GENDER FACTOR IN CONSTRUCTION CONFLICT MANAGEMENT: A STUDY THROUGH A COMPETENCY BASED AFTER SCENARIO BEHAVIORAL RATING

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ABSTRACT

GENDER FACTOR IN CONSTRUCTION CONFLICT MANAGEMENT: A STUDY THROUGH A COMPETENCY BASED AFTER SCENARIO BEHAVIORAL RATING

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Construction industry's nature is based upon short term, opportunistic and competitive relations. Due to this tough and competitive nature of itself, the industry is vulnerable to conflict scenarios in all sizes to be played out everyday. These conflict situations lead to schedule and payment delays, cost overruns, rework and cost and time consuming litigations. Therefore, the "managerial challenge" in construction sector is more than conducting transformation of resources between its planned start and planned finish. It is about how you can manage conflicts in an ongoing process, with minimum damage.

According to the general idea, this proclivity in the sector for conflict occurrence is due to its male centric and masculine orientation. Although there are several studies using managers' gender as a subject variable, the current literature falls short of valid studies investigating any gender effect on effective conflict management practice. The dominant approach thus far has been merely analyzing the managers' performances in terms of "five modes of conflict management". However, any managerial performance measure should depend on identifying its own situation specific behavior sets: competencies. Therefore, a peculiar set of competencies for effective construction conflict management performance is structured initially. Then,

an after scenario questionnaire is designed including three hypothetical conflict cases. The questionnaire is distributed to construction managers to compare their management approaches through the same conflict cases. The respondents are asked to rate the seven alternative management scenarios referring to seven different competencies proposed for each case. Finally, the data derived are evaluated via relevant statistical methods and presented with tables and necessary illustrations.

Keywords: Construction Conflict, Conflict Management, Competency Theory, Gender

ÖZ

YAPIM ANLAŞMAZLIKLARI YÖNETİMİNDE CİNSİYET FAKTÖRÜ: VARSAYIMSAL VAKALAR ÜZERİNDEN YETKİNLİK ODAKLI BİR DAVRANIŞ DEĞERLENDİRMESİ

Ünsal, İzel
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Yapı projelerinin doğasını süreli, çıkarcı ve rekabetçi ilişkiler oluşturur. Bu sert ve çekişmeli yapısı gereği çatışma ve anlaşmazlıklara diğer disiplinlere kıyasla daha meyillidir. Yaşanan anlaşmazlıklar etkin bir şekilde yönetilmediğinde bütçede artışa, süre uzatımına, projeye zarar veren gecikmelere, hak taleplerine ve hatta hukuki süreçlere evrilebilmektedir. Bu sebeple, yapım projeleri idaresi belirli zaman aralığında kaynakları etkin kullanarak projeyi yürütmekten daha zorlu bir görev içerir: anlaşmazlıkların etkin yönetimi. Proje akışında ortaya çıkan bir anlaşmazlığın etkin yönetimi, mümkün olan en kısa sürede, projeye ve taraflara en az zararı verdirecek şekilde çözümlenmesine bağlıdır.

Genellemelere bakılacak olursa, sektörün anlaşmazlıklara bu denli yatkın oluşunun temelinde erkek egemen ve maskülen doğasının kayda değer bir payı var. Şimdiye kadar bu konuya değinen dikkate değer sayıda araştırma olsa da, kesin bir değerlendirme yapmak için maalesef yetersiz kalmaktadırlar. Genellemelere ve anlaşmazlık çözüm yönetimi tercihlerine dayalı çalışmalar tutarsız ve birbiriyle çelişen sonuçlar ortaya çıkarmaktadır. Aslında her bir anlaşmazlık vakasının kendi bağlamı içerisinde değerlendirilmesi, bunun için de genel geçer müdahale metodları yerine davranış/yaklaşım tanımları belirlenmesi gerekmektedir. Yönetim

bilimlerinde uzun yıllardır bir ölçüm yöntemi olarak kullanılan “yetkinlikler” bu çalışmanın özünü oluşturmaktadır. Öncelikli olarak bu çalışmada yapı projeleri anlaşmazlıkları özelinde gerekli olan yedi ayrı yetkinlik tanımlanmaktadır. Daha sonra üç ayrı varsayımsal anlaşmazlık vakası kurgulanarak, her biri bir yetkinliğe referans verir şekilde yedişer adet çözüm senaryosu önerilmektedir. Anket katılımcılarından bu senaryoları uygulama eğilimlerine göre puanlamaları istenerek, yaklaşımları arasında cinsiyet odaklı anlamlı bir farklılık olup olmadığı değerlendirilir. Elde edilen tüm veriler istatistiki analizler üzerinden gerekli görülen görselleştirmeler ile birlikte sunulmaktadır.

Anahtar Kelimeler: Yapı Projelerinde Anlaşmazlıklar, Anlaşmazlık Yönetimi, YetkinlikTeorisi,Cinsiyet

To the strongest family I have ever known:

To mum and dad.

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This study would not be accomplished without the 82 construction managers who sincerely supported my survey and voluntarily contributed to my questionnaire despite their busy schedules. I wish I had the chance to thank them one by one in person. I also want to express my deepest love and gratitude to Hakan Altuncan. Without his joy, support and professional experience, I could not survive this thesis process that smoothly. Thank you for being there.

Most importantly, I am deeply thankful to my mum and dad. Both made me feel like they are always with me whatever I do and wherever I go. Any success I have ever achieved in my life is their performance. Love you guys.

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CHAPTER 1

INTRODUCTION

This chapter initially presents an introductory information about the current state regarding the research scope, followed by the main argument behind the study. Then, it continues with its aim and objectives, followed by the contributions it offers to the current literature. The last section features an overview of the content elaborated in the following chapters.

1.1 Introduction

The core of a construction project is fulfilling the client's needs within a group of predetermined standards about time, cost and quality (Leung, Ng & Cheung, 2005). Temporarily assigned professionals from various disciplines are responsible for accomplishing this task with a limited amount of input and resource[1]. Due to this over differentiations and under differentiations, it is very likely to face with organizational conflicts in the whole project organization, within the process(es) or between the processes (Gardiner and Simons,1998). Although successful completion of a construction process is based upon co-operation between the multiple disciplines involved, unfortunately the industry's nature is based upon short term, opportunistic and competitive relations, instead of cooperative partnerships.

[1] Based on the studies: Acharya et al., 2006; Jaffar et al., 2011; Jones, 2006, Ock & Han, 2003; Singh & Vlatas, 1991; Sunindijo et al., 2014; Tazelaar & Snijders 2010

Tazelaar and Snijder's research conducted in 2010 exemplifies the "harshness" of the construction industry by revealing that, construction sector experience more arbitrations, litigations, suspensions and other legal dispute resolution steps than other sectors. In other words, the industry is vulnerable to conflict scenarios in all sizes to be played out every day (Cheung, Yiu You & Yeung, 2006); which are mostly frequent and intense rather than other organization forms (Singh & Vlatas, 1991). Thus, this competitive and tense environment suggests the need to focus on the construction conflicts and their effective management practice.

1.2 Argument

Some may argue that the chaotic and harsh environment of the construction sector is predominantly dependent on its male centric orientation. The whole industry is shaped by male domination, aggression and gallant behavior on an ongoing basis (Gale & Cartwright, 1995). Considering the working conditions, traditional habits and customs; it can be seen that the industry consists of crisis, conflict and masculinity (Gale A. W., 1992). As more women moved into managerial positions in organizations including the construction industry, any possible gender effect on the conflict management practice also gains importance besides the efficacy of conflict management approaches and techniques.

Certain studies from the popular literature claim that, any increase of female appearance in construction sector may positively decrease the masculine domination and the "butch" environment in the industry and may ease managing problematic conditions. They introduce that women can diffuse the conflicts, reduce the tone of the arguments and promote a less aggressive environment by just being present in a conflict situation (Loosemore & Galea, 2008; Potter, 2005; Henderson, Stackman &

Koh, 2013). However, it is still conclusory to claim that women are more capable of managing construction conflicts more effectively than their male counterparts.

