broad look at the population. As the research questions required information concerning successful practices used by construction project managers, interviews with construction project

managers who have experienced the effects of the project management workload provided insightful data. Purposeful sampling can provide information to help understand the meaning of experiences from the perspectives of the participants (Merriam, 2002). When using purposeful sampling, the researcher is able to select information-rich cases for study (Patton, 2001). This purposeful sampling selected successful managers suggested by human resource managers and organization executives. Parameters for the selection of the sample interviewees were made from the results of the Dulaimi and Langford study (1999) described in Chapter II. That study compared CPM attributes with their behavior. By using similar selection parameters, the study I conducted could compare results on the same level. Despite the time lapse since the Dulaimi and Langford study was conducted, the duties of the CPM have not changed significantly and the conclusions are still applicable. The executive manager or human resource person can evaluate their employees using the following criteria for high score in the dimensions of their responsibilities and personal characteristics. Considering the high score in dimensions of the employee's responsibilities, the executive/human resource person should examine: management of the project's environment and resources; information handling (communications); providing for growth and change; and conflict handling. Considering personal characteristics, the executive/human resource person should examine the employee's background, experiences, and advances in employment; educational background; participation in technical training, relationship training, and leadership training; and social independence. Longevity of employment and advancement in responsibilities indicates a certain amount of success for the construction project manager. The above criteria should provide the selector a guide for selecting successful project managers for interview.

For this study, construction executives and human resource managers in varying

construction organizations in several geographic regions were contacted to select successful construction managers that have demonstrated strong background in construction management and have performed strongly in the organization. These individuals were contacted via email and telephone for telephone interviews. The intent was to purposefully select successful construction project managers to accurately describe their methods in fulfilling their responsibilities.

Thirteen in-depth interviews were held with selected current construction project managers. The major benefit of in-depth interview data collection is that it offers the potential to obtain full, detailed perspectives on their experiences (Creswell, 2007; Denzin & Lincoln, 2003). This type of interview can contain the participant's view of the world and the relationship of his or her experiences to the lived world (Kvale, 1996). These in-depth interviews were about one hour in length. The length of these interviews was similar to the interviews conducted by Lowstedt and Raisanen (2012) when they interviewed construction project managers relating to innovation programs within the construction organization. As the participants were in several regions across the United States, the interviews were conducted via telephone. Traditionally, in-depth interviews have been recommended to be conducted face-to-face. Several research studies have found that telephone interviews are as effective as face-to-face interviews (Sturges & Hanrahan, 2004). For this study, telephone interviews provided access to construction project managers in several regions of the United States. Construction project managers have limited time available for activities outside of their responsibilities, and telephone access provided more flexibility in scheduling interviews.

There is a large population of construction project managers in the United States. According to the Bureau of Labor Statistics, U.S. Department of Labor, 485,000 management

positions existed in construction in 2012. Fifty-seven percent of those construction managers were self-employed and would not be considered in the applicable population group. Seventeen percent of the total were employed in commercial building construction, and five percent were in heavy and civil engineering construction (*Construction Managers*, 2012). This resulted in a gross population within the study parameters of about 100,000 construction project managers. Although the size of population related to the study indicated a significant number of affected individuals, it presented a large number of individuals to interview.

As the research questions required information concerning successful practices used by construction project managers, interviews with construction project managers who have experienced project management workload would provide the most insightful data. Purposeful sampling can provide information to help understand the meaning of a phenomenon from the perspectives of the participants (Merriam, 2002). When using purposeful sampling, the researcher is able to select information-rich cases for study (Patton, 2001). This purposeful sampling selected successful managers, as suggested by human resource managers and organization executives. The purposeful sampling also included construction project managers from heavy/highway, industrial, and commercial building sectors. The sample also included construction project managers from several regions in the United States. As the sample was small compared to the entire population of construction project managers, it needed to represent successful CPMs in applicable sectors and regions.

The interviews with selected construction project managers were semi-structured. Each interview followed the interview guide, Appendix A, and expanded on those questions to clarify and add detail to the responses (Merriam, 2009). The questions were in three general areas: confirmation of similarity to position requirements and environmental conditions; what

perspectives the construction project managers had about managing their discrete and functional duties in a stressful environment; and what skills and coping strategies the construction project managers used to manage projects and implement innovation simultaneously and successfully. The questions were subject to change, depending on responses and emerging concepts.

The interviews were intended to provide data that related to the research questions. As the interviewer, I was aware of my biases and would use questions and interviewing techniques that would not influence the answer. I wanted honest, non-influenced responses to the interview questions. Test of effectiveness and neutrality of the interview questions needed to be made prior to interviewing the majority of participants. Creswell (2007) recommended pilot testing of interview questions and procedures. The first two interviews served as pilot interviews to assure that the interview questions yielded relevant data without influence. The two pilot interviews were examined closely to determine revisions to further interviews. Creswell (2007) discussed some of the challenges in interviewing. Occasionally, interviewees can react unexpectedly to the interview situation. The interviewer needs to be flexible and respond appropriately to keep the interviewee in the discussion, without influencing the responses. In this study, there was a chance that the interviewees would respond as they felt their organization would want them to respond, rather than with their own response. As the interviewer, I needed to draw out the interviewee's own experience, again without influencing the response.

The interviews were recorded and transcribed by the interviewer. The recordings were destroyed after the interviews were transcribed and verified for accuracy with the participants.

The participants were identified by pseudonyms and all identifying information was destroyed.

I was sensitive to the interviewees' need for privacy and how the interviews could affect them. The interviewees took time from their lives to help the researcher find answers to the questions, and participating in the interviews shouldn't have caused them any harm. One of my primary considerations was that the interview not affect the employment of the interviewee (Creswell, 2007). It was essential in this study that the participants felt free to express themselves, as they discussed their jobs and their experiences. Creswell (2007) stated, "We consciously consider ethical issues – seeking consent, avoiding the conundrum of deception, maintaining confidentiality, and protecting the anonymity with individuals with whom we speak" (p.44). All of these considerations were actively pursued in this study.

The participants were fully briefed about the interview topic and the purpose of the study. They were provided an informed consent form and gave their permission prior to the interview. The participants were able to refuse to answer any question and could stop the interview at any point. The participants would not want to openly discuss their situation if there was any chance that their employer would be able to associate them with comments made in the study. Participants reviewed the transcript of their interviews, having absolute editorial refusal on any item concerning their interview. None of the participants made corrections to their transcript.

Data Analysis

Subsequent to the transcription, the data was coded and organized by the researcher manually. The coding process was accomplished in the six steps shown below:

1. The interviewer transcribed interviews within 2 days of each interview. Transcriptions were sent to all participants. No corrections were submitted. Several participants sent email approval, and several participants did not respond.
2. Transcripts were read three times by researcher (interviewer). Notes were taken of major themes and relationship to the two research questions.
3. Initially, four major data topics were established to arrange the data into topics relating to the participants and the research questions. Maxwell (2005) describes these divisions as organizational topics, broad topics that can be determined prior to the interviews from the purpose, the research questions and other established direction. The initial data classifications were: background, responsibilities, pressures/stress and skills and strategies. The background data was arranged to determine demographics of the participants. The responsibilities data was arranged to confirm common responsibilities in the sample. The pressures/stress data was arranged to confirm that the construction project managers are working in a stressful environment. The skills and strategies data was arranged to collect methods used by the participants to be successful. This process would be considered open coding, as each data area is assigned a code (Merriam, 2002).
4. After compiling the data in the four organizational topics, the appropriate data topics were compiled in a matrix comparing responsibilities, success indicators and skills/strategies to achieve success for the associated responsibility. This matrix was used as reference to arrange the data into related coding.
5. Direct quotations from the participants were then used to form a detailed matrix for responsibilities, stress, and skills strategies. Substantive categories were formed to

provide descriptive areas that relate to organizational topics (Maxwell, 2005). These substantive categories were generated from the participants' discussions. This coding process was axial coding, rearranging the data into more specific categories (Merriam, 2002). The grouping of responsibilities contained nine substantive categories. Stress was divided into three substantive categories of stress characteristics (six items), effects of stress (three items) and solutions to stress (13 items). The participant interview analysis produced 19 substantive categories relating skills and strategies. After the quotation matrix was coded, a list of competencies for construction project managers from the study by Dainty, Cheng and Moore (2004) with the quotations from the participants to guide consolidation of the topics. The Dainty, Cheng and Moore study discovered 12 competencies for construction project managers which were similar to the list of skills/strategies that emerged in this study.

6. After considering the coded list of skills/strategies and the list of competencies, the consolidated list of important skills and strategies that lead to success from the data in this study condensed into four theoretical categories: personal competence, social competence, team leadership and technical skills and management, Further examination included personal competencies and social competencies into a commonly understood category of emotional intelligence. Emotional intelligence included most of the soft-skill topics developed in the more detailed matrix. . This process was selective coding, forming substantive theory (Merriam, 2002). Maxwell (2005) describes theoretical categories as general categories relating to a theory or theories. This categorization of the skills and strategies for success was similar to the competencies in the Dainty, Cheng, and Moore (2004) study and resulting theory.

Yin (2009) suggested some tactics for the four design tests, to ensure the quality of the research design. The four tests common to all social science methods are: construct validity, internal validity, external validity, and reliability. To achieve optimum quality in this study, several of Yin's tactics were applied to phases during the research. To achieve construct validity, Yin suggested using multiple sources of evidence, establishing chain of evidence, and having key informants review the study report. I intended in this study to use multiple interviews for a broad view of the perspectives and experiences. Literature review information and the exploratory conceptual framework were used as references in examining evidence from the interviews. The data from the interviews would either confirm or change the flow of events within the exploratory conceptual framework. One survey in the literature review indicated a high amount of stress in the construction project manager's environment (CIOB, 2006). The interviews verified the amount of stress the CPM experienced, the influences producing the stress, and the effects of the stress. The data from the interviews also indicated the process of dealing with the stress and emotions using strategies that are effective in this situation.

During data analysis, internal validity was accomplished by pattern matching, explanation building, addressing rival explanations, and by using logic models (Yin, 2006). Comparison to the exploratory conceptual framework was made to confirm or refute similarity to the literature. External validity was accomplished by using identical questions in all interviews, to demonstrate replication logic. Reliability was established during data collection by carefully applying qualitative research techniques and developing an accurate and searchable database, coded to major themes in the data.

Trustworthiness

Qualitative research needs to be valid and reliable. If the research is valid, it describes the actual situations. Although a full view of reality is not really possible, the interpretations of reality from experiences and observations can be provided by the participants (Merriam, 2009). If the research is reliable, it can be duplicated by other researchers and produce similar results. In establishing trustworthiness in qualitative research, credibility, dependability, confirmability, and transferability need to be demonstrated by the research (Guba & Lincoln, 1998). I needed to minimize biases and provide solid information that would withstand scrutiny.

Credibility relates to the findings being accurate about the individual's experiences. The findings need to be believed by the reader (Creswell, 2007, Merriam, 2009). The findings need to be congruent with reality (Merriam, 2009). The data do not speak for themselves, so the researcher's interpretation needs to be true to the intent of the data expressed by the participant (Merriam, 2009). I accomplished trustworthiness by controlling any biases during interviewing, transcribing, coding, and analysis, so the data would accurately reflect the interviewee's meaning. I was prepared to make notes of any bias occurrences during the interviews. I made specific reviews to assure that biases were not transferred to the data.

Familiarity of the organization and construction project manager culture helps interpretation of data to be credible by making the descriptions understandable (Shenton, 2004). I am very familiar with construction organizations, their cultures, and their unique characteristics. I added to this knowledge through discussion with the construction organization's contact about specific organizational and cultural factors that could affect the credibility of the data.

A range of participants discussed their perspectives in the construction project manager situation. We can expect that varying approaches, such as triangulation, which involves using a wide range of informants (Shenton, 2004), will provide breadth to the analysis. Comparison of findings from the twelve interviews I conducted would provide a rich picture of CPMs' perspectives and experiences. Critical comparison of similarities and differences between the data from all of the interviews would provide a balanced look at the data and findings. All participants had the opportunity to review their transcripts for accuracy. I also had colleagues review the findings for credibility.

As the target for research in this study is from interviews, full triangulation from other sources was not available. Where possible, additional documents and observations were used to provide some triangulation.

The findings need to be dependable. I used techniques that would show that if the work was repeated, with the same participants and same methods, the results would be similar (Shenton, 2004). A record of all activities was contained in an audit trail. The document trail showed the procedures used throughout the data collection and analysis phases.

The findings also need to be confirmable. The results need to reflect the participants' input, not the opinions of the researcher. Participants were given the opportunity to review the transcripts and findings of the study. The varied interviews provided the opportunity for triangulation of findings to confirm the originality and consistency of the data. The audit trail shows the consistency of procedures used in collection and analysis of the data.

Transferability is the demonstration that the research can apply to a wider population (Shenton, 2004). The description of findings and their context will be described in terms that can be transferred to other situations. The theory of stress and coping was developed for

application to all stress-related situations, and has been applied to the specific construction project manager environment. The findings can be used to provide insight for other situations involving stress and conflict.

Limitations

The purpose of this study is to understand perspectives of construction project managers successful in their jobs. These positions involve simultaneously succeeding in implementing organizational innovations directed by upper-level management and executing day-to-day project-related responsibilities managing a successful project. The sample size for this study was small in comparison to the total number of construction project managers, although selection of the participants was purposeful based on successful performance by the participants. A larger sample may reveal some additional perspectives and provide support of the perspectives contained within this study. The perspectives contained in this study demonstrate attitudes and techniques used by successful construction project managers in construction organizations, which can be used by other construction organizations confronting similar situations. Using information confirming effective management techniques, construction organizations can start formulating methods to obtain positive results in construction project manager responsibilities.

Chapter III Summary

In Chapter III, I describe the methodology proposed for this study. The study is a qualitative research study. Data collection was accomplished through in-depth interviews with current successful construction project managers.

Qualitative research methods provide insight into the environment, interactions, emotions, and experiences of construction project managers. Construction project managers

face complex situations with their large responsibilities, conditions, and conflict. Their description of their situations gives insight to construction organizations to provide training, support, and consideration. Successful construction project managers select appropriate coping strategies to manage their responsibilities.

Qualitative research methodology was chosen for this study. As the construction project management task is fairly consistently bounded within the industry, particularly for commercial building and heavy/highway construction organizations. The bounds of the construction project manager position include multi-disciplinary considerations in organization, management, psychology, and sociology. This study facilitates understanding of the decision-making process to adopt a coping strategy.

One-hour telephone interviews were conducted with construction project managers in various locations in the United States. The sample size is comparable to other qualitative studies in the construction industry. I interviewed 13 construction project managers and three administrators in this study, resulting in a total of 16 interviews.

Purposeful sampling was used in selecting the participants. I contacted construction executives and human resource managers to suggest successful construction project managers with sufficient background and experience to provide insight into their techniques for managing the full extent of their responsibilities. Although the interviewees have been successful, they all have had learning experiences on the job that have influenced their strategies.

The interview questions were formulated to provide data for the study's research questions. The interview questions also followed the flow of the decision process to confirm or refute theory and assumptions. Two pilot interviews were made to refine and confirm the

use of the questions. Throughout the interviews, questions and approaches to data gathering were adapted to conditions and the participants in the study.

The data were initially coded into themes directly related to the exploratory conceptual framework. The data were compared for similarities and differences between interviews. The participants' experiences were analyzed using the exploratory conceptual framework.

Ethical concerns were paramount in this study. I assured participants that there would be no linkage to them through the study. I wanted the participants to freely communicate their experiences in the interviews without fear of penalty. The study needed to be trustworthy and representative of the industry.

CHAPTER IV

Data Collection

Introduction

The case for this study consisted of a group of construction project managers identified by their organizations as being successful in their positions. Thirteen in-depth interviews were conducted with a variety of construction project managers in commercial building, heavy-civil, and industrial construction in several different geographical locations, with varying construction experience. Three interviews were conducted with upper-level managers. Background data were also gathered through relevant documents. The interviews were conducted via telephone and recorded. All of the interviews were transcribed by the interviewer. Transcripts were sent to each participant for correction. None of the participants had any review comments.

The purpose of this study is to understand the ways construction project managers cope in a stressful environment to successfully implement discrete and functional responsibilities. These positions involve attempting to succeed in implementing functional organizational innovations directed by upper-level management and executing discrete day-to-day project-related responsibilities managing a successful project in a stressful environment influenced by overload, work-life conflict, and severe pressures.

The research questions I sought to answer in this study were:

1. What perspectives do construction project managers have about managing their discrete and functional duties in a stressful environment?
2. What skills and coping strategies do construction project managers use to manage projects and implement innovation simultaneously and successfully?

In Chapter IV, I display the data as related to answers to these questions from the participant interviews and associated documents. In Chapter V, I provide analysis based on the conceptual framework of coping introduced in Chapters I and II and on an analytical framework related to preparing construction project managers to meet their responsibilities and challenges. The construction project managers who participated in this study coped with stress and succeeded in their positions because they effectively applied lessons learned through observation and prior preparation in all facets of this work. Education, professional development, and work experience taught them interpersonal skills, including team- and human resource management, customer relations, and leadership; business skills, including budgeting, finance, and planning; and technical knowledge of the construction process. The successful project managers coped with stress by being confidently competent in their positions and by applying their skills and strategies appropriately.

Four types of data were gathered: the participants' demographics, responsibilities, skills and strategies for success, and strategies for managing responsibilities in a stressful environment. The participant demographics and construction project manager responsibilities discussion establish and confirm the boundaries of the CPM position. Part of the description of the boundaries of the study are data from the participants describing the stressful project environment. Strategies for coping with stress in the construction project management environment follow the discussion of the case boundaries.

Participants in the study were selected from volunteers nominated by their employers. Figure 4-1 lists the participants (as pseudonyms), the type of firm they work for, college degree, experience in construction, current project location, the number of firms they've been employed with, and the length of time with their current firm. The participants are employed

by a variety of construction businesses, work in diverse locations, and have varying levels of construction experience. The majority are project managers or senior project managers. Upper-level managers interviewed had previously been project managers and senior project managers.

Table 4.1: Demographics of interview participants

Participant Pseudonym	Construction Sector	Degree	Years in const.	Current Position	Location	# of companies	Years w/ current firm
Art	Heavy Civil	Construction Engineering	30	Operations Manager	Hawaii	4	1
Brad	Heavy Civil	Construction Engineering	19	Project Manager	New Orleans	2	17
Bob	Industrial	Construction Management	13	Project Manager	Seattle	1	13
Chuck	Commercial Building	Construction Management	19	Senior Project Manager	Seattle	2	2
Clarence	Commercial Building	Construction Management	9	Project Manager	Seattle	1	9
David	Commercial Building	Mechanical Engineering	10 + 4 mfg	Project Manager	Seattle	2	10
Ed	Commercial Building/Concrete	Construction Management	4	Project Manager	Miami	1	4
Frank	Commercial Building	Construction Management	8	Project Manager	Seattle	1	8
Christine	Commercial Building	Construction Management MBA	15	Senior Project Manager	Seattle	3	5
Gene	Commercial Building/Concrete	Construction Management	3	Project Manager	Miami	1	3
Ian	Commercial Building/Concrete	Civil Engineering Masters of Const. Mgmt.	3	Project Manager	Miami	1	3
Jerry	Heavy Civil	Construction Management	15	Project Manager	Hawaii	2	15
Jim	Commercial Building	Construction Management	27	Division General Manager	Seattle	1	27
Larry	Commercial Building	Construction Management	9	Senior Project Manager	Boise	1	9
Mike	Commercial Building	Construction Management	11	Senior Project Manager	Boise	2	10
Steve	Commercial Building/Concrete			Talent manager, SE Region	Miami		

Participant Education

All of the participants have college degrees directly related to construction project management. Eleven have a bachelor's degree in construction management. Four received bachelor's degrees in engineering; two in construction engineering; one in mechanical engineering; and one in civil engineering. Two participants have master's degrees; one in business administration, and one in construction management. All of the undergraduate degrees in construction management are from university programs accredited by the American Council for Construction Education (ACCE). ACCE is a group of representatives from the entire construction community, the public at large, construction educators, and constructors. The council's goal is to establish and maintain standards and criteria for accreditation. ACCE establishes a curriculum for construction management programs to "provide an education that will lead to a leadership role in construction and to [sic] prepare the student to become a responsible member of society" (ACCE, 4/14, p.7). The ACCE construction management curriculum includes requirements for general education, mathematics, science, business, management, construction science, and construction. Topics included in the broad-scope categories include communications, mathematics, statistics, business management, accounting, human resource management, construction design theory, construction graphics, surveying, construction materials and methods, construction/business ethics, estimating, planning/scheduling, construction cost accounting, construction law, safety, and project management (ACCE, 2014). Construction management degrees and engineering degrees are intended to prepare graduates for a career in the construction industry as well as for progressive levels of advancement.

All of the participants started their careers as field engineers and have been promoted progressively. One participant has a mechanical engineering degree and has worked for four years in the manufacturing industry prior to working in the construction industry. Eight participants are still working for the same original firm that hired them after they graduated. Five participants are working for their second company. All are on a trajectory toward a life-long career in the construction industry.

The participants' current work locations are in or near cities ranging from small urban areas to large metropolises. Seven participants work in the Seattle area. Two participants are located in Hawaii on the island of Maui. Four participants are located in Miami, Florida. Two are working in the Boise, Idaho, area, and one participant is assigned to a project in New Orleans, Louisiana.

Eleven of the participants are employed by firms that primarily are involved in commercial building construction. Three participants are involved primarily in heavy-civil construction, and one participant works in industrial construction. The size and exact nature of the projects within each classification varies significantly, from small tenant improvement projects to $100-million-plus mega-projects.

The contractual relationship for the projects varies as well. Seven participants work for firms primarily engaged in the private sector. These projects have slightly different dynamics than the public projects. Typically, but not always, the management staff is slightly larger on the private projects, as the customer expects and funds a higher level of service from the contractor. Several participants have extended duties that include marketing and project development. Three participants are employed by a nationwide firm that subcontracts to build concrete structures of buildings. In these cases, the customer is another contractor. The three

participants in the heavy-civil sector are usually involved in large, public projects. One of those participants is involved in a joint-venture arrangement on a large public project. The remaining participants manage projects in both public and private venues, in a variety of contract amounts. Customer expectations vary with all of these projects, and the management team must address these expectations.

The majority of the project managers have gone through a progression of positions, training, and experience to achieve the level of project manager or senior project manager. The average length of construction experience of these participants – Brad, Bob, Chuck, Clarence, David, Ed, Christine, Larry and Mike – is 12.8 years. The three participants employed by the concrete-shell contractor started as field engineers, and advanced with unusual speed – within three- to four years – to project management positions. According to Steve, the region talent manager, the firm had identified these three individuals as exceptional employees who had the requisite composure, team leadership skills, and mastery of construction skills and knowledge to advance quickly. One of these three participants, for example, introduced the active use of mobile devices to field management, providing quick and informative cost data to more effectively manage the projects.

The participants' employers have provided educational opportunities throughout the participants' careers. One firm has developed an in-house leadership program that includes several appropriate role-playing exercises. The firm also contracts out several seminars directly related to the personal- and social skills needed in leadership positions. Two participants mentioned being positively influenced by participating in Dale Carnegie success courses. There are many seminars, online courses, and publications available on personal- and social skills development, emotional intelligence training, leadership, project management

skills, and a variety of other educational programs targeted at improving the skills of the construction project manager. The Associated General Contractors of America, Inc. (AGC), a management association, offers a number of courses and seminars for continuing education. For example, the AGC offers a project development program for early career project managers, which is intended to provide a solid foundation for long-term career development (AGC, 2015). The AGC also offers a more advanced six-day Construction Project Manager course, directed at developing leadership skills and teaching strategies that strengthen students' ability to manage projects.

While the participants' management approaches and professional contexts vary somewhat, their responsibilities, skills, strategies, and coping methods are essentially uniform.

Responsibility Boundaries

The construction project manager's responsibilities within a stressful environment form the boundaries of this study. This discussion on responsibilities confirms the boundaries established in Chapter I. Construction organizations typically prescribe position responsibilities for project managers, with these responsibilities varying by project type. The responsibilities of the study participants are similar to responsibilities described by the Department of Labor for a construction project manager, as quoted in Chapter II (National Center for O*NET Development, 2013). This discussion is provided to illustrate the position responsibilities from the participants' perspectives.

Overall Project Management

Most of the participants described responsibilities in the context of the overall responsibility of the project they are working on. Following is Clarence's explanation of his overall responsibilities:

> When we have an active construction project, [we are] responsible to work and coordinate with the superintendents and make sure that there is no schedule impact, and working with the project engineers as well to make sure that we have material when we need it, to meet that schedule and also manage financial – both keeping track on an individual level of projects and making sure that the overall project is on budget, or just managing those costs."