Effective conflict management is a behavioral approach which is more than bringing down the temperature of an argument. It refers to the quality and effectiveness of resolving and identifying differences in viewpoints, strategic choices and decisions among team members (Klenke, 2003). The literature offers several theoretical analogies among conflict management performances subject to different variables; gender, status, culture, nationality, age and experience. When these studies examined, it is perceived that the dominant approach thus far has been merely analyzing the managers' performances in terms of their *general* preferences, opinions or judgements. However, the theory of conflict management argues that each case requires a unique conflict management approach, including a suitable intervention technique structured upon a diagnosis of the current state (Singh & Vlatas, 1991; Singh & Johnson, 1998; Rahim, 2001). In this regard, any research focusing on conflict management effectiveness should be structured upon a *situation specific* performance measurement. On this basis, this dissertation uses a situation specific *after scenario* questionnaire as a research tool, in order to investigate any possible effect of gender on construction managers' conflict management performances.

1.3 Aim and Objectives

The aim of this study is to investigate any significant gender effect on conflict management performances of managers in the construction sector. The following objectives were intended to be accomplished during the investigation process:

- identifying the nature of construction conflicts and providing any relative information about their emergence in the industry,
- investigating the principles behind the theory of conflict management and clarifying its basic premises,
- identifying the competency theory and its relative importance to conflict management performance assessment,
- deducting the competencies required for effective construction conflict management performance from the current literature,
- investigating whether the required competencies to perform effective conflict management differ in distinct conflict cases,
- investigating any significant effect of gender on conflict management behaviors of construction professionals

1.4 Contribution

Current literature offers several studies concerned with the conflict management and leadership techniques of construction managers on an individual basis. However, the construction industry is in need of evaluating the managers' performances rather than focusing on the managers' technique preferences.

Based on this explanation, this dissertation offers three main contributions of this dissertation:

- It provides a list of competencies specific to superior conflict management performance in construction projects,

- It demonstrates the necessity of situation specific management approaches for distinct conflict cases,
- It presents whether there is a significant gender effect on construction managers conflict management performances.

1.5 Disposition

This thesis is composed of five chapters: First is the introduction chapter, presenting the main argument followed by the aim and objectives, contribution and disposition respectively.

Then, in the second chapter, the outcomes of a detailed review of the current literature is presented. First of all, the conflicts in the construction projects and their occurrence processes are mentioned. Next, the theory of conflict management and its basic premises are covered. Then, the competency theory behind managerial practice is introduced. Following that, a list of construction conflict management competencies is proposed based on the relevant studies to date. In the final section of this chapter, gender issues in construction projects and previous studies about gender in conflict management and construction management practice are discussed.

The third chapter is focused on the research material and methodology. First of all, the research material is presented. Initially, the structure of the distributed questionnaire with its all phases, the presented hypothetical conflict cases and the proposed management scenarios are introduced. This chapter concludes with the research methodology, including relative information about the execution of the survey and sample selection procedure.

The fourth chapter includes quantitative results of the study. Together with the conducted statistical tests, each data outcome will be presented individually. First, the weighted mean scores of proposed competency based management scenarios are evaluated for each case, then the results are analyzed in terms of the interviewees' gender.

The final chapter, conclusion, provides a brief outline of the study, together with the final outcomes and findings. Then next is the discussions section, in which the interpretations from the study are presented and further discussed. This chapter concludes with suggestions for respective future studies, by taking into consideration this one's limitations and bottlenecks.

CHAPTER 2

LITERATURE REVIEW

This chapter aims to provide any necessary information from the relevant subsequent literature. The derived data is analyzed under five main sections. The first section focuses on the interrelation among conflict situations and the construction sector due to the nature of itself. Thereafter the second section addresses the theory of conflict management and its situational characteristics. In the third section, the theory of competency and competency based assessment method is presented. Then in the following sub-section, the idea of competency list is identified and a list for construction conflict management is developed based on the literature review. The fourth section analyzes the interrelation among gender and the theories of construction and conflict management. Finally, the last section presents the implications drawn from the literature, together with the shortcomings of previous studies.

2.1 Construction Conflict

Any individual in construction sector can forecast the end results of the situation illustrated: a construction manager insists on using the economical substitute of a material, while the architect stands out for the one on the high side; at the same time an engineer deals with budget allocations while a sub-contractor stakes claim for a large number of previous change orders unforeseen during the planning stage; to top it all, a foremen and a site manager struggle for finding a way out from the

subcontractor's workers' strike action due to their unpaid wages. At the latter end, regardless of their role in the hierarchical structure, every individual has to face with it; the construction conflict. Since, construction projects are widely known to experience conflict situations more than other project based industries (Singh & Vlatas, 1991).

Conflict arises when there is a difference of interest between a group of people who is responsible for accomplishing the same task (DeVilbiss & Gilbert, 2005). Conflict scenarios occur when the interests of people involved in the same task interfere. Conflict situations mostly enter the scene when there is any divergence of priorities, interests and objectives between the members of an organizational group or when these members face a nonconformity among the requirements of a task or activity (Gardiner & Simmons, 1992). Their emergence can be related to incompatible preferences, goals, and activities of conflicting parties' (Rahim, 2002). Therefore, conflict is a natural part of any business with a larger project team, limited resources and a complex structure (Dulaimi & Longford, 1999). Traditionally, provisional professionals from various disciplines are responsible for accomplishing a construction process, in conjunction with its all subprocesses, in a limited amount of time with a limited amount of input and resource (Cheung *et. al.*, 2006; Gardiner & Simmons, 1992). In other words, construction projects have multidisciplinary characteristics due to the variety of stakeholders and processes involved in (Jaffar, Tharim & Shuib, 2011; Sunindijo & Hadikusumo, 2014). Hence, they are commonly prone to encounter considerable amount of conflict situation due to their complex nature. Any poorly assigned risk factor will eventually end up as conflict situations on an ongoing basis in a construction projects life cycle. These conflict situations lead to schedule and payment delays, cost overruns, rework and cost and time consuming litigations (Anderson & Polkinghorne, 2008). According to Tazelaar & Snijder's (2010)'s research, 1.6% of construction transactions turn into serious conflicts, in that way they lead to disputes, arbitration, suspension or more serious

legal phases. Following that, even if the conflict is not clearly managed, it would hereafter eventuate as claims, counter claims or disputes (Acharya, Lee & Im, 2006). At this juncture, although some scholars prefer to use them interchangeably, it is important to note that disputes and conflicts are two distinct notions. In contradistinction to conflicts, disputes cannot be managed; they require resolutions. Disputes are mostly associated with judicial legal issues predominantly with a third party intervention, which most likely affects the industry (Fenn, Lowe & Speck, 1997). Claims are requests of one party to the others due to certain cases, in order to compensate any loss or short changes (Mitkus & Mitkus, 2014). The interrelation among these three notions was initially illustrated by Acharya *et. al.* (2006) and interpreted by the author of this dissertation as a continuum model in Figure 2.1 below.