Frank's summary of his responsibilities emphasize leadership:

> Overall, I manage the entire budget and supplemental management of the project schedule, work with superintendents and, then, general leadership out here – making sure that materials come in on time, making sure all our submittals are brought in correctly, keeping the field moving. There's more of the leadership role – rather than writing every RFI [request for information], writing every submittal."

Christine emphasized her overall responsibilities, highlighting her accountability for meeting the firm's goals, or, as she expressed it, "Trying to guide the ship for each of my accounts to align with what the company is looking for."

Jerry expounded upon his responsibilities to the project staff:

> It's kind of where the rubber meets the road here. I'm totally responsible for the outcome of the individual projects that I'm managing. Our staffing changes from job to job…. I'm responsible for the guys that are working for me in the office, and also in the field. I'm responsible for them getting out here and doing the right thing, making money, taking good care of our clients. At a detailed level, I'm responsible for managing the schedule, and cost, and forecasting. I'm responsible to make sure that

> everybody's getting along, and [I] try to make sure that all my guys are doing what they're supposed to. Keeping the morale up and the drive alive.

Team Management

Along with overall project management, the construction project manager needs to effectively lead the project team. This team includes management personnel and may also include the customer, trade partners, and workforce. Brad, the project manager for a portion of a large joint venture project, stated:

> I'm the lead . . . the head guy for the company on the project, every day at the project, [managing] 25 people or so. So, any issues that my firm has, I deal with those, like a project major would . . . . I deal with our people on that stuff.

Chuck discussed his role working with a large team:

> It just depends on the staff level, at least from my position, how much staff you have to delegate the work. The job I'm on, about $127 million or so, we have a staff of about 20 salaried people, between quality control, safety, project managers, project engineers, office manager, and superintendents. On that level, you can delegate a lot of work down and just watch the process and make sure that the machine is running on all cylinders . . . . That's what you're trying to do.

David expressed a simpler viewpoint: "There's always the organization responsibility to set up the team and divide up the project responsibilities with the project team, depending on the project size or complexity."

Budget and Financial Management

A primary goal for the construction organization is to manage the project within the budget. Many of the participants concurred that budget and financial management are major

responsibilities of the construction project manager. According to one participant, Art, "the project manager is both concerned with the field and the business aspects." Frank discussed the CPM's financial responsibilities: "I'm in charge of financial forecasting for the job," he said. "The higher up you move, the less construction you do, the more financial and accounting you do, and risk management that you do." Most participants discussed their role in budget management. Gene described his financial management role as:

> I'm basically responsible for the overall financials of the project that I'm on, which includes understanding incurred costs to date, and forecasting future costs, so I can always report to my company the expected profit and expected cost of completion throughout the duration of the project.

Ian discussed his financial role as a subcontractor to a general contractor:

> I do the budget on the project. So, basically get the estimate and turn it into the budget that is trackable throughout the project. We can track the costs and make cost projections. Part of my day-to-day job is doing the monthly financial projection, tracking the cost on a daily basis, weekly basis, and a month-to-month basis, and doing projections to make sure that we stay on budget. . . . If [the project] is going to be over or under, how much it's going to be … affects our line of credit. Another part of the job is to do the billings and pay apps [progress billings] to our GC and also from our subs… review theirs, go through the invoices and pay apps. I also do our pay apps to the GC [general contractor].

Larry stressed the importance of coordinating and authorizing change orders submitted to the owner. Particularly in hard-bid projects, adequate compensation through change orders is a major factor affecting the profitability of a project. The construction project manager is

responsible for establishing budgets, maintaining costs within the budgets, making periodic financial forecasts, financial reporting, and the ultimate financial performance of the project. Most of the participants were very concerned about completing accurate and timely budget reports and projections. Their employers need to know this information throughout the duration of the project.

Dealing with the Customer

Gene, who works for a concrete contractor, stated: "One of the bigger roles of the project manager is to be the point of contact for the client, which is, in our case, the general contractor."

> Larry explained the relationship of the construction project manager to the customer: They [project managers] will be the main point of contact for the owner's representative during the course of construction and will assure that the schedule will be maintained and the schedule commitments are maintained – and [that] the overall quality and finish of the project meet the owner's expectations and our contractual obligations that we made on the front end.

As customers vary in expertise and sophistication, the level of service a construction project managers provides to the customer varies. Chuck described the level of involvement with customers:

> Some owners are really hands off. They already know what they want; they just want to know that you're on time and on budget. Some owners are really into the weeds with you . . . . They want to know why this screw wasn't put on yesterday . . . . That's the day-to-day stuff what [sic] happens out here.

Christine summed up the responsibilities with the customer in four short words: “Keep the customer happy.”

Planning the Project

The project plan and secondary plans are typically formulated by the construction project manager and the project management team, in accordance with the customer’s needs. The project needs a plan to be successful. Art, who had the most experience of the participants, discussed the planning process: “Planning your work ahead of time is the battle . . . . You build it in your mind 10 times before you actually build it in the ground one time.” Chuck said, “Usually, you have a plan, which you set forth on to manage that. Make sure you’ve got a plan, and go execute it with your team.” Ian viewed the plan as the start of the progress: “Start off with pre-construction, reviewing the means and methods, site logistics – that’s where we usually start with the project.” Several of the participants discussed planning the project as a strategy for project success. Further discussion of planning the project is included in the following discussion of skills and strategies for success.

Human Resource Management

Located remotely from the organization’s office, the construction project is away from employee support that would be available in a self-contained facility. The construction project manager, then, is responsible for employee support and administration. In a joint-venture atmosphere, Brad saw a responsibility to mentor employees at the project site, so his organization’s team members are able to focus on their roles and maintain their identities, so they “don’t get lost in the shuffle” of the primary joint venture partner’s world. Ian, project manager for a concrete contractor with a large direct labor force, is responsible for making manpower projections and balancing crews with the fluctuating workload.

Company Emphasis Responsibilities

Several of the construction organizations in this study emphasized a few different project manager responsibilities, depending on the type of work, type of contracts, market conditions, or company policy. One of the firms represented by participants in this study requires its project managers to sell future projects to existing and new customers. Bob stated, "I do a lot of development. Our company tries to bring in new clients and new jobs." Chuck added: "Before award, you're putting together the RFP response, going to the interview, all those things to land the job. So you're involved in that . . . . It's a larger team, with marketing to help you pull that in." Frank, from the same construction organization stated:

> Our company's culture is, you eat what you kill. If you go out there and bring in work and execute that work, then you're going to be successful. I prefer the way we do it, because it's more beneficial, because the best sales person is the one who knows how to do it. It puts a lot of stress on me, because you always have to be out there selling, but you have to able to perform what you just sold.

Some construction organizations include the initial bid as a project manager responsibility. Larry stated:

> In our company, our project managers are responsible for initially bidding and estimating construction project bids – compiling subcontractor bids and our own bids and putting them together and providing proposals to the owner, then, negotiating final pricing for projects and negotiating contracts with the owner. [Those] would be the first steps.

Along with coordinating subcontractor bids, the project manager, in this case, is responsible for managing the subcontractors during construction and for warranty work during post-construction.

Stressful Project Environment

The variety and complexity of project manager responsibilities give rise to a number of stressors in the work environment. Art discussed the project pressures:

> I think the pressures that we had 30 years ago are still there. You still have to build something. Your competitor is cheaper than ever because he thinks he's smarter than you. The workforce is probably less skilled than it was. You've got a lot of things going against you. The owners want you to build that, but the neighbors don't want you to make dust or noise. They want it to be magically dropped from the sky by a helicopter and be there the next day . . . . So, pressures sort of fall on us.

Brad identified the pressures and resulting stress as well:

> When it comes to time and money, it puts stress on. It's expensive for us to open our doors every day, right? It's a big project and lots of overhead. There's always the schedule pressure... not just the physical work but getting the designs done and the planning effort. There's always more than it seems like you can do. The main pressure comes from the schedule, I would say. Time is money and all that, right?

He believes that communicating and delegating are essential to managing the project effectively. "We've got all these engineers and designers," Brad continued. "I have to be sure I've got all these guys engaged and producing, as compared to getting down and understanding something – making sure I've got four guys going, than me sitting down trying to do one thing."

Frank discussed pressures from the customer:

> Pressure, in my opinion, . . . comes directly from our owners – the owners we have out here. It's kind of a commoditized industry. [Compared to] the amount of risk that we take, the fees are small, if you compare to retail with 50% profit or 50% return on investment . . . . If you look at construction, we're lucky to make 1.88% or 2% overall, [and] then we're just about breaking even. Fees are small and the schedules keep getting shorter and shorter. The owners are extremely demanding, especially the ones we work for . . . . They demand a lot and don't pay extremely well for that, and still want 120% of your time. You have to figure out a way to shave three months off your schedule . . . . I can't think of another industry [that works] like that . . . . [In construction] a situation like that is the norm, and requires long hours. The owners make a lot of changes but are not willing to affect the schedule. Our company isn't going tell the client that we're not going to turn the building over on time because of these changes . . . . They're just going to expect us to find a way to do it. It's figuring that out that's really stressful. Our field is very demanding as well, especially when you're younger, when you're close to the day-to-day work. Everything is hot . . . . There's never a time with a RFI or submittal that you can let it sit for two weeks and you can take your time. It just doesn't work like that."

Personal relationships on the project can cause stress for construction project managers. Art described some of those problems:

> The personal issues that reach every person . . . actually, those are really bigger stress items. Different personalities clashing out there in the field . . . we feel that we've got to go figure out what's going on . . . , try to solve problems that aren't technical

> problems. Again, the technical problems are the easy part. Yes, [the personal relationship] issues are stress-causing issues, for sure – and, of course, any time anything goes not as planned, like a safety incident, or quality problem.

Larry also discussed stress on and from the project:

> The other stresses that we have are not necessarily being able to control your project at the end of the day. Working with multiple subcontractors on the job and working with multiple site supervision on our end, and you're always working with the unknown . . . soils conditions, weather, multiple jurisdictions, etc. Always being thrown curve balls.

The participants in the study discussed the personal effects of work stress. The participants mentioned marital problems and difficulties in balancing work with their personal lives. Most of the participants had developed ways to maintain their personal lives, despite the long hours and pressures. This awareness was primarily self-developed through observation and mentoring. Jerry discussed health problems that have affected his life:

> Under the last guy that was division manager . . . he was a challenge. He was tough . . . . He used to stress me out just to the max – so bad, that I'm just physically ill. I've got some stomach issues. I'm getting older. They're getting to be part of my everyday life . . . . I think that all that stress, I personally hold it right in my gut, and I'm trying to manage that right now. It will physically double me over, where I can't even move. So I'm working on my diet. I just discovered apple cider vinegar . . . . It may have saved my life. I'm drinking that stuff . . . it's an acid until it hits my system, and then it turns alkaline. I've got this acidic thing going on and that combined with the stress from work, it's a killer. I am working on my diet.

Jerry's physical problems were the only overt effect of stress discussed by participants in this study. As the participants were not questioned about physical effects of stress, Jerry may not have been the only study participant affected physically by the stress of his work.

The goal for the construction project manager is to be able to successfully complete their responsibilities and continue to progress within the organization.

Skills and Strategies for Success

To achieve professional success, a majority of participants in this study emphasized the importance of knowing and having confidence in their own skills. Through their work experience, they had developed confidence in their abilities, and they managed their behavior to be acceptable within the job context. The participants felt it was important to build positive personal relationships with their co-workers, clients, and other individuals involved in the projects. They also cited leadership skills as being important in motivating a large group of diverse individuals to achieve successful results. The majority of the participants also recognized the importance of developing the technical skills needed for managing the process. In addition to self-directed improvement employees gain from experience, many of the construction organizations provide training to help the project teams gain skills and learn strategies to achieve success. The division general manager, Jim, indicated that his firm actively identified training needs and provided effective training. In that case, the construction firm was interested in ensuring that their project managers had the skills needed to meet project challenges.

Personal Awareness and Confidence

As construction project managers complete their educations, participate in professional development through their employers, and gain experience, they develop

strategies for dealing with stressful and complex situations they encounter. David reflected on the benefits of having a positive attitude, as developed through his project experience: “As I become, more and more, an overall project manager, in much larger projects and [on] much larger teams, I’d say that one of the skills and strategies is to always carry a positive outlook on the project, no matter how tough things seem or how much the team is struggling.”

Self-confidence and a positive attitude are important for a construction project manager. Larry, who has nine years’ experience in project management and division management, discussed an important component of self-confidence as not backing away from an issue or soft selling it but, rather, to tell it like it is and have a plan for resolving the all ready. “That’s what they’re looking for us to do,” he said. “They understand that construction is not a perfect world: We’re going to run into issues, and we have to work to resolve those issues. By pushing for positive resolution . . . , I think that’s what makes you successful.”

Self-awareness and emotional regulation are important to construction project managers’ success. Chuck, the participant with the most project management experience, emphasized the need to keep calm in the midst of a stressful project environment:

> “You need to be at a pretty even keel, as you have a lot of successes and failures on any one jobsite. You can’t let the success get you too high, and can’t let the failures get you too low. You’ve got to keep going 100 miles every day and looking better than the last, or equally good, or better. You’ve got to keep plowing ahead, not get too far down with things that happen . . . that’s kind of the skill set you’ve got to have, and I think that becomes your mindset, too. That’s what I’m here to do; that’s what I enjoy doing, and if I don’t like it, I’d better go do something else.”

Self-understanding is important for individuals and for their image. Jerry, who has 15 years of primarily field experience, attributes his upbringing for instilling in him characteristics that matter in project managers:

> The number one on that list is, I am real and I'm honest with both myself and all my guys. They know that . . . and that's not just 80% of the time, 90% of the time, or whenever it's convenient . . . . It's 100% of the time. I've got a pretty good work ethic. I was raised to work hard and do the right thing. I know the difference between right and wrong. I've got all those personal qualities that I grew up with . . . . They've been really beneficial in running jobs and making friends. Those are the personal qualities that have set me up for success.

Larry, with nine years of project experience, talked about applying personal attributes needed for success: ". . . honesty, integrity, having the tough conversations at the front end, always being honest with your owner, tell them exactly where you're at."

Ian, who has a master's degree in construction management, discussed strategies for getting beyond inevitable stress inherent in these positions:

> Sometimes, you're not sleeping; you're stressed out. You've got to deal with it. You've got to have a thick skin. You can't be under stress, not crack, and fight through it. Which happens a lot, too. You can't do anything about it. You have that stress. Instead of having it affect your performance, you just keep fighting, don't crack under the pressure, and it will pass. It's just a matter of time.

Attitude makes a great deal of difference. Christine, who has worked for two large construction firms, talked about having a good attitude everyday:

> Yeah, we might have problems, but you've got to step back and put everything into perspective. If you can't do that, you're going to cause yourself to have undue health risks and issues, and you're not going to be fun to be around. I don't go every day to not enjoy work. I live every day to enjoy work, and enjoy my family, and enjoy the people around me. I think that will mitigate a lot of my stress, too.

Frank discussed having the determination to do well in the position:

> Just pure determination. It's a tough industry, you work a lot of hours, but if you're willing to do that and willing to learn, [if you're] able to be humble about it, ask the right questions, and continually strive to learn something new every day, you're going to be successful.

Ian credits his experience with helping him develop a proactive attitude, "What I've found out, there are a couple of things: to be proactive, it helps a lot. Once you get yourself to reacting to things, it's difficult to get out of that position. To start right, you start being proactive, so you're not reacting to issues. That helps."

Although the participants were not too conversant about their personal attributes, they were all confident in their positions, and had developed several methods to show their dedication to their goals. The participants have developed self-confidence and the ability to demonstrate that self-confidence in their daily responsibilities. Their education, training, and experience in project environments have provided the basis for the development of their personal attributes.

Social Awareness/Social Management

The participants stressed that their relationships with their colleagues and other parties in the construction process are essential to their success and the project's success. Bob, a graduate of a construction management program, works primarily in industrial construction. He discussed the importance of managing and working with people:

> People management is a big part of that – people management and communication with those people. That's something that probably isn't often mentioned and should be included in academic programs. It's real critical in what we do every day. Our job is all about people, and making sure that they're staying motivated, staying happy and want to follow the path we're headed.

Clarence also spoke of working with the entire team:

> Be able to work with your co-workers as well as your other team members that make up the construction project. Not just my company staff, but also the actual other people that make up the project as a whole: the architects, the owner, the other consultants, the subcontractors. I would call that being a team player. Being able to work successfully and efficiently within a group.

Christine discussed understanding the many individuals that the construction project manager deals with:

> You've definitely got to be able to listen . . . not just listen, but you've got to understand what they are trying to tell you, with anyone you deal with on a daily basis. You see as a partner and have empathy for putting yourself in [other] people's shoes – trying to understand where they are coming from – because that not only helps me

> figure out the best solution, or at least see the best options for a best solution, it helps you understand the pressures that individual is going through at the same time.

Bob also discussed client relationships:

> To be successful is getting to know and understand what the client needs, what the end goal is, and do everything that we possibly can to support that. That means, as the needs change, [making] sure that we're getting the job done, and we need to do everything to meet the concept.

Experience with different types of clients has impressed upon all of these participants the need for understanding and communicating with all of the stakeholders in the construction project.

Stress can cause many problems on the jobsite. Clarence discussed working with coworker relationships to relieve the project stress:

> Usually when we have stresses on the job, you can see where those stresses affect the production, the productivity. With our team members, we try to create a way to relieve that stress and develop some more comradery . . . like a group lunch or dinner, or we'll go out and do an activity, such as go-carting or wine tasting, or something to let everybody know that we're not just about production but we're actually still people that need to function as group. Just because something is going wrong, it is not necessarily in our control. We can still lean on each other and find the best way possible. Sometimes sit down as group and discuss what are the issues [sic], and get multiple opinions to the best way to proceed. Can we function as a team and still create some relaxation? There's different ways outside of work to help relieve those

> tensions and get back to work and function as well as possible. Everybody's had a chance to recharge their batteries a little bit.

Christine also discussed relieving stress through strong team relationships:

> I think just your personal attitude helps relieve stress, too. I'm a big advocate of a fun factor . . . when things are going really crappy, or when I choose teams, or influence who is going to be on my team, my biggest mark [sic] on whether I want a person on my team is whether they can be fun. Because when the going gets tough, if you're going to hunker down and be extra grumpy or all stressed out, I don't want you on my team. You need to look at the light at the end of the tunnel, step back and . . . put yourself in the priorities. No one died, no one got injured . . . and that's a successful day in my book . . . . Sometimes, people will not like a certain item, but you've got to have fun when the going gets tough or it's not worth doing.

Social relationships can provide a forum for coping with stress. Support coping can come from colleagues, bosses, and mentors. Clarence discussed this type of support:

> When I do get stressed, I tend to lean on some of my relationships, either at home or with a mentor, and ask how best to deal with it . . . . I've had a pretty good mentorship; it helps me understand the area I need to focus on and how I deal with an issue, whether I was an engineer or project manager . . . , being able to have somebody to talk to and leverage their experience, because an important part of realizing what you're good at and what you're not is to ask for help and not to sit there and figure everything out for yourself . . . . Usually, somebody has already figured it out or might have the experience that will help you find the least path of resistance.

Gene also discussed relying on colleagues for help and support:

> And if you can't figure it out on your own, then you have to reach out to other people to figure it out. I think what stresses people are issues or problems that they don't know how to resolve and close out. This is the kind of stress that you have complete control over, so if I know how to solve something, that doesn't stress me out as much as something that I have no idea how to solve, at which point, you're going to continue to be stressed until you figure out how to solve it. It may be soliciting help from higher-ups in the company, or reaching out to experts in other companies. You have to treat each case of stress as something individual.

Ian confirmed that the support from other people contributes to the success of the project:

> The other thing I found out [through experience] is [the importance of] asking for help at the right time from the right people. Whenever some issue comes up that I believe that I can't do it by myself and need some help, I reach out to my supervisor and ask for his help . . . . His ideas, his experience, [being] 50 years old, been there, done that . . . for many years of experience. He helps me a lot in cases like that.

Team Leadership Skills

One of the main functions of the construction project manager to lead. All of the study participants recognized that they were working in teams to achieve project success. David described his responsibilities:

> Most of my work is on the projects themselves, in operations. I'm located on the jobsites. My duties and responsibilities now as a project manager . . . . I manage a team; I'm responsible for contracting and procurement for the project… There's always the organization responsibility to set up the team and divide up the project responsibilities with the project team depending on the project size or complexity.

Project manager leadership skills are necessary to obtain effective project results. Art stated: “I think that being firm but fair [is important]. I think that in a lot of these meetings, someone has to be in charge, in control. You can’t run over people: They’ll knife you in the back at some point; it’s just a matter of when.”

Ed talks about his connection with his workforce:

> It’s a more personal connection with the guys, and they see that I care about their well-being, and I recognize their performance, and I appreciate their hard work. I continue to do that throughout the job. It’s amazing what my workforce will do for me now, just because they have a close connection with me. They respect what I say, and we have a mutual respect for one another that is a little unique. So, that’s something that I figured out along the way . . . the benefit that you get, the gain you get with each guy, putting in the work, and showing that you’re not just an office guy. You live and breathe exactly what they do every day. The company is nothing without their hard work... It’s really amazing to see the reward for that, and it feels great. Whatever you need gets done because of the respect we have for one another.

Effective communications with all parties is a necessary leadership skill. Gene discussed how effective communications helps accommodate changes:

> So, we deal with change and we have to communicate that out internally and externally. We spend most of our time working with people and communicating to people that are all helping the same effort, to get the project built successfully.

Mike emphasized the importance of communications in avoiding project problems: “Projects get into trouble when communication is bad . . . . Part of the team is doing one

thing, and part is doing another. They're not talking, not understanding how it affects each other and things get sideways."

Construction management education in most universities addresses communication skills, but many construction organizations provide further communications training. The day-to-day experience of communicating with many types of individuals helps CPMs develop effective communication skills.

As part of being an effective leader, the construction project manager needs to be a problem solver. Chuck explained that being a problem solver on a project is helping people make things happen:

> I see something's broken, and I want to go fix it. That mentality . . . you've always got your eyes open, seeing how things go together, somewhat intuitively, and then you have this ability when things don't go together, you want to jump right in and fix it. That's what I think is the skill set that works great out here: . . . having the drive to work really hard and at a fast pace. You might have to make quick decisions, and without a whole lot of second guessing and contemplating about what should I do, how should I answer this . . . that's also a good skill set to have . . . . On any jobsite you might have 50 to 250 people at any one time . . . . If you're holding back and you're team is holding back, not making decisions . . .there's a ripple effect with them: . . . 200-250 people out in the field is massive, and that costs real money fast. Having that type of mentality is a skill set – not being bashful, being able to call it as it is, deliver good news just as easily as you can deliver bad news.

Christine talked about problem solving: "There are always issues that come up, and you've got to be able problem solve with the right parties at hand."

Clarence discussed dispute resolution skills:

> Dispute resolution is always a good one. There's always conflicts of interests at times . . . at least, difficulty on being able to agree on approaches . . . being able to look at those and evaluate what is the best overall direction for the project. Sometimes we have fighting, between egos. Working as an efficient team member for the success of the project [should take precedence over] certain people's personal goals or agendas.

Another important part of leadership skills is delegation of duties. Most of the participants talked about distributing the tasks throughout the team. Delegation of responsibilities assures that the necessary tasks are done during the appropriate timeframe. Bob said, "I need to delegate to people to make sure that the plan is completed each day." Many of the participants see the value in delegating work responsibilities, and the accompanying pressures and stresses, to competent team members. Clarence talked about supplementing the team to help solve problems and reduce stress:

> Usually, when time constraints become that great, you can leverage other people around or have that discussion with my bosses: "Based on this, do we have anybody available to set up some work that isn't necessarily job critical?" But also to take that off my plate or somebody else's plate, so we can get the one focus taken care of and don't end up falling behind.

Frank, who works for a large construction firm that provides sufficient project staffing, talked about team support:

> We're lucky at this company to have very competent people at all levels of the company. I trust my engineers. They're top notch and they're going to get their work done, and if I ask them to do something, they will do it well and do it fast. Our

> superintendents are our partners. If you have really good superintendents, they see how to resolve it and have a better way to do it. They relieve stress by managing the schedule. That helps a lot. You can't do this alone, and I make sure that I have close mentorship with higher ups in the company. You have to remember that you always have a boss, and you need to be sure that you keep your boss informed and run anything that you're concerned about by them, so you're not living in isolation. If something does go wrong, your boss has your back, because you made sure that he was aware of the situation, and he's there to help protect and help mitigate. If you do this by yourself, it's going to be a long, long road. Surround yourself with really good people, make sure that you have clear communication with upper level management and that you're fully transparent with everything.