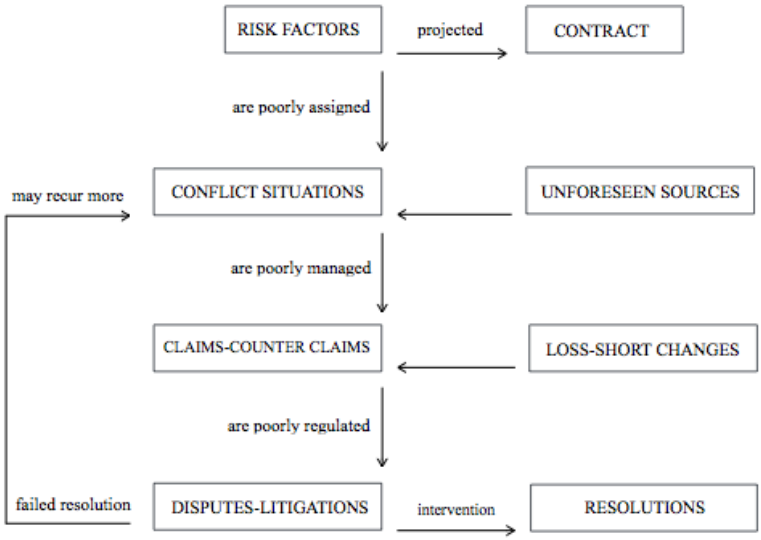

Figure 2.1 Construction Conflict Continuum Model (Adapted from *Acharya et. al.*, 2006)

Table 2.1 Factors Behind Construction Conflicts (1991-2015)

Research	Factors Behind Construction Conflicts
Singh Vlatas (1991)	Interaction of different intellects, beliefs, methods, cultures, character perceptions, desire for growth, promotion and power, egocentricity
Gardiner & Simmons (1992)	lack experience, design errors and omissions, design not meeting specifications, cost overrun, running late, operational faults, internal politics, conflict of loyalty, different leveling and emphasis on charge, misuse of quality system, contract condition modifications
Gorse (2003)	poor briefing and coordination, lack of experience,design errors and omissions,misuse of standard documents and contracts, exceeding project duration and budget and building functional problems
Harmon (2003)	size and the duration of project, complexity of the contract documents, changed conditions, poor communication, limited resources, financial issues, inadequate design, labor issues and force major events
Acharya (2006)	change of site conditions, public interruptions,change order evaluation, design errors, excessive quantity variation, double meaning in specifications
Cheung *et. al.* (2006)	lack of common goals, competing needs of the project team members, inadequate risk allocation, changes in the construction plan, land specifications and erroneous information
Ng *et. al.* (2007)	misunderstandings, negligence, personal working habits, issues about contractual management, quality, performance, payments, delays, poor information sharing
Jaffar *et. al.* (2011)	poor communication among project team, delay interim payment from client, failing to respond in timely manner, improper project schedules, error of pricing or costing and late instructions given from the architect or engineer
Mitkus Mitkus (2014)	unsuccessful communication among/between the participants in a construction project, unfair behavior of construction participants and psychological defense mechanisms
Brockman (2014)	rework, construction scheduling, owner specifications,working conditions, lack of communication, coordination of disciplines, different styles of performing work, lack of information, poor documentation, perceived levels of effort
Li *et. al.* (2015)	delay of drawings, engineering change, delay of materials and equipment, payment problems, period delay, shortage of engineering quality, unreasonably interface with construction, unforeseen factors and force major

Construction industry has been investigating the factors behind conflicts throughout the last 25 years. The factors mentioned in different studies between 1991 and 2015 is illustrated in the Table 2.1 above. Almost each substantive study identified broadly similar factors; poor communication, schedule issues, payment issues, any kind of error, difference and change, quality and contractual issues. This similarity is inevitable due to the nature of the construction industry itself: All construction projects include predetermined work flows based on proven work routines. Even if the project budget and duration differ; the work breakdown structure, the process flow and the links between tasks and *conflict causes* are common.

In addition to the sources of conflict in construction industry, researchers also have focused on their types and classifications. For instance, in their earlier inquire Gardiner & Simmons (1992) divided conflicts into four main categories due to the phases they occurred in; inception/briefing/tendering conflicts, design conflicts, construction/operation conflicts and project management conflicts. Thereafter, they altered the groups depending on the impulsions behind them; conflicts due to task interdependency, due to organizational differentiation, due to values/ interests/ objectives, due to tension and due to personality traits (Gardiner & Simmons, 1998). With a similar judgement, Acharya *et. al.* (2006) also proposed five different categories; owner evoked, consultant evoked, contractor evoked, third party evoked and other project matter evoked conflicts. Ock & Han (2003) brought a different approach to the topic and argued that conflicts should be divided into two categories; the ones occurred among the contractual parties with privity (*i.e.* among contractor and owner) and among the ones without privity (*i.e.* team members of the functional departments). Alternatively, Leung *et. al.* (2005) preferred to classify them as conflicts related to the task and conflicts related to the team. In addition to this, some contemporary researches reclassified the construction conflicts into three as relationship, task and process conflicts (Chen, Zhang & Zhang, 2014), technical, managerial or interpersonal conflicts (Edum-Fotwe & Mc Caffar, 2000), procedural,

informational or interpersonal (Hartman & Crume, 2007) or conflicts due to behavioral problems, due to contractual problems and due to technical problems (Jaffar, Tharim & Shuib, 2011).

Although the literature offers much classifications about the conflict situations in the construction industry, they are categorized under three main types in this thesis: i) planning conflicts, ii) executing conflicts and iii) relational conflicts. The basis of first two of them is DeVilbiss & Gilbert (2005)'s survey concerning the management phases. According to them, any construction management practice is comprised of a planning phase and an execution phase. The planning phase focuses on designing a roadmap for the future of any kind of job in accordance with several unknowns and risk factors. Problematic situations due to the initially disregarded factors; contractual deficiencies, unforeseen risk factors, defective team structuring can be included under planning conflicts. Distinctively the execution phase includes the job performing and task undertaking process, while measuring the progress and prospective course corrections. Conflicts due to the issues about duties, responsibilities and resources, along with any differences in viewpoints and opinions concerning the progress and cost of the project are included in the executing conflicts. Some researchers (*e.g.* Edum-Fotwe & McCaffar, 2000; Leung, Ng & Cheung, 2005; Hartman & Crume, 2007; Jaffar *et. al.*, 2011; Chen *et. al.*, 2014) analyzed the conflict situations evoked by behavioral problems among team members as "relationship conflicts". In accordance with them, the third type in this thesis concentrates on any problematic situation caused by inefficient team coordination, superior-subordinate relationships and ambiguities between contractor and subcontractors under the type of relational conflicts.

2.2 Conflict Management Theory

Being reminiscent of something negative, conflicts are mostly defined as undesirable situations which should be eliminated or avoided. However, a conflict can be turned into a "win-win" situation with a successful management approach. At this point, one central question that lacks an answer is whether technical knowledge and managerial expertise in construction sector is enough to turn conflicts into "win-win" situations. Certainly not.

Conflict management practice can be defined as some kind of an *art*, in which the artist needs to design his/her own style for dealing with the interference of interests, preferences and perceptions among parties in any organization (Singh & Johnson, 1998; Ock & Han, 2003). The theory of conflict management focuses on scientifically modeling this *art*; synthesized by sets of behavioral approaches emerged while eliminating destructive or dysfunctional conflict. In the meantime, moderate amount of constructive conflict should be maintained and utilized, in furtherance with the organizational learning and group performance. However, due to the situational characteristics of conflicts, there is lack of ground rules that indicates when to reduce destructive and maintain constructive functions or what to do in order to achieve this (DeVilbiss & Gilbert, 2005; Rahim, 2000).

Numerous studies about conflict management have used the instruments based upon the Managerial Grid; a scheme initiated by Blake and Mouton in 1964. Throughout the years several scholars contributed the grid in order to derive a model referring to the modes of conflict management styles (Thomas & Kilmann, 1974; Pruitt 1983; Rahim & Bonoma, 1979).