The construction project manager shows leadership throughout the execution of the project. Larry, both a project manager and a department manager, discussed the project manager's leadership on the project:

> I think to be a project manager and to be successful, you need to take the job personally. If the guys I see don't back away from responsibility but take the responsibility for their projects and drive those projects forward . . . those are the guys that I see that are extremely successful overall. If a guy makes excuses and doesn't own up to issues, and doesn't meet the problems head on, those are the guys that end up not being successful and really hurting the company at the end of the day. I would say that the main thing is that the project manager needs to know who they are, know how to deal with people, have a lot of the soft people skills, and also not be afraid to dig in and really work across roles . . . . Sometimes the project manager has to step

> outside of his role, roll up his sleeves, and do some of the dirty work. Maybe he doesn't necessarily want to do it, or do it on an everyday basis, but that's what you have to do to resolve the issue . . . . They need to be what they need to be at the time to get the issues moving forward or to move the project forward. One thing that I've learned is [the importance of] honesty, integrity, having the tough conversations at the front end, always being honest with your owner, tell[ing] them exactly where you're at.

Technical Knowledge

The participants in this study emphasized that construction project managers need to have the necessary skills related to the technical management of the project. This includes financial-, scheduling-, planning-, and process skills gained through education and experience. Clarence reflected on the value of effect being able to pull from your experience: "We try to provide constructability, provide comments, provide direction, and make recommendations . . . . You need to be able to leverage the experience we've had as well as utilize that toward the team members."

Ian also relies on his education and experience:

> I'm very young for my position, but I started a little early, too. I think experience and knowledge help a lot. The technical knowledge, what you learn from your coursework combined with your experience, helps. Not being thrown in a position that you just don't have a clue. Growing into a position by doing smaller-scale jobs, doing a bigger job, and a bigger job, then doing a huge job like this project. That helps a lot. Good decisions come with experience, which comes from [making] bad decisions. That experience is a huge part.

Jim, the district manager for a large construction organization, discussed his firm's philosophy on giving construction project managers beneficial experience as they grow into their positions:

> We always throw our new folks into project jobsites. We give them manageable chunks of work and a lot of support. As they become successful in what they're doing, they get more, and they get more, and they get more. It's a process of doling out tasks, giving them opportunities, to make mistakes and to grow, but not make mistakes that are going to be critical or fatal to the project. Give them some rope, let them go, but give them plenty of support, which, in turn, starts to build confidence in the individuals and helps develop the abilities that it takes to build projects. Give them a lot of support, put some trust and faith in them, give them a chance to figure things out, try things out, have people to be sounding boards with, and let them go.

Planning the project is a major responsibility for the construction project manager. Art commented: "Planning your work ahead of time is the battle. You build it your mind 10 times before you actually build it in the ground one time."

Mike saw planning skills as important for success:

> Another way I have been successful is planning. Kind of over-planning. Communicating and over-communicating. Making sure that the people on my team know the expectations and what's the desired outcome. Making sure that we have a plan and we are following the plan. If the plan needs to change, we don't go off willy-nilly and change the plan. We need to review and determine how to execute it effectively.

Christine talked about planning and risk management:

> Looking at the risks early on, so we can start as early as possible and get a plan put together before it's too late, when it will impact the project more. Sometimes it's hard to find the time to look ahead, but you have to look ahead and assess the risks that are potential in front of you.

Chuck discussed the importance of pre-planning and understanding the effect on the project:

> Overall, to manage the stress, it's all about the job set up . . . . The pre-planning is where you're going to get your stress reduction. If you pick a bunch of bad subs and go in with a really skinny budget, then you're going to have stress more than you need to.

Understanding and applying financial systems and adjustments is key to the construction project manager's success. The entire financial dynamics of the project are very complicated and important to monitor and control. Art discussed the financial responsibilities of the construction project manager:

> The project manager is . . . in the field, managing the subs, and involved with the business. In a smaller operation, they may be involved with the banking, the bonding, the finance, the audit, and all of that, in addition to just managing the project. I think they have to understand all of the financial end of it as well as the ever-changing regulatory requirements to pull it off.

Larry emphasized the importance of financial skills for the construction project manager:

> Accounting and financial skills is [sic] extremely important, because without that, you don't know where your project is at. If you don't have the financial knowledge of the project, if you can't get your hands around that, you won't be able to manage your guys and your team in the field.

Overall knowledge of construction methods and processes is essential for the construction project manager. David discussed the interface necessary to work successfully with architects and engineers:

> I also enjoy the challenge of figuring out ways to work that out – working with architects and structural engineers, when you need to figure out what's going on. There's a chess game involved in corralling that, I would say. That goes with the act of getting information. There's a huge team of people for a construction project. There's a very fast pace to the parts and pieces of their job to keep the building going. The duration has to flow well, and when it doesn't, there's a weak clog somewhere. That definitely adds to stress.

Summary

The participants in this study are successful construction project managers. Despite their working in different types of construction, their responsibilities and pressures are similar. The participants described a variety of pressures and stressful conditions that exist on a daily basis in their work environment. The many stakeholders in construction projects, such as construction owners, community neighbors, subcontractors, suppliers, and direct employees, have agendas that they expect to the project to follow. Compliance to short durations and small profit margins combine to present stressful situations for the construction project managers. The participants described frustrating, seemingly uncontrollable, conditions

resulting from several factors and situations. These situations present difficult problems. The stress can cause health problems, including serious physical symptoms.

There are other similarities among the participants: They all have construction-directed college educations; they all have considerable direct construction experience; and they work for construction firms that provide training, mentoring, and professional development. Through these three educational influences, the construction project managers are able to develop personal attributes such as emotional intelligence, team leadership, and technical management to achieve success in their projects and in their careers.

The participants described the skills and strategies that they felt helped them achieve success in their careers. Many of the participants described personal attributes that have provided them confidence and control of situations throughout the project. Self-awareness and the development of self-control of emotions are attributes participants use in their work environment. Other attributes mentioned are honesty, good work ethics, integrity, resilience, positive attitude, and determination. The participants stressed being realistic and being proactive in the process.

The participants discussed social awareness and being able to manage people, keeping their people motivated and happy. Understanding people in daily interactions by listening to them was important to the participants. They noted that it is essential to understand what the client wants and needs, and determine how to achieve that objective. As a construction project manager, it is important to create a positive, even enjoyable, work environment. Positive social relationships can contribute to coping and can help by providing advice in difficult situations. Social coping and mentoring greatly enhance the construction project manager's ability to be successful.

The participants stressed the importance of team leadership. Fair delegation, close communication, and appreciation for teamwork were mentioned as important skills. The construction project manager needs to be a problem solver and able to resolve disputes throughout the project. Personal involvement with the team is needed to create a trusting relationship. Team leadership also includes maintaining successful relations with upper management and the customer.

Knowledge and application of technical skills are also very important for construction project managers' success. Overall understanding of the construction process is essential, but specific understanding of planning and financial management skills are necessary to help the CPM manage risks and stay on top of current financial projections, to keep the project under financial control. The participants stressed that these skills have been obtained and refined through experience. Understanding of critical factors and application of control of those factors lead to the success of the project.

Construction projects are complex ventures, and a complex set of skills and strategies is essential for construction project managers. Self-management, social management, team leadership, and applicable technical knowledge provide tools for the construction project manager to be successful.

CHAPTER V

Findings

The purpose of this study is to understand the ways construction project managers cope in a stressful environment to successfully implement discrete and functional responsibilities. These positions involve attempting to succeed in implementing functional organizational innovations directed by upper-level management and executing discrete day-to-day, project-related responsibilities managing a successful project in a stressful environment influenced by overload, work-life conflict, and severe pressures.

To understand successful methods used by construction project managers, I conducted interviews with successful project managers to gather their perspectives about their responsibilities. In this study, I also sought to identify skills and coping strategies that construction project managers use to be successful in their stressful work environment.

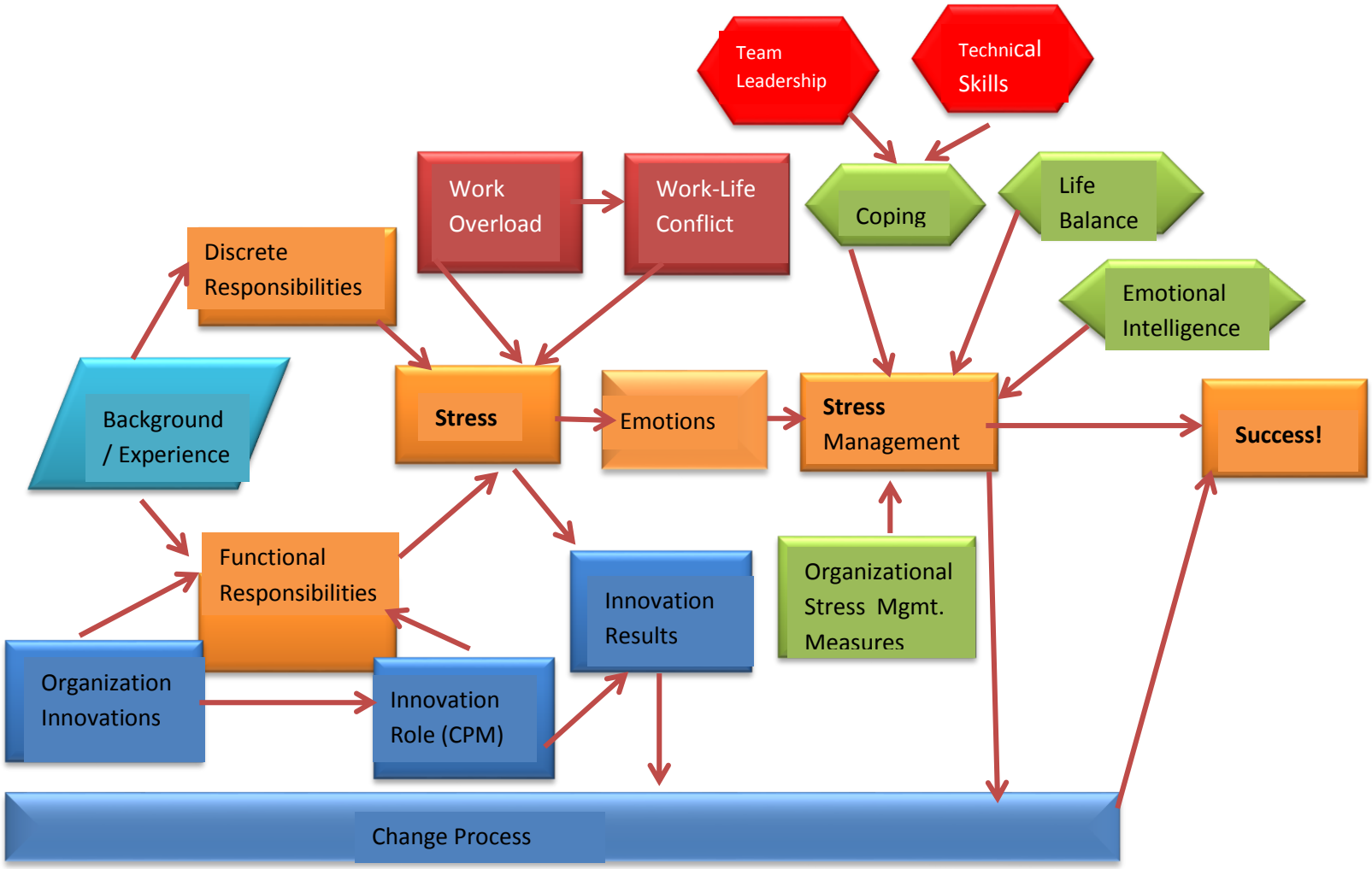
Managing construction projects is a complex process requiring technical, management, teamwork, and strong communication skills. To succeed in the stressful project-delivery market, the study participants indicated that the construction project manager needs to optimally engage personal competencies, social competencies, team leadership competencies, and management of technical project attributes. Optimization of emotional intelligence strategies, including self-awareness, self-management, social awareness, and social management, are major factors in this strategy. To complete the success sequence, effective team leadership and effective management of technical requirements need to be added to the emotional intelligence formula.