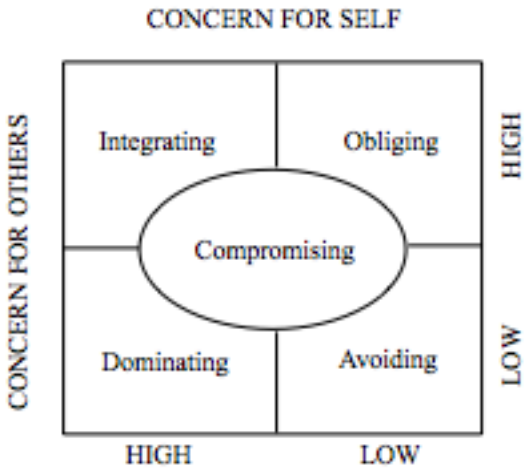

Figure 2.2 The Dual Concern Model of the Styles of Handling Interpersonal Conflict (Rahim, 2002)

The model in the Figure 2.2 above (Rahim, 2002) classifies the styles under five main groups, depending on their focuses of concerns; concern for self and concern for others. The vertical axis of the graphic model symbolizes the "assertiveness" while the horizontal chart symbolizes the "cooperativeness" of a conflict management style (DeVilbiss and Gilbert, 2005). The five different styles of conflict management are:

- Integrating or Collaborating,
- Obliging or Accommodating,
- Dominating or Competing,
- Avoiding or Withdrawing,
- Compromising or Negotiating,

A completion for each one to follow[2]:

1) **Integrating/ Collaborating** style can be identified as the one with the "good intentions". Accordingly, both parties intend to design alternative outcomes and solutions acceptable for either side. In other words; it mostly aims to solve the problem with a satisfactory outcome, foremost for both. Due to this reason, it is likely to end up with a win-win solution. It is effective for handling social conflicts, while dealing with task related strategic issues, when there is also a long term planning.

2) **Obliging/ Accommodating** style can be identified as the one with the "sacrifice". To put in other way; one of the parties mostly compensates oneself for the other's satisfaction or interests.

3) **Dominating/ Competing** style can be identified as the one with the "pressure". Namely, one party forces behavior to end up as a winner in this win-lose situation, aims to get the best for his/herself while totally neglecting the other parties' expectations. If the involved issues are routine matters or a quick decision is required or the other party is too assertive, dominating can be appropriate to prefer.

4) **Avoiding/ Withdrawing** style can be identified as the one with the "ignorance". This lose-lose style can only be effective if a party relies on getting out of a conflict situation is for the welfare of his/her organization over the long run. Avoiding is appropriate if confronting with the other party is more destructive than the conflict itself. Further, this style is mostly chosen under effects of the

[2] Derived from the works of DeVilbiss & Gilbert, 2005; Loosemore, 1999; Rahim, 2002; Rahim & Buntzman, 2001; Singh & Vlatas, 1991

despair about solving the disagreement, the problematic conditions of the dispute and the belief about conflicts can be dissolved if they are ignored.

5) **Compromising/ Negotiating** style can be identified as the one "in the middle". It aims to find a common ground, on which both sides give and take. It includes give ups in order to reach a mutually beneficial final outcome and is effective when there is an overlap between both party's interests and power levels. Generally, this style results in a "lose-lose" situation. However, there is always a possibility that it can end up with a constructive and positive conflict resolution.

A style can only be defined as the "best" approach if its usage offers a satisfactory outcome for each party involved. As a result of this, any analogy among these conflict management styles will be conclusory. The contingency theory of conflict management claims that each conjuncture requires its unique conflict management style. Due to this contingency approach, every conflict situation requires its own idiosyncratic diagnosis and distinctive intervention technique. This is because, it is highly possible that the underlying causes and the hidden nature behind a conflict situation differ from the unveiled state (Rahim A., 1992). What differentiates successful conflict management is hidden in here; possessing context-dependent conflict management approaches to every situation (Liu & Zhai, 2011; Loosemoore, 1999; Rahim 2000; Rahim & Buntzman, 2001; Singh & Vlatas, 1991).

Numerous studies have been conducted to assess the interrelation between conflict management strategies and affecting dependencies of the conflict situations such as; **emotional state** (Montes, Rodriguez & Serrano, 2012), **interaction category or status** (Özkalp, Sungur & Özdemir, 2009; Rahim & Buntzman, 2001; Singh & Johnson, 1998), **age or expertise** (Oluwakemi, 2014), **personality or characteristic features** (Liu & Zhai, 2011) and **gender** (Brahnam, Margavio, Hignite, Barrier &

Chin, 2005; Loosemore & Galea, 2008; Gbadamosi, 2014; Gunkel, Schlaegel & Taras, 2016; Ome 2013, Özkalp *et. al.*, 2009; Rosenthal & Hautaluoma, 2001).

Although the literature offers several theoretical analogies among conflict management performances of professionals, the dominant approach thus far has been merely analyzing the managers' performances in terms of "five modes of conflict management". However, subject to the situational characteristics of conflict management, any intervention technique can be the most effective one due to its context. Namely, previous surveys are unfortunately deficient for making conclusive statements about conflict management performance effectiveness of managers. This generates one central question that lacks a theoretical answer: Is it impossible to measure conflict management performance?

2.3 Competency Theory

Although it sounds as much abstract as it can be; performance effectiveness can be measured. However, due to the lack of any theoretical construct, the concept of successful or effective performance measurement is in need of proper factors for assessment (Menches & Hanna, 2006). Regardless of field or sector, any managerial performance measure should depend on identifying actions and behaviors displayed while achieving organizational objectives (Dulaimi & Longford, 1999). The set of these behavioral approaches to emotional, social and cognitive intelligence, namely the "competencies"; are directly or indirectly associated with each other under the roof of a common construct (Boyatzis, 2009).

Even though there is a clutter between definitions of "competence" and "competency" in the managerial literature, almost one and all concludes with the same distinction. While "competence" refers to identifiable skills, talent or ability to accomplish a task with standard performance, the term "competency" indicates

behavioral pattern of an individual in order to deliver a competent performance (Boyatzis, 2002; Moore, Cheng & Dainty, 2002; Robotham & Jubb, 1996; Rowe, 1995; Woodruffe, 1993). In short course, one centers upon what an individual must be able to do for a job, meanwhile other focuses on how this job can be done effectively (Rowe, 1995; Woodruffe, 1993). In 1970s US, McBer Consultancy became prominent identifying the competence and competency notions. McBer's work is referred as a generic underlying of micro or meso-level elements (competencies) as part of macro level elements (competences) (Moore *et. al.*, 2002). Simply put, Rowe exemplifies the "competence" notion with driving tests in which a particular competence is evaluated (1995). An individual completed the driving test successfully can be judged as competent for driving (for a specific job) while the one who failed can be judged as incompetent for driving (for a specific job again). Aftermath of Rowe's example it is obvious that; in order to assess effective conflict management performance the main question should be asked is "How good can you drive?".

The answer is hidden in the other term; competency. The concept of competency compounds context or situation specific performances with an individual's relevant skills and competences. The term competency contains a combination of characteristics, traits and behaviors deficient for a noteworthy job performance (Abraham, Karns, Shaw & Mena, 2001). In furtherance, Woodruffe (1993) asserts "competency" as an "umbrella term" covering behavioral dimensions that will ultimately effect the job performance either directly or indirectly. In other words, competencies refer to any personal factor that have an impact upon any remarkable performance on work activity. Due to this natural intercourse between job performance and competencies, Boyatzis (2009) asserts that competencies should reflect any successful performance outcome. After all, competencies are individual attributes that can be used as performance indicators or constructs that help to measure the level of performance effectiveness (Abraham *et. al.*, 2001; Moore *et. al.*,

2002; Robotham and Jubb, 1996; Rowe, 1995; Shippmann, Ash, Batjtsta, Carr, Eyde, Hesketh, Kehoe, Pearlman, Prien & Sanchez, 2000; Sengupta, Venkatesh & Sinha, 2013).

Despite the distinct classifications have been presented, the literature seems to be in a substantial agreement about the competency based performance measurement methodology. Competency assessment refers to comparing performers' acts for the same target -accomplishing a task- in a same organizational group based on a competency model constructed idiosyncratically (Rothwell & Lindholm, 1999). The main idea behind all is discriminating the "superior" performances from the "acceptable" ones. Although the underlying idea is the same, the literature includes distinct terminologies. According to Boyatzis (2009), competencies for delivering an outstanding performance should be differentiated from the threshold abilities -the behavioral habits decent for the same performance- required for the same task. These threshold abilities can be defined as legitimate standards for undertaking a certain job with an acceptable performance (Moore *et. al.*, 2002).

On the other hand, superior performance competencies refer to the behavioral sets of individuals performing the same tasks and duties at a higher level (Robotham & Jubb, 1996). Woodruff (1993) importantly notes that, in order to make this differentiation the main focus should be the degree of using these superior competencies, rather than concentrating on the amount of competencies in superior category. Similarly, Emmerling & Boyatzis (2012) claim that differentiating the frequency of displaying superior competencies for a certain task is much more important than analyzing the amount of mere abilities.

2.3.1 The Competency List

A competency list is a reference tool comprising groups of behaviors of an effective performer in a specific job. That is to say, any assessment procedure needs a competency list as an underlying foundation (Woodruffe, 1993). This list entails an assortment of behaviors and skills rather than any levels of abilities (Robotham & Jubb, 1996). The behavioral dimensions in a competency list should be explicit with user-friendly and clear labels, should have a balanced generality level and they must be observable (Woodruffe, 1993). This chapter aims to develop this list of competencies; by compiling behaviors associated with effective performance for managing construction conflict.

With the lack of ones concerning construction conflict management, the literature offers much significant examples of specific competency lists for construction management. As an example, Dainty, Cheng & Moore. proposed a set of performance excellence criteria for construction conflict management specifically (2005). This set includes 12 competencies for performance assessment of construction managers, which are; achievement orientation, initiative, information seeking, focus on client needs, impact and influence, directiveness, teamwork and cooperation, team leadership, analytical thinking, conceptual thinking, sel- control and flexibility. In a more recent study, Hanna, Ibrahim, Lotfallah, Iskandar & Russell (2016) proposed a competency list for effective construction project management under four main categories; cognitive, knowledge/experience, management and leadership:

(1) Cognitive Competencies: energetic and enthusiastic, assertive/aggressive/result driven, positive attitude/selflessness, vision, courage, adaptability, responsible/reliable, impact and influence, strategic thinking, initiative,

self-awareness, analytical thinking, detail oriented, personal effectiveness, achievement and action, possessing self-control skills

(2) Knowledge/Experience Competencies: Business/financial acumen, understanding all phases and interrelationship, continuously monitoring, awareness of and knowledge to use state of the art technology, disciplinary understanding a project managers job, certification/training

(3) Management Competencies: Communication management, integration management, issue management, focusing on client's needs, building knowledge network, business development/ability to sell, project controls, ability to plan, organizational savvy, knowledge and management of legal issues, process expertise, risk management, internal and external relations, quality management, human resources management and leadership in safety

(4) Leadership Competencies: Building coalitions with project team, developing and mentoring others, building consensus, strategic insight, building trust, team building, influential, innovation, engaging others and sensitivity/diverse thinking

Together with them, Edum-Fotwe & McCaffer (2000) also identified primary knowledge and skill elements (competencies) effecting construction project management performance under different categories:

(1) Technical skills: Planning and scheduling, construction management activities, basic technical knowledge in own field, productivity and cost control

(2) Managerial skills: Leadership, delegation, negotiation, decision making, motivation and promotion, teamwork, time management, top management relations

(3) Financial skills*:* Establishing budgets and reporting systems

(4) Legal skills: Drafting contracts

(5) Communication skills: Presentation, report writing, general and business correspondence

(6) General skills: Chairing meetings and understanding of organization

Distinctly from the formerly mentioned surveys focusing on a specific discipline, Boyatzis (2009) claimed a substantial list of distinctive competencies of outstanding performers from the threshold ones. According to his statement, there are three clusters of fourteen competencies that help differentiating any effective performance:

(1) Emotional Intelligence Competencies: emotional self-awareness, emotional self-control, adaptability, achievement orientation, positive outlook

(2) Social Intelligence Competencies: empathy, organizational awareness, coach and mentor, inspirational leadership, influence, negotiation, teamwork

(3) Cognitive Intelligence Competencies: systems thinking and pattern recognition

Similarly, Abraham *et. al.* (2001) also claimed a list of critical competencies for any effective management performance in any discipline. According to them, the ones with leadership, interpersonal and communication skills, technical expertise and business expertise and the ones who are results oriented, problem solver, team worker, quality focused, customer focused, flexible/adaptable, staff developer, dependable/trustworthy, safety conscious, risk taker, innovative, hard worker, time manager, and purposeful are highly prone to deliver superior management performance.

2.3.2 Construction Conflict Management Competencies

Behavior sets which are distinctive for assessing any other management performance in any other sector, may not be regarded as that suitable for measuring conflict management in construction. As it is stated below by Robotham & Jubb (1996), competencies are contingent on the situational context:

> The relative effectiveness between operators on a machine, for example, can be measured in terms of X number of units produced in Y units of time, but the practice of management cannot be so easily labelled. Even when a set of competences has been produced, which, if any, of these subsequent competences are common to all managerial positions, and which are specific to the role and level of management, the organization, and the cultural context?

Mainly, any performance in any discipline needs its own situation specific behavior sets. In order to measure construction conflict management performance, a peculiar set of competencies should be structured. Due to this, the key performance indicators for construction conflict management were derived from the current respective literature. Seven core competencies for effective construction conflict management were identified through the literature review of relevant researches:

- systems thinking,
- emotional self-control,
- creative problem solving,
- adaptability,
- influence and negotiation,
- empathy,
- group effectiveness and leadership.

Hereupon, each competency will be defined on an individual basis.

Systems Thinking

One of the major key points of managing construction conflict is recognizing the conflict situation within and between processes (Gardiner & Simmons, 1992). Due to this, if a manager aims to design an effective conflict intervention strategy, he/she should initially identify the current conditions and state of conflict (Ock &Han, 2003; Singh & Johnson 1998). This situation refers to the *systems thinking* in Boyatzis's (2009) list and it is defined as "perceiving multiple causal relationships in understanding phenomena or events". In other words, rather than focusing on one single part specifically, an effective conflict manager should also analyze the relationships between the parts simultaneously (Rahim, 2002). Any manager should develop an understanding for the sources and implications of situations through a systematic methodology (Dainty *et. al.*, 2005). As each problematic situation should be analyzed systematically prior to accomplishing any successful result (Singh & Vlatas, 1991), systems thinking of conflict managers should be evaluated for effective assessment.

Emotional Self-Control[3]

In order to reach an effective outcome from a conflict situation, any manager should react rapidly with an appropriate strategy (Gardiner & Simmons, 1992). However, it is not easy. Pursuing effective performance under stress needs self-control. A self-controller can retain him/herself from negative sequences of a conflicting situation. Thus he/she can propose a functional and constructive response more rapidly (Dainty

[3] Also referred as "self-management" in Sunindijo & Hadikusumo (2014); "impulse control" in Hopkins &Yunker (2015); "self-control" in Dainty *et. al. (*2005) and Gunkel *et. al.* (2016)

et. al., 2005). Moreover, managers with self-control can restrain any sudden emotional impulses due to anger and anxiety (Gunkel *et. al.*, 2016; Sunindijo & Hadikusumo, 2014[4]). According to Hopkins & Yunker's (2015) survey, managers with self-control tend to have more contemplated outcomes from a conflict situation. Considering the tense and contentious characteristics of construction industry, any manager with self-control increases the possibility of constitutive relationships among parties, while decreasing the amount of instantaneous decisions. Although Boyatzis mentioned emotional self-awareness per se, in this thesis, the two notions are collected under the title of emotional self-control. Yet, any manager with emotional self-awareness is postulated as deliberatively aware of his/her limits in chaotic conditions (Hopkins & Yunkel, 2015). Therefore, emotional self-awareness is presumed as a prerequisite competency for emotional self-control.