The theory of stress and coping illustrates a linear relationship between stress, emotions, appraisal, and coping (Lazarus & Folkman, 1984). The stressful environment and

peak problem-related stress require construction project managers to use their developed skills to cope with the situation and successfully solve the immediate problem, leading to the successful project. The control of emotions and using positive appraisal methods result in positive coping and successful problem solving (Haynes & Love, 2004). Emotional intelligence provides construction project managers with personal composure and social understanding, enabling them to rationally appraise the situation and control the emotional response. As management of a project is a team endeavor, team leadership is essential in the appraisal and coping actions. Expertise in specific construction management tasks greatly influences the appraisal phase. The knowledge of these methods and the application of the principles provide the construction project manager tools to positively affect the appraisal.

Lazarus (1991) discusses a changed application of emotional control, appraisal, and coping skills as individuals mature and add learning to their personal traits and skills. Many different learning mechanisms, such as associative learning, classical/instrumental conditioning, imitation and identification, social role playing, and the development of identity, can be working during adulthood. Thus, CPMs can gain emotional intelligence skills, team leadership skills, and technical skills from their formal education, continuing education, on-the-job experience, mentoring, and synthesis of behavior skills.

Figure 5.1: Revised flow of responsibilities and factors in construction project management



In analysis of the participants' interviews, data was compared to the exploratory network developed from the literature review. By inductive logic from the data analysis, from the bottom up, two additional factors emerged that affect the coping process. These factors are technical knowledge and management and team leadership. The construction project manager is more able to cope with emotions by using the technical and leadership skills. Construction project managers who have technical expertise and strong team dynamics are better able to achieve positive and successful results. Both team leadership techniques and technical skills provide construction project managers with tools to be cope with the pressures of the job. By being able to solve problems and keep the project on track, project success can be obtained. Figure 5-1 illustrates the addition of team leadership and technical skills to other factors that contribute to success. Both team leadership techniques and technical skills provide construction project managers with tools to be cope with the pressures of the job. By being able to solve problems and keep the project on track, project success can be obtained. Figure 5-1 illustrates the addition of team leadership and technical skills to other factors that contribute to success.

Relationship of findings and theories:

Dainty, Cheng and Moore (2005) conducted a study using a competency-based model for predicting performance of construction project managers. From their findings in this study, they support the hypothesis that "superior-performing managers will evidence higher levels of specific key behaviors that underpin effective management performance than average performing managers" (Dainty, et al, January, 2005, p, 8). To be successful, construction project managers need to demonstrate and implement higher level skills and strategies. The Dainty, Cheng and Moore study indicated that two competencies, team

leadership and self-control were the most important competencies for construction project managers. The findings of this study actually indicate four important skills and strategies, which could also be called competencies, as self-awareness/self-management, social awareness/social-management (grouped together as emotional intelligence), team leadership and technical management. This study indicates that the social aspect of emotional intelligence is extremely important in this stressful environment. Dainty, Cheng and Moore (June, 2005) list "impact and influence" in their eleven competency factors, which has similar aspects to the social-awareness/social-management element of emotional intelligence. The participants in this study indicated that the technical aspects, particularly planning and financial management, were essential to achieving success.

In a study examining the relationship between emotional intelligence and leadership behavior in the construction industry by Butler and Chinowsky (2006), the researcher proved that a strong relationship exists between emotional intelligence and leadership behavior. The study indicated that when an individual's emotional intelligence is improved, the individual's leadership skills also improve. As this study indicates that both emotional intelligence and team leadership are skills needed, then training in emotional intelligence should improve both emotional intelligence and team leadership skills. This is an important connection for continuing education within the construction organization, enabling growth of multiple skills with training.

The participants in this study discussed the pressures and resulting stressful environment for construction project management. The construction project manager needs to control situations in this environment to be able to attain success. The CPMs need to be able

cope in difficult situations. Lazarus and Folkman (1984), in their theory of stress and coping, define coping as the efforts taken to manage situations appraised as being potentially harmful or stressful. Although most project situations are not potentially harmful to the individual, most situations affect time, cost or quality of the project, which will produce stress. There are numerous strategies that enable the construction project manager can apply to be able to cope with situations and achieve success.

Lazarus and Folkman (1984) identify two forms of coping: problem-focused coping and emotion-focused coping. Problem-focused coping is used primarily where the individual feels that they can solve the situation. CPMs can use their skills and strategies developed through their education and experience to solve these problems. The four skills and strategies revealed in this study, self-control, social-management, team leadership and technical management provide the construction project manager tools to solve the situational problems. Emotion-focused coping involves controlling the individual's own emotions, the emotions of other parties, and keeping the team in control.

Using Lazarus and Folkman's (1984) theory of stress and coping framework, the skills and strategies that emerged in this study provide construction project managers tools to conquer the negative influences in the project process. This study, then, supports the theory of stress and coping, by applying the emerged skills and strategies, ultimately resulting in success.

Emerged topic

An additional question emerged during the data analysis phase of this study: Where do construction project managers obtain the knowledge, skills, and strategies to be successful? The participants in this study addressed this question with their background and responses. A

theoretical model formulated in a research study by Edum-Fotwe and McCaffer (2000) suggests both skills/strategies and identifies the relative sources of learning the necessary skills/strategies. In this survey, the authors identified and weighted for importance to the construction project manager 56 knowledge and skill elements. These elements were consolidated into seven categories: technical skill, managerial skill, financial skills, information technology (IT) skill, legal skills, communication skills, and general skills.

The Edum-Fotwe/McCaffer study was conducted in 2000 in the U.K. As the construction industry has experienced change in the 15 years between the two studies, some variance in the knowledge and skill elements of importance would be noted. The authors note a changing emphasis toward soft skills, and include some of them in their predominantly technical categories. Under managerial skill, they include leadership, time management, decision making, negotiation, delegation, and motivation. They discuss the importance of relationships in construction project management and indicate the essence of relationships relate to non-technical and social-oriented skills. The primary difference between the two studies was the emphasis on self-awareness/self-control and social-awareness/social-control categories that were demonstrated by the participants in this study, which relates to the current importance of relationship management in project success.

The research from Edum-Fotwe/McCaffer study identified three basic sources of education for CPMs to acquire the necessary knowledge and skills: academic, or university, education, formal training from the construction organization, and experiential education, gained through applied experience in construction operations. The survey indicated that both academic education and formal training provide some knowledge and skills; however,

construction project managers obtain the majority of important knowledge and skills through their job experience.

Bigelow et al. (2015) conducted a recent study to determine what skills and level of skills are expected by construction employers in Texas. Employers in that study preferred application-level understanding, more than just knowledge, of 68% of the skills required. Of the top 12 skills needed by entry level employees, nine were soft skills: ethics, teamwork, accountability, written communications, oral communications, time management, professionalism, leadership, and problem solving. Three of the skills were technical or project execution skills: planning/scheduling, computer skills, and estimating.

The participants interviewed in this study discussed the education sources that have influenced their knowledge and skills. Several participants discussed the advantages of the technical education they received at universities. One participant commented that he did not receive much soft skill education at universities. The division manager of a large construction firm described several training programs the firm offers to its management- track personnel. Most of these training programs center on social- and relationship skills. Two participants discussed a continuing education training program that focused on social skills and that they felt was influential to their success as construction project managers.

Most of the participants attributed their success to their experience in managing construction projects at several levels. Brad, a construction industry participant for 19 years, commented about the importance of his experience:

> I started out in the field more as a superintendent, or at least working for superintendents, and being out in the field, in the work, for quite a while. I think that it

> helped me to learn what really goes on and what can really be done. Having more respect for the equipment and limitations and abilities, and the people.

Clarence reflected on his ability to perform his responsibilities:

> . . . Being able to pull from your experience. We try to provide constructability, provide comments, provide direction, and make recommendations . . . . You need to be able to leverage the experience we've had as well as utilize that toward the team members.

In Chapter IV, Jim, the district manager for a large construction organization discussed the experience that the company gives individuals as they progress in their positions: "We give them manageable chunks of work and a lot of support. As they become successful in what they're doing, they get more, and they get more, and they get more." The average experience of the participants in this study, excluding the three project managers from the concrete contractor, was 12.8 years. The mentoring and learning on the job has significantly affected the knowledge and skills of these successful construction project managers.

Discussion

Emotional intelligence

Emotional Intelligence involves both personal and social competencies. Personal competence is a combination of self-awareness and self-management. Social competence is similar to personal competence with the addition of social-awareness and social-management (Bradbury & Greaves, 2009). The term *composure* can be used to refer to the skills, abilities, and performance of the construction project manager (Dainty, et al, 2004). With a high level of emotional intelligence, or composure, project managers are able to successfully manage

their responsibilities in a stressful project environment. “The composed manager restrains negative actions when tempted, even when faced with opposition and hostility from others, or when working in stressful conditions” (Dainty, et al., 2004, p. 883).

The participants strongly indicated that personal and social competencies are key to their ability to successfully manage projects in stressful environments. Although they did not specifically identify emotional intelligence as a factor in their success, they discussed several skills and attributes that contribute to self-awareness, self-management, social awareness, and social management. Construction industry participants tend to prefer to discuss “hard” skills rather than “soft” skills, and are generally reluctant to discuss “emotions” (Lindebaum & Cassell, 2012).

Several of the participants indicated that they were aware of their attributes and managed their emotions in many situations. The way the participants represented themselves indicated the awareness they had of their achievements and the skills and attributes that enabled them to be successful. The participants demonstrated strong self-awareness. They were self-aware and self-confident in their ability to succeed as construction project managers. Jerry indicated his personal awareness:

> I’m a confident guy, so I don’t have to go out and be the guy that knows all the answers just to make myself feel better. I’m already there; I already feel good about myself. That’s helped to keep stress at bay. I’ve tried to manage it for myself for the last 10 years, for sure.

All of the participants had developed confidence in their skills. Positive personal management skills included communication skills, personal time-management skills, stress-management skills, ability to set priorities, work-life balance skills, and alternate life

activities, such as exercise, relaxation, and diet. The participants described several attributes that they had developed that helped them self-manage in their situations: positive attitude, even temperament, dedication, being genuine, dealing with the situations as they came, recognizing stress, and being proactive in all activities. Each participant has analyzed themselves and their situation and has applied techniques that help them be successful and resist the negative effects of stress. They use these skills to cope in stressful situations. Gene stated:

> I think if you're going to be a project manager in construction, you just have to be able to handle stress. A lot of people do that in a lot of different ways. I think for everybody, it's a little bit different.

Awareness of emotions and methods to control emotions is an important trait of the successful construction project manager. Bradbury and Greaves (2009) talk about the advantages of self-awareness: "When you are self-aware, you are far more likely to pursue the right opportunities, put your strengths to work – and, more importantly—keep your emotions from holding you back."

There is a direct relationship between a CPM's years of experience and ability to cope with stressful conditions. Participants with 10 or more years of experience were more confident and had developed tried-and-true techniques to achieve success. All of these participants had experienced and achieved success in stressful conditions. In addition, these participants had continual professional development (CPD) in project management. CPD has been found to reduce stress and increase project effectiveness (Haynes & Love, 2004).

The second part of emotional intelligence involves social awareness and social management. Goleman (2015) identifies empathy and social skill as components of social

awareness and social management. Empathy involves considering others' feelings, opinions, and points of view. Social skill is described as "managing relationships to move people in desired directions" (Goleman, 2015, loc.116). For the construction project manager, this means striving to understand the people they are dealing with, and providing services to manage these individuals and situations to achieve success in the project. The participants in this study emphasized that it is essential for the CPM to understand all of the different points of view held by the many individuals and parties involved in the project. The project manager needs to be able to listen and communicate with all of the project's stakeholders. Several of the participants emphasized customer relations. Communicating with management personnel, workforce, subcontractors, vendors, upper management, and everyone involved in the project is essential. The participants discussed the relationships they develop to help cope with the stress that accumulates during the construction process. The participants develop social relationships to solve problems as well as to provide a support network. Ian discussed creating relationships with other people on the project:

> I think it is better when people really want to work and you treat them the way you want to be treated. Give them the chance and the opportunity to grow. That's one of the things that helps a lot. It makes everyone's life easier. It builds up the team spirit together, everybody working together to build the project together and to achieve. Another thing is that it goes to the personality to do your best to keep people motivated and people wanting to work with you and for you, for the company, and for the project. Making them to be able to come ask questions, to improve them, to give them that experience and exposure so they can grow when they get the chance.

Emotional intelligence goes beyond possessing social skills, and extends into being able to "identify, understand, process and influence one's own emotions and those of others to guide feeling, thinking and action" (Love, et al., 2011, p.56)

Team leadership

In the study developing a competency-base performance model for construction project managers, by Dainty, et al. (2004), 12 competencies were determined within the study framework, but two competencies emerged that predicted superior construction project manager performance with a high level of confidence. These two key management behaviors are composure, which is similar to emotional intelligence, and team leadership.