Creative Problem Solving[5]

Due to the fact that there is not one exact solution for any conflict situation, it is the manager's responsibility to design different approaches to a problem on an ongoing basis. Rather than proposing a single formulation, managers should analyze the problems from more than one perspective (Rahim, 2002). In such a case, effectiveness in creative problem solving is efficient for designing various strategies contingent upon the situation. The term defines reframing negative situations into positive opportunities for new outcomes. In other words, creative thinkers may construct various strategies for any problematic condition, derived from itself (Anderson & Polkinghorne, 2008). Together with, Hopkins & Yonker's (2015)

[4] In their recent study, Sunindijo and Hadikusumo (2014) resulted that, the managers with higher emotional intelligence were more flexible in justifying distinct conflict management techniques for different conditions and contexts. Although they mentioned every competency under the cluster of emotional intelligence; in this paper author prefers to analyze them individually.

[5] Also referred as "creative thinking" by Anderson & Polkinghorne (2008).

research resulted that, an individual with problem solving skills are more prone to design an effective conflict management strategy based upon the contextual characteristics of the situation. Moreover, they also stated that problem solving is the most significant among all emotional intelligence competencies used with multiple conflict management styles and scenarios. Depending on these, creative problem solving competency should be integrated to the competency list for measuring construction conflict management performance.

Adaptability[6]

Concerning the importance of contingency-based approaches in conflict management, an effective manager is expected to be able -flexible- in handling any change in conditions (Boyatzis, 2009) and in getting along with others whose styles or opinions differ from his/her's own (Darling & Walker, 2001). Similarly, Coleman & Kugler (2009) claim that "conflict adaptability" is one of the most critical entailments of any leadership and management practice and define the term as:

> […] conflict adaptivity: the capacity to identify and respond appropriately to different conflict situations or relevant changes in conflict situations by employing the different POs [psychological orientations] of the situated model and their related strategies in a manner consistent with the demands of the presenting situation.

Both two of the aforementioned surveys demonstrated that, adaptable managers are positively prone to having a satisfactory outcome in conflict situations. In short, an effective conflict manager should display adaptability in adjusting different conflict handling behaviors based on the contextual characteristics of each situation (Hopkins & Yunkel, 2015).

[6] Also referred as "flexibility" by Darling & Walker (2001).

Influence and Negotiation

Similar with the other industries, any dispute occurred in a construction project is generally negotiated in advance of any other intervention technique. Due to this, negotiation is an essential skill for each construction management professional (Cheung *et. al.*, 2006). However, in order to end up with a satisfactory outcome from a negotiation, a manager should have influencing skills in addition to conventional negotiation tactics. Boyatwzis (2009) defines *influence* as "wielding effective tactics for persuasion".

Empathy

Any construction manager having the ability to emphasize with others' feelings, perspectives and concerns, stays one step ahead in making use of opportunities through them (Boyatzis, 2009; Sunindijo & Hadikusumo, 2014). This is because;

> The aim is to develop mutual empathy, or at least a situation where both sides make concessions, and work towards constructive solutions, superordinate goals or as evaluation of their different perspectives into something new by a process of synergising[7].

Empathy promotes individuals to concern about others' interests and needs when they tend to manage conflict situations (Shih & Susanto, 2010).

[7] Leeds, Sir C.A. (1992) Managing Conflict in Organizations in Peter Fenn and Rod Gameson (Eds), *The French Approach to Handling Conflicts and to Negotiating: Certain Notable Features.* Retrieved from Taylor & Francis e-Library, 2005, pp. 152-163

Group effectiveness and Leadership

An effective conflict manager should conform with others in a collaborative manner to reach a shared goal (Boyatzis, 2009). Because, commitment to the team spirit will decrease the likelihood of conflict occurrence due to personal interests (DeVilbiss & Gilbert, 2005). As it is stated by Harmon (2003);

> If conflicts are caused by poor communication and the lack of a collaborative approach to constructing the project, then the prevention of conflicts should entail open communication and a teamwork atmosphere.

Building team spirit in construction projects- which are generally temporary organizational structures- is an effective technique for improving integrative management processes. Gardiner & Simmons (1998) emphasize the necessity of inter organizational team building on account of managing conflict in construction projects. They indicate that, team building helps overcoming the outliers and any organizational differentiation among individuals in any construction process.

In his competency list, Boyatzis (2009) mentioned four group effectiveness competencies; *"coach and mentor"* & *"inspirational leadership", "teamwork"* & *"organizational awareness"*. However, in this thesis, all will be analyzed under the term "group effectiveness and leadership". This is because, leadership in construction industry involves all actions which motivate and inspire subordinates to achieve beyond expectations while leading them to energize themselves in political, bureaucratic and resource based changes and conflicted conditions (Edum-Fotwe & McCaffer, 2000; Grisham, 2013). Due to this, the ability to assist team members in dealing effectively with stress and guiding them for interpersonal flexing when required gives an advantage to a construction manager in conflict and tense conditions (Darling & Walker, 2001).

As it is stated in previous chapters, construction projects are highly prone to conflict conditions due to their diverse characteristics and adversarial conditions. It is the leader of the team responds to such problematic situations, decides when to resolve and what to guide and sets the tempo (Grisham, 2013). Therefore, the "managerial challenge" (Loosemore, Nguyen & Denis, 2000) in construction sector is more than conducting transformation of resources between its planned start and planned finish. It is about how you can manage conflicts in an ongoing process, with minimum damage.

2.4 Gender in All

Although women employ considerable amount of professional positions in private sector, their representation in managerial positions still remain insufficient (Arditi & Balci, 2009; Aycan *et. al.*, 2012). According to Handerson *et. al.* (2013)'s research, the number of women in project management positions relatively decreased in a recent time period between 2008 and 2011 regardless of sector or region. For example in case of this thesis' origin, Turkey, Kabasakal *et. al.* (2017) refers to the 2014 TUIK data and declares that only 2.4% of the women professionals are holding manager positions. To constate, the increasing amount of women appearance in business transforms the attitudes slightly positive towards them in Turkey (Aycan, 2004). However, gender role stereotypes in management remains visible regardless of sector.

Along these lines, construction sector is in the forefront among others considering the inadequate amount of women professionals. In addition to the negative issues related to the sector's nature, women are reluctant to involve in due to the discrimination against women, sexual harassment and alienation (Arditi *et. al.*, 2013;

Arslan & Kivrak, 2004). One may consider that these impressions may be on the wane in managerial positions. On the contrary, the women ratio even decreases. Aslan & Kivrak (2004) exemplifies that, in the beginning of the 2000's only one of the major 95 construction contacting companies in Turkey has a female manager, who is while at the same time a member of the family company. In a same manner, only 2 of the 62 board members of first 6 companies are occupied by women managers (Arslan & Kivrak, 2004).

Although construction industry's bias through femininity is still an issue, the increasing amount of women managers indicate that female are also volunteered to be in this managerial challenge. However, if you are a woman in construction sector, sooner or later you have to contend with the tense and aggressive culture of the industry. This is because, the sector is male-centric; it is characterized by male professionals, who are mostly dominating, aggressive and gallant (Loosemore & Galea, 2008). Despite the fact that the number of women entering construction sector is rapidly increasing, the culture of construction industry is still perceptibly masculine (Gale & Cartwright, 1995). Any woman intents to get in the industry has to fit in this culture which is "male" with the image of hard drinking, aggressive, sexist and hard playing side of masculine gender role (Gale A. W., 1992). Due to their dominating masculine values, male to male interactions in conflict situations have a greater tendency to end up with escalated tension and crisis (Loosemore & Galea, 2008). In such a way that, masculine gender role orientations increase the aggressiveness in individuals' responses to conflict situations (Coleman, Goldman & Kugler, 2009). However, when a woman enters the picture:

> […] the power of female presence as using men's discomfort in confronting or negotiations with women to their (women's) advantage. […] in terms of their ability to diffuse potential conflicts and arguments by mare fact of being present in a situation (Henderson, Stackman & Koh, 2013).

Potter (2005) prefers to define this situation as "how female archetypes can bypass the tango of male egos"[8]. She states that any woman appearance can bring down the temperature of a conflict situation due to their less threatening and less aggressive image in the eyes of other conflicting parties.

The literature offers several theoretical analogies among conflict management styles of male and female professionals. However, the dominant approach thus far has been merely analyzing the managers' performances in terms of five modes of conflict management. One of the views that emerges from the literature denies any significant difference between male and female professionals in their conflict management behaviors. For instance, Odetunde (2013) and Korabik, Baril & Watson (1993)'s survey results demonstrate this absence of gender role. In furtherance, Gunkel *et. al.*'s (2016) latest survey also ignores any influence of femininity and masculinity on managers' preferred conflict management techniques.

On the contrary, most of the early literature on gender and conflict management assert the role of gender orientation. However, this side of the literature is characterized by inconsistent outcomes. To set an example, Holt & DeVore's (2005) and Özkalp *et. al.'*s (2009) researches identified that female tend to use compromising more than men by a wide margin. However, Ome (2013) and Gbadamosi's (2014) newsworthy surveys came to a conclusion that male managers appeal to compromising style higher than their female counterparts. Furthermore, Brahnam, Margavio, Hignite, Barrier & Chin (2005) and Brewer, Mitchell & Weber (2002) could not identify any significant difference on this construct. Similarly, the

[8] Potter mentions the reference of this quotation as "one (male) negotiations specialist":
Potter A., 2005. Why conflict mediation is not just a job for men. *Humanitarian Dialogue (HD) Opinion,* October 2005, pp. 2-18

avoiding style is also an object at issue. Some claimed that women are less avoiding than men (Brahnam *et. al.*, 2005; Gbadamosi, Baghestan & Al-Mabrouk, 2014) while the others concluded that feminine role orientation is more prone to be associated with avoiding (Brewer *et. al.*, 2002; Davis, Capobianco & Kraus, 2010). Meanwhile, Holt & DeVore (2005) did not report any remarkable affect of gender on opting avoiding style. A similar inconsistency can also be seen in results about collaborating style. Although Gbadamosi *et. al*. did not identify any difference, Henderson *et. al.,* (2013) and Brahnam *et. al.,*'s (2005) surveys claimed that female show high preference for collaborative methods than males. Last but not least, although there are some surveys asserting the contrary (Gbadamosi *et. al.,* 2014), Rosenthal & Hautaluoma resulted that women are less dominating and more accommodating (2001). In line with the public gender stereotypes, women mostly prefer mild strategies rather than the strongest one; which is the dominating (Chao & Tian, 2013). These results are in furtherance with Brewer *et. al.*(2002); in which they resulted that masculine gender orientation is disposed to dominating style more than feminine and androgynous[9] orientations.

Although the dominant approach in literature has been comparing preferences in terms of the five styles, there are also some remarkable studies focusing on "behavioral repertoires"[10] of each gender either in management or in conflict situations. In their recent survey, Davis *et. al.* (2010) resulted that female are more likely to reflect active constructive behaviors in conflict situations. To be more precise, they found female positive significant gender effects for the behaviors; perspective thinking, creating solutions, expressing emotions and reaching out. In furtherance, women can get involved with the underlying reasons of a conflict

[9] The androgynous gender role refers to individuals who acquire high levels of masculinity and femininity at the same time (Brewer et al, 2002).
[10] See Davis et. al. (2010). Gender Differences in Responding to Conflict in the Workplace: Evidence from a Large Sample of Working Adults. *Sex Roles,* 63, page 551

situation by isolating themselves from the tone of a disruptive condition (Loosemore & Galea, 2008). Even though they do not focus on conflict management behavior, there are two significant studies that need to be mentioned. In 2009 Arditi & Balcı conducted a research concerning the managerial competencies of male and female construction managers. The scores of female managers in sensitivity, customer focus and authority and presence were highly above from their male counterparts' scores. Then in 2013, Arditi, Gluch & Holmdahl updated this research and ended up with different results. Although both studies showed that female managers were more sensitive, in contradistinction to the previous survey, this indicated that male construction managers had higher scores in decision making and resilience.

2.5 Literature Review Discussion

Conflicts have great possibilities to arise within or between processes of a construction project, due to the serial or parallel relations among multitude activities. Conflict management practice is firstly about recognizing the conflict at the proper time within or between processes. Secondly it requires an effectively working mechanism rapidly produces the most appropriate response to the conflict situation (Gardiner & Simmons, 2001). That is to say, the "managerial challenge" is about how you design a behavioral approach in between these two phases (Loosemore, 1999). This thesis aims to investigate whether construction manager's gender has any significant effect on his/her perceptions or behavioral sets when they face with this "managerial challenge".

Beyond all these definitions and arguments reviewed in the previous sections, two main shortcomings of today's literature will be addressed. Both two problems are about their research material and methods. Firstly, most of the previous surveys use the five modes of conflict management as their research tools. However, none of the

five conflict management styles can be defined as the ideal one regardless of any information about the context they occur. Subject to the situational characteristics of conflict management, any intervention technique can be the most effective one depending on the context. Namely, previous surveys remain deficient for making conclusive statements about conflict management performance effectiveness of construction managers. Unfortunately, they only provide information about general preferences and perceptions of construction managers in reference to conflict management practice in construction sector. Specific to the conflict management practice, depending on the contingent characteristics of itself, any assessment based on competencies should be structured upon the cases or conflict scenarios. Loosemore and Galea's research conducted in 2008 can be given as an instructive example. Their research investigated the effect of female participation in a conflict situation. In order to do that, they used scenario based interviews. By this way, they made the respondents equally familiar with certain industry related real life conflict scenarios.

Secondly, any managerial performance measure should depend on identifying its own situation specific behavior sets: competencies. Distinctively, some of the recent surveys use competencies or behavioral patterns for analyzing the gender role in conflict management. Although their research tools are valid beyond doubt, there is one central question about whether each behavioral approach has the same "weight" for a specified job definition. For instance, is the competency of "sensitivity" equally important as "decision making" or "expressing emotions" as "resilience" when managing construction conflicts? Certainly not. A level of importance or namely the hierarchy between these specified competencies should be identified. Otherwise, any performance measurement disregarding the weight difference among these competencies provide inconclusive results. Therefore, previous studies results outcomes for nothing but general comparisons of managerial competencies based on different variables.

Due to these two shortcomings in the present literature, this thesis will hereupon continue with a research methodology grounded on a scenario based competency assessment for construction conflict management performance, using manager's gender as a subject variable.

CHAPTER 3

MATERIAL AND METHOD

This chapter presents necessary information about the research material and methodology. The first section provides information about the used *after-scenario behavioral rating,* together with the presented cases and measures in detail. In the second section, the research method is briefly illustrated together with its structure, procedure, sample selection and statistical data analysis and assessment methods used.

3.1 Research Material

After the detailed examinations conducted so far, there are two main notices identified offering an insight into the research framework:

- any kind of conflict management performance measurement should be contingent upon a common context,
- there are seven competencies reflecting effective construction conflict management performance: *systems thinking, emotional self-control, creative problem solving, adaptability, influence and negotiation, empathy, group effectiveness and leadership*.

Based on these notices, the study is structured upon a competency based *after-scenario behavioral rating,* which aims to:

- situate all respondents in a common context by providing construction specific conflict cases.
- define the superior and threshold conflict management performances for each three cases through the ratings given to the seven different competency based management scenarios.
- identify any significant difference between ratings of male and female respondents given to the proposed conflict management scenarios.

An *after scenario behavioral rating* is basically a case based performance measurement approach through a hypothetical situation methodology. Hypothetical situations involving conflicts are widely used for measuring responses and reactions of children and adults in such conditions. They allow us to observe real-life responses without creating stressful and tense scenes and to control the scenarios of conflict emergence (Johnson, LaVoie, Eggenburg, Mahoney & Pounds, 2001). A scenario places respondents as actors of certain industry specific conditions and:

> […] a scenario tells a compelling story describing the challenge that participants must meet or problem they must solve and conveys, explicitly, or implicitly, the rules that shape the kinds of decisions they can make. A scenario shapes the strategic space in which participants will act, conveying the incentives and goals which motivate them and other actors or teams, the types of decisions that must be made, and, usually, some guidance on the quality of "goodness" of those decisions (Bartels, McCown & Wilkie, 2012).