In this study, participants stressed the importance of team leadership. Effective team leadership calls for a complex set of skills and personal attributes. Each project has several teams: the contractor's management team, the owner-contractor-designer team, the entire construction workforce, and other teams concerned with the completion of the project. Several skills and attributes support effective team leadership.

Mike talked about using plans to lead the project:

> Another way I have been successful is planning. Kind of over-planning. Communicating and over-communicating. Making sure that the people on my team know the expectations and what's the desired outcome. Making sure that we have a plan and we are following the plan. If the plan needs to change, we don't go off willy-nilly and change the plan. We need to review and determine how to execute it effectively.

Santorella (2010, loc. cit. 2424) discusses the relationship between the construction project manager and the team:

> What we (construction project managers) get from our teams is more up to us than we realize . . . . It means we have more control over getting what we want than we think. The more we help our team to improve, and demand nothing less than their best in return, the closer we are to getting the product that we actually need.

Santorella also recommends several team management techniques designed to motivate and encourage the team. These steps ensure quality, reducing delay and resulting in satisfying the customer.

Developing relationships with team members to pursue mutual goals is part of these skills. Several of the participants discussed having management teams of like-minded individuals. Christine discussed establishing a team atmosphere that included the "fun factor" where all team members worked in a comfortable environment with less stress. Several participants discussed delegating responsibilities to capable team members. The team leader in these situations needs to be a problem solver, enabling the team to pursue the project goals. Team leadership also involves engaging the leader and team members to deal with their responsibilities in a timely fashion. Dulaimi and Langford (1999) found that team behavior affected project performance and that the CPM has influence on team behavior.

Technical management

Technical management of the project is another major emphasis that lead to the construction project manager's success. Gharehbaghi and McManus (2003) stated that one of the most important tasks of the construction project manager handling unexpected situations effectively. To be able to do this, the CPM must possess several professional skills, such as time management, resource management, risk management, and budgeting. The researchers also stated:

> The more skills and attributes the construction manager has, the more likelihood there is of successful project completion. Although some of these abilities may not be required at times, it is important to use them in specific conditions and situations. What makes a construction manager successful is his/her ability to satisfy the client by completing the project within the required time and budget and to deliver the desired quality. A successful construction manager must also ensure a smooth operation of the project. Finally, the successful construction manager can use his/her successful team for further projects, therefore establishing productive teamwork.

The basic skills in these areas are addressed in University Construction Management Programs (ACCE, 2014). The firm provides further training and increased emphasis on these skills. Construction project managers need to develop methods of accomplishing these tasks quickly and accurately. They are directly responsible for the time, cost, and quality of the project, and they need to develop job-specific methods of optimizing these controls.

Several participants discussed the importance of overall project management. Within overall project management, several other systems need their attention, such as budget management, personnel management, and managing the construction organization's programs within the project. The project itself must successfully meet budget, time, and quality goals. Budget management was clearly a priority for most of the participants. For the construction organization, Cost is the most important factor determining a project's success. The cost of the project must be contained within the budget. Christine, who has a master's degree in business administration, emphasized the importance of positive financial management: "I manage the budget to understand where you're at and understand where you have give [sic] or

takes, and being able to evaluate, or problem solve, whether you need to spend more money now or spend money later."

If there are additional costs, they must be compensated for, usually via change orders or adjustment to the contract. Considerable pressure is on the construction project manager to accurately monitor and manage the financial status of the project. Ed discussed the pressure that financial analysis can induce and a measure that he implements to be successful:

> There's internal pressure, within our own company, and external, from our client. Internal would be if something is losing money or a specific labor item is losing money, or we spent too much on a given material. There's a pressure to cover that loss or make sure that we don't lose more. If you look at labor, if we're not hitting our productivity levels the same on all the levels, and we're not the same at level five, you've got to figure out something for that. You've got to change the way that you do it, so that you make money. That's the internal pressure. What's critical is getting the right feedback and the right historical cost information about the job so that I can accurately forecast what the costs are going to be. And that's a difficult path to tend. Again, you have 150 guys in three different areas. We've got an average of five floors in each area right up front. So, getting accurate cost is difficult because you code every man-hour accurately to the task that they are doing or working on. We've got a thousand-line-item budget... I've seen in my previous experience the cost codes and the coding of every man-hour is always inaccurate, because it is too time consuming . . . . I created an Excel spreadsheet that simplifies the area, and I have one of my laborers trained with my superintendent to understand what each item is in the budget, and half of his time is dedicated to walking around every single day understanding,

> recording, and keeping track of the man-hours in each area so it can be coded correctly, and our actual to-date costs are accurate, rather than just thrown into the budget. The pressure that we get on any cost item internally . . . I can make a judgment call based on our actual costs, because I know it's accurate or 95% accurate versus a free-for-all guess.

Construction project managers need to have considerable construction experience and a complete understanding of the processes. Participants discussed the importance of construction experience and technical construction knowledge. Several participants indicated that the project needs careful planning early to be successful. The construction project manager needs to have planning skills, an in-depth understanding of the process, and an understanding of the team's planning and progress-monitoring capabilities. Mike emphasized planning and risk management:

> How I analyze work: looking at risk management, developing a detailed project management plan, a detailed logistics plan. Understanding the detail well enough to know the risk and the benefits of what we're doing. Never going into anything without having the appropriate amount of knowledge to make an informed decision.

In examining construction project manager competencies, Dainty, et al. (2005) recognized cognitive competencies that enable the construction project manager to analyze and understand a situation, task, problem, or body of knowledge. This analytical thinking requires experience, knowledge, and the cognitive competency to sort out facts for an effective solution.

The construction project manager needs to look at detail and the full project to achieve success. Frank discussed this:

> You need to understand the bigger picture as well as the nuts and bolts. The hardest thing in our company is to go from engineer to manager because you move from a detail-oriented look at things to a bigger picture, client-focused view, a long-term focus . . . . A lot of times, those two can conflict with each other. It's tough to pull yourself out from the weeds and fly a little higher.

The construction project manager is usually not in charge of the actual construction, but is responsible for ensuring that the superintendents and field forces complete the project to satisfy the customer's expectations.

Several participants discussed the need for personnel management. Jerry discussed keeping good personnel within the company after their role in the current project was complete. Managing human resources on the jobsite is important for the success of the project and for fulfilling leadership- and social responsibilities throughout the project's duration.

Summary

Project management is accomplished in a stressful environment. Construction project managers need to be able cope with the stress and their emotions by utilizing skills and knowledge to accomplish their goals. In the exploratory conceptual framework (Figure 1-2), coping, life balance, and emotional intelligence are shown as factors to manage the stress during the process. Through this study, the participants have indicated that team leadership skills and technical management skills contribute to their ability to cope with the stress. Construction project managers need to have the knowledge and skills to bring about positive solutions to the many problems inherent in the construction process.

The literature refers to three sources for the construction project manager to acquire the necessary skills and strategies for successful project management: academic education,

continuing education, and experience. All three of these influences were evident in the study participants. Several participants indicated that their experience gave them insight into events and provided the appropriate knowledge for them to manage successfully.

Although construction project managers need and use a broad scope of skills and strategies to successfully manage their responsibilities, participants identified three categories of skills and strategies were seen to be most important: self/social management (emotional intelligence), team leadership, and technical management skills. Having this combination of both hard- and soft skills enables the construction project manager to lead the project to successful completion.

The literature indicates that composure is an essential quality for the construction project manager. Composure is achieved with a high level of emotional intelligence. Emotional intelligence consists of two major components: self-awareness/management and social awareness/social management. Construction project managers who have a high level of emotional intelligence have confidence, composure, and a positive attitude. The study participants indicated that several attributes helped them with managing their work, such as positive attitude, even temperament, dedication, being genuine, being able to deal with situations, recognizing stressful situations, and being proactive. This confidence, combined with understanding the team, can result in cooperation by the team members.

Team leadership skills were emphasized by many of the participants as being important to their success. Planning, team coordination, effective delegation, relationship development, and maintaining a positive environment were major factors contributing to effective team leadership. The CPMs can trust their team's abilities and actions, which contributes to the ability to cope with the stress in complex situations.

Participants also noted a need for proficiency of technical skills and the ability to apply them appropriately to project situations. Management of time, resources, risk, and budgeting requires in-depth knowledge of methods and appropriate application to provide essential information and satisfactory performance. When construction project managers apply the appropriate measures and controls, stress decreases and success prevails.

Construction project managers in this study developed their skills and strategies through three general learning experiences. Academic education in a university bachelor's degree program provided basic introduction, particularly technical education. Continued education training programs focused on specific construction project management skills, often in the soft skill area, added to the CPMs' knowledge and skills and their ability to be successful in the stressful project environment. Project experience, mentoring, and relationship-building experiences provided the most influential educational opportunities for these participants. This conclusion is consistent with the theoretical model used in this analysis (Edum-Fotwe & McCaffer, 2000).

CHAPTER VI

Conclusions and Recommendations

The main objective of this study was to understand how construction project managers view their positions and how they can succeed in a stressful and pressure-filled environment. Both the literature and the participant interviews described construction project managers' tasks as complex and pressure-filled, resulting in high levels of stress. Construction project managers need to have effective skills and strategies to succeed in this intense environment. If the CPMs are not able to complete their responsibilities successfully, the outcomes may be ruined careers, family-, physical health-, and mental health deterioration, and shattered dreams of success.

The participants in this study used a wide variety of skills and strategies to achieve success in their projects and their careers. Although they represented a variety of construction sectors, geographical regions, and organization function, the participants had similar experiences, pressures, and strategies. Construction project management involves producing a unique product that will satisfy the customer, by maintaining the budget and completing the project within the prescribed time frame and at the appropriate quality level. Success for construction project managers is the result of satisfying the customer and fulfilling responsibilities for their employer, the construction organization. Success for the construction project manager is demonstrated by continued employment and progression within the organization.

The construction project presents a complex array of challenges that result in a stressful environment. Pressures to decrease costs, complete projects quickly, and make profits for contractors and subcontractors continue and increase in competitive markets. The

construction industry attempts to lessen the pressure by using alternative contracting methods, but the pressure and the stressful environment continue to dominate the construction industry. As the stressful environment will continue to exist, construction project managers need to find ways to manage their responsibilities despite the obstacles.

Previous studies on construction project manager stress and methods used to obtain success in that environment have been primarily conducted in the U.K., Europe, Asia, and Australia. As there are cultural differences geographically, one of the objectives of this study was to compare the perspectives of construction project managers in the United States to those indicated in the global studies. The project responsibilities, the stressful environment and the skills and strategies for success did not substantially vary from the participants in this study and those studied in the literature review.

Conclusions

The participants in this study identified strategies to successfully manage their responsibilities. Summarized, they are self-awareness/self-management and social awareness/social management, which, together, are referred to as emotional intelligence; team leadership; and proficiency in technical management techniques. The participants have developed these skills and strategies through their education, life experiences, work experiences, self-improvement activities, and work-based training. They may have some of the attributes for success as part of their individual makeup, and they have acquired many of the attributes through their experiences and training. Several broad categories of knowledge, skills, and strategies have been compiled from the participant interviews.

Emotional intelligence

Emotional intelligence is a term for the abilities of an individual to combine self-awareness/self-management and social-awareness/social management. A higher quotient of emotional intelligence indicates that the individual has effective means of coping with emotions and stress. The project environment produces stress and accompanying emotions, which could influence actions by the project manager and project team that could negatively affect the success of the project. Control of emotions and actions with project stakeholders can help lead the project to success (Love, et al., 2011).

The participants in this study are all successful construction project managers progressing in their careers. They all are confident with their personal skills. They have developed self-confidence by being aware of their abilities and applying them to their daily lives. They have created a strong group of personal attributes such as positive attitude, even temperament, stress management, dedication, and work-life management. These attributes help them communicate, set priorities, manage time, and be genuine in their relationships with the various personalities involved in the project process. Edum-Fowe and McCaffer emphasized that these skills are essential for the construction project manager's success (2000). Control of emotions is important for the construction project manager to evaluate appropriate strategies in stressful conditions. Love, et al. indicated that emotional intelligence helps control emotions during stressful project conditions (2011).

Many of the participants emphasized realizing the relationships in the process and providing the necessary attention to their customers. A large part of emotional intelligence is realizing the dynamics of social relationships and understanding the methods to manage these social relationships (Goleman, 1994). The construction project manager needs to

communicate effectively with all parties in the process: the customer, regulatory officials, team members, subcontractors, designers, and the general public. Edum-Fowe and McCaffer emphasized the importance of communication skills in project management (2000). Understanding the motives and methods of other individuals in the process assists in effectively communicating with them.

Individuals increase their emotional intelligence as they add to their experience. Construction project managers adapt to their environment as their experience increases. The more experienced participants in the study seemed more able to work effectively in stressful conditions. Edum-Fotwe and McCaffer found that construction project managers acquire many of their soft skills through experience (2000). Although a fairly high level of emotional intelligence is desirable for the entry-level construction project manager, emotional intelligence can be learned and practiced, resulting in increasing levels of emotional intelligence during the CPM's career.

Team leadership

Construction project management is conducted by teams of individuals, each assigned to specific aspects of the project. The construction project manager's team can consist of only a few individuals to many individuals, depending on the scope of the project. Typically, a project team can consist of administrative assistants, field engineers, project engineers, foremen, assistant superintendents, and superintendents. As each team member has specific responsibilities that are critical to the ultimate success of the project, each team member needs support, accurate information, and encouragement to complete their tasks. The overall atmosphere at the project needs to be positive and proactive. The construction project manager's effectiveness as a team leader relates directly to the project's success and his or her

continuing success. Along with self-control, Dainty, et al. identified team leadership as the most predictive skill of superior performance by construction project managers (2005).

Creating and maintaining a positive – even "fun" – project atmosphere can effectively combat the negative effects of pressure and stress. The CPM needs to select team members, assign responsibilities, and provide a positive environment for the team members. The CPM may apply specific emphasis to help team members achieve their objectives. The volume of project responsibilities is almost overwhelming, particularly for one person. Construction project managers must delegate many of these activities to trusted team members who are capable of successfully completing the tasks. CPMs need to purposefully create team-building opportunities and provide an atmosphere that complements and supports a cohesive team.

Numerous problems and conflicts occur during the construction project. The construction project manager needs to be a problem solver, leading the team to adopt a positive problem-solving attitude. Santorella emphasized problem solving as a major duty of construction project managers, which relates to their success (2010).

Team leadership skills can be acquired from many sources. Academic education can cover basic leadership theories and applications. Leadership has become a topic in many construction management programs. Whether in business management courses or project management courses, discussions and exercises in leadership- and team building help prepare students for the project environment. Organization-sponsored training programs directed at cultivating social relationships, team dynamics, and leadership can help build the leadership skills of project-management-track employees. Most project managers have gained these team leadership skills by working with teams in leadership situations. Actual success and

situational failure can provide positive learning experiences. Mentors and role models also provide practical education that influences successful behavior.

Technical management

Construction project managers need to have knowledge of technical management of the project, and apply that knowledge effectively. Expertise on construction systems and construction management systems is essential for construction project managers. Gidado indicated the importance of knowledge and management of technical issues as a challenge for construction project managers (1995). Realizing that their most important goals concern cost, time, and quality, construction managers need to excel in managing those particular areas of a project. The participants strongly advocated having knowledge and skills in financial forecasting, recordkeeping, and management. Stevens emphasized that financial performance management is part of the construction project manager's responsibilities (2007). Scheduling and time control also were a major concern for the participants. Satisfying the owner, whether through social interaction or quality construction, is also extremely important. Construction project managers need to have the necessary expertise and know when and how to apply it to the construction project.

Academic programs are successful in providing management-, construction-, and engineering basics for management positions in the construction industry. In recent years, as mentioned by some of the participants, construction management programs have become very active in encouraging construction industry internships for their students. This combination of practical and technical knowledge has increased students' preparation to enter the construction industry.

Continuing development program in technical subjects also provides project-management-track-employees with important information, particularly on new developments in the industry. Experience working on construction projects increases their knowledge of construction techniques and management techniques as well. Experience also provides insight into the timing and effectiveness of applications.

Implementing Organizational Innovations

Initially, this study was intended to examine the workload of construction project managers to understand their role in implementing organizational innovations. This discussion did not emerge from the interviews. A few of the participants discussed their time- and workload demands relating to innovations, but most of the participants did not discuss implementation of innovations as a primary responsibility. As the project is their predominant responsibility, they are primarily concerned with the success of the project and their own success.

Some of the participants discussed functional responsibilities that affect their discrete- or project-related responsibilities. Chuck stated:

> The functional stuff, the corporate end of it, those are the things that take you away from your game plan. Managing a jobsite, depending what one it is, is usually a full-time gig. It requires all of your energy and focus to execute . . . the sort of things that pull you away from your day-today that are not predictable. You feel that you have to do them, because they come down from corporate, but there's not a direct correlation to your regular day job that makes it any easier. That's what I usually find as a little stressful.

David discussed some changing organizational programs:

> One of the things we're trying to do is to lean-out our operation. We have initiatives bringing teams of people together to look at a process. Maybe cost management forecasting, doing buy-out and project start-up . . . looking at any waste that we might have in the process . . . and figure out how to eliminate it . . . looking at techniques using the lean management perspective that we use. When something comes down from the top, there's always a process that has to be figured out. It's for the operations team and how the guys building the building have to operate. Transfer the information, and work with that to the quality control program . . . a budget management process or whatever.

Ed also discussed innovations:

> As far as organizational duties in our company, as part of our mission statement, it's our goal to prove ourselves as the cutting-edge . . . concrete contractor in the nation. It's kind of a difficult task, as we're in an industry where things happen quickly. It's difficult to rise and push on innovations that makes things more efficient or better and prove to be cutting edge.

The data suggest that the discrete responsibilities, relating to the project, are more than a full-time job. The amount of responsibilities in the stressful project environment consumes construction project managers to the point that they have little time to manage other responsibilities. It is possible that the construction employers of participants in this study are not actively implementing innovations. The data in this study did not substantially indicate that construction project managers either are concerned with these innovations or that they are not able to implement them. Further studies can be initiated to determine the number of

innovation initiatives companies are implementing and how those directly relate to construction project managers.

Recommendations

I have generated three categories of recommendations from this study, relating to practice, education, and further research.

1. Recommendations for the practice

Construction organizations want their recruits to succeed and advance into management positions. In recruiting, training, and providing project managers with experience, the organizations need to focus on the knowledge, skills, and strategies that enable construction project managers to succeed. They need to look at individual strengths and academic education when considering applicants for career positions. Construction organizations also need to provide their employees with development opportunities that correlate with successful project management. Progressive experience needs to be complemented with learning opportunities, mentorship, and positive role models. Concentration in these areas will produce construction project managers that continue their careers and achieve success earlier in their careers.

As emotional intelligence is one of the most important skill/strategy areas, emotional intelligence and the potential to achieve a high level of emotional intelligence should be part of the employee evaluation and continuing education for career employees. Several tests have been developed that give an indication of the potential employee's emotional intelligence level. Petrides and Furnham (2001) determined that trait emotional intelligence is best measured through self-report questionnaires pertaining to the realm of personality. A reliable test to effectively measure emotional intelligence is the Schutte Self-report Emotional

Intelligence test (Mo.Y, et al., 2006). Other reliable tests are also available for employees during employment.

Internship experience, other construction experience, participation in organizations, and other social activity can provide some indication of emotional intelligence. An understanding of the stressful construction environment by potential employees will help them develop the emotional intelligence necessary during their career in construction.

2. Construction experience

The majority of education on the most important topics comes from experience in the construction industry. Along with academic education and continuing education, progressing through positions and various work activities can provide construction project managers with a complete and balanced knowledge base. This progression needs to be organized to provide a complete background, progressing in responsibility. The experience also needs to be oriented to emotional intelligence development, tea leadership, and technical expertise.

Along with progressive advancement in increasing challenge and responsibility, the construction organization should provide a system of peers, mentors, and role models to help guide the individual through complex construction projects. Social support is an important element of coping in the stressful construction environment. Reliance on support from peers and mentors can help individuals become more proficient in executing their job responsibilities.

3. Education:

Examining the curriculum and success of a construction education program can also help determine how well the program has helped develop an individuals's hard- and soft skills prior to career employment. The academic program begins by teaching technical

expertise. The quality of construction-, engineering-, and management education influences the individual's technical expertise. Traditionally, academic education has concentrated on the technical education, or hard skills. The current trend is to include some soft-skill education in business- and construction management courses. Topics such as construction communications, leadership, team-oriented projects, personal assessment, and social skills may be included in some academic programs. Each program will have an emphasis beyond the basic accreditation requirements that addresses certain knowledge and skills. Examining these programs and becoming involved with their advisory boards can help construction organizations choose strong potential career employees.

Career Development Training

Construction organizations need to provide training to help employees develop and be able to accomplish their responsibilities. The construction organization needs to determine what training will be effective to increasing the success of the construction projects. The organization needs to evaluate their employees' knowledge and skills relative to the needs – such as social skills, communications, or more technical topics such as financial forecasting. As academic programs emphasize technical knowledge, many construction organizations concentrate on the soft skills for their continuing education. Emotional intelligence can be learned and is a good topic for this training. A wide variety of development training is available from construction associations and private consultants. In-house programs, remote-location programs, online programs, and self-study programs are available for this training.

In a study conducted by Slaski and Cartwright (2003), the researchers conducted emotional intelligence training to determine if this training increased participants' emotional intelligence and resulted in noticeable improvement in their management performance. The

training was centered on self-awareness and detachment in one-day-per-week training sessions for four weeks. The results of this study suggested that emotional intelligence training can lead to improved health, well-being, and performance (Slaski & Cartwright, 2003).

Construction organizations need to continually be aware that additional training is needed within their organizations. This study and the theoretical model indicate that although development training is not the primary source of knowledge and skills, it is part of the effective educational effort necessary for construction project managers to succeed. Academic education provides the basics, and work experience provides the majority of education, but experience can miss some important areas.

Further Research

This study has indicated that there are other areas of construction-project-manager-related research to explore. As the education sources for construction project managers emerged in this study, another study similar to the theoretical model study could be accomplished. This study would identify current types of education available in the United States for construction project managers. This would include an examination of university construction management programs and a study of continuing education programs and progressive experience programs in the construction industry.

An expanded group of participants, with different selection parameters, may provide further information on the environment that construction project managers work in. Further regional differences may possibly show some variations. Examination of experiences of minority participants may also result in some variation of results. This study has identified several skills and strategies for construction project manager success. Further exploration of

the topics in a larger sample can be accomplished using quantitative research with survey instruments.

The literature and the participants indicated that academic education does not typically cover the soft skills necessary for the construction project manager. Further research could examine the current level of soft skills covered in academic education. It could also examine pilot programs for soft-skills development in academic education. Additional research could be conducted with model education curricula for training programs and evaluating the success of those programs.

Although there is some evidence that emotional intelligence training can benefit construction project managers, not enough research is available on which type of training is most applicable to construction project managers and if the training actually increases CPMs' emotional intelligence. Along with this further research, continuing education could be examined for its effectiveness for construction project managers.

Limitations of the Study

Although this study had a relatively small number of participants in the study, responses reached a saturation level. Some additional data may be generated by gathering input representing more geographical regions and a larger variety of construction specialties. The data this study generated, however, was consistent and provided opportunities for substantial coding and analysis.

This study did not identify minority representation in its construction-project- manager participants, as the study was based on construction project managers as a group rather than as individuals. The questions were purposefully designed not to identify racial, cultural, ethnic, or gender differences among the participants. As all of the interviews were conducted via

telephone, the interviewer was not aware of any minority representation among the participants. One of the participants, Christine, is a woman, but there was little difference between her approach and the other participants' approaches. Cultural backgrounds may have an effect on construction project managers' methods and success, but cultural backgrounds were not isolated in this study.

As mentioned previously, a different approach may produce data relevant to innovation implementation and the role of the construction project manager in advancing innovation. Identifying construction organizations' successful and unsuccessful innovation implementations may help such a study. Construction organizations are reluctant, however, to release such confidential information. Several construction organizations declined the invitation to participate in this study, due to the perceived confidential nature of their data.

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Appendix A

Interview Guide Questions

Question 1: What is your background in construction project management?

Question 2: Could you describe your duties in your position as a project manager? I described a little bit, anyway, of both the project and organizational duties. Could you describe what the duties are in your position?

Question 3: What skills and strategies have helped you achieve success as a construction project manager?

Question 4: Research on the role of construction project managers suggests that it is a very stressful job. If you feel pressure and stress, where does it come from and what strategies do you use to manage it?

Question 5: With the long hours and pressures of your job, are you able to maintain a balance with your personal life?

Question 6: Is there anything you would like to add that would help me understand your perspective?