In this research, the respondents are presented with three hypothetical conflict cases (scenarios) referring to three pre-identified types of construction conflicts: (1) execution conflicts (2) planning conflicts and (3) relational conflicts. Then, seven alternative behavioral conflict management scenarios are proposed for all three cases. Each scenario reflects one of the seven competencies from the construction

conflict competency list. The respondents are asked to rate each behavioral scenario based on a 5 Point Likert Scale as 1 being "the one that one definitely do not prefer to exhibit" and 5 being "the one that one definitely prefer to exhibit". Although they were not given to the respondents, the equivalences of each point is as follows; 1 refers "Threshold Performance", 2 refers "Moderately Threshold Performance", 3 refers "Neutral Performance", 4 refers "Moderately Superior Performance" and as 5 refers "Superior Performance". Through this rating, each management scenario reaches an overall score in terms of performance measurement. The behavioral sets rated 4 and above are assigned as "Superior" and rated 2 and below are assigned as "Threshold" performances for managing the relative conflict situation. This allows us to make comparisons among respondents' conflict management performance using distinct subject variables like age, experience, gender etc. After all, the proposed behavioral rating identifies:

- whether there is a general *level of importance (weight)* among these seven competencies, or their relative importance is circumstantial
- whether there is an ideal management approach for each conflict case or there can be multiple effective management alternatives
- whether there is a significant difference between the ratings of male and female construction professionals given to the proposed scenarios

In order to validate the conceptual relations between the proposed management scenarios and the competencies they are reflecting, a relational mapping test is initially distributed to 7 graduate students from Middle East Technical University Building Science Graduate Program. The respondents were asked to map the management scenarios with the competencies they relate one to one (the original Validity Check Relational Mapping Test Phase I document is presented in Appendix

A). Five management scenarios for Cases A and B are revised based on the Validity Check Phase I results. Then, the second phase was conducted a week later. Due to the absence of one of the respondents in the second week, phase II was conducted among 6 of the 7 graduate students with 0-5 years of occupational experience attended in the phase I (the original Validity Check Relational Mapping Test Phase II document is presented in Appendix B). At the end of the second phase of this validity check it is resulted that, each of the seven conflict management scenarios proposed for the conflict cases are effective in representing the competency they are related. The situational characteristics, the validity check results and the finalized management scenarios of each conflict case will be presented in following sub-sections on an individual basis.

Hypothetical Cases

All three of the hypothetical conflict cases are subjected to one single construction element; a mixed use project in Ankara, Turkey with 40.000 m2 construction area. Company X is in the job owner position while Company Y is in the contractor. All contracts with the four main subcontractor firms were signed:

- The Company K as Concrete Works Subcontractor,
- The Company I as Finishing Works Subcontractor,
- The Company M as Mechanical Works Subcontractor,
- The Company E as Electrical Works Subcontractor

The planned project completion date was specified in each contract together with the requests for bank letters of guarantee. However, the project has not been completed within the planned duration and have been progressing with time extension due to the agreements between Companies X and Y.

Conflict Case A

The case below refers to a problematic situation occurred in the project execution process, which can be exemplified for an execution conflict. The organization scheme reflecting the sub-ordinate and superior relations for the conflict case is illustrated in Figure 3.1 below.

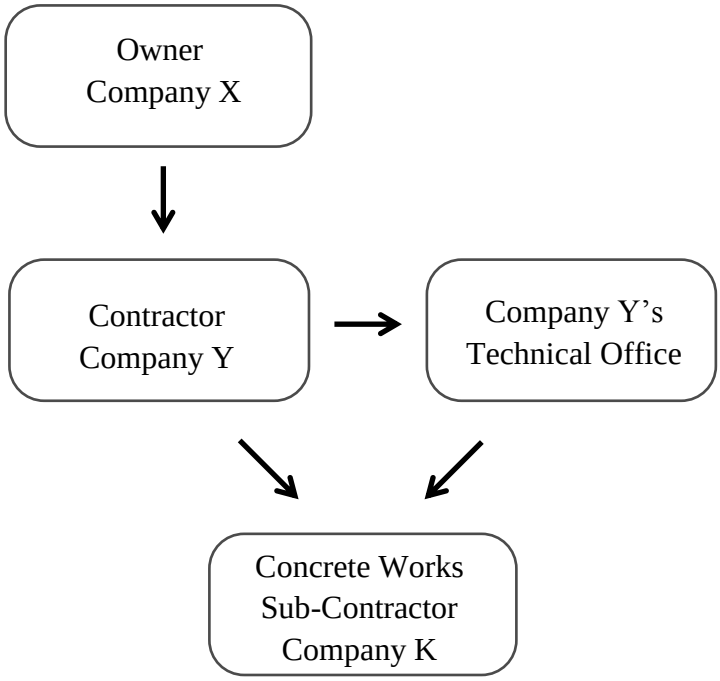

Figure 3.1 Organization scheme for Case A

The unskilled labour forces, headworkers and foremen of the Concrete Works Subcontractor Company K have been in work stoppage due to their unpaid wages. Only 40% of the project scope in the contract have been completed yet and the rough works have already been 3 months behind the planned schedule. When the technical

office of Company Y analyzed this quarterly delay, they identified that the Concrete Works Subcontractor Company K had been already suffering a loss due to the comparisons of hourly wage bills and interim payments. However, as there was not a request for mark-up from Company K, the technical office did not take any action. The Contractor Company Y negotiated with the other party and founded that the Concrete Works Subcontractor Company K would declare their withdrawal from the contract in consequence of their economical inadequacy. Besides, it has been founded that, the accountant of Company Y had forgotten to take the bank letter of guarantee from the Company K subsequent to the signature of contract.

The respondents are presented with seven different management scenarios for Case A, each representing/reflecting one of the seven conflict management competencies:

- I would initially leave off and evaluate the case. I would prefer analyzing every trigger factor up until this point and then develop an action plan on this basis *(systems thinking).*
- I would hire the technical team who missed out informing me about the case earlier and the accountant who forgot to take the bank letter of guarantee from the Company K away *(emotional self-control).*
- In order to prevent any work stoppage, I would propose that the contractor Y Company would undertake the unpaid wages of the workers prior to negotiating the future of Company K in the project *(adaptability).*
- As we are already behind the schedule, we can not venture any more delays. Due to this I would immediately declare a notice of termination for the contract and initiate a tender for another rough works company *(creative problem solving).*
- I would initiate negotiations with Company K in order to convince them to transfer their entire budget to this project. I would deduct the budgets of other

work items for providing them an additional payment in order to complete the remaining 60% of the project *(influence and negotiation).*

- I would put myself on the Company K's place and try to find a satisfactory solution for both parties, bearing in mind that this may put the project more behind the schedule *(empathy).*
- I would delegate this to the technical department, which is the most prevalent one in terms of the project budget and schedule. Moreover, I would demand from them to developing a solution that may compensate their mistakes about not informing me about the Company K's economical situation earlier *(group effectiveness and leadership).*

Validity Check Results for Conflict Case A

The results of the first phase of the relational mapping test is distributed to 7 graduate students from Middle East Technical University Building Science Graduate Program is as follows:

- 100% of the respondents matched the behavioral sets referring to the competencies *emotional self-control* and *empathy* with one to one correspondence.
- 85,7% of the responses were true for the pairings of i*nfluence and negotiation* and *systems thinking*.
- The *adaptability* and *group effectiveness and leadership* is matched correctly by th 57,2% of the participants.
- The only accuracy rate below 50% is *creative problem solving* with 14,3% (Figure 3.2).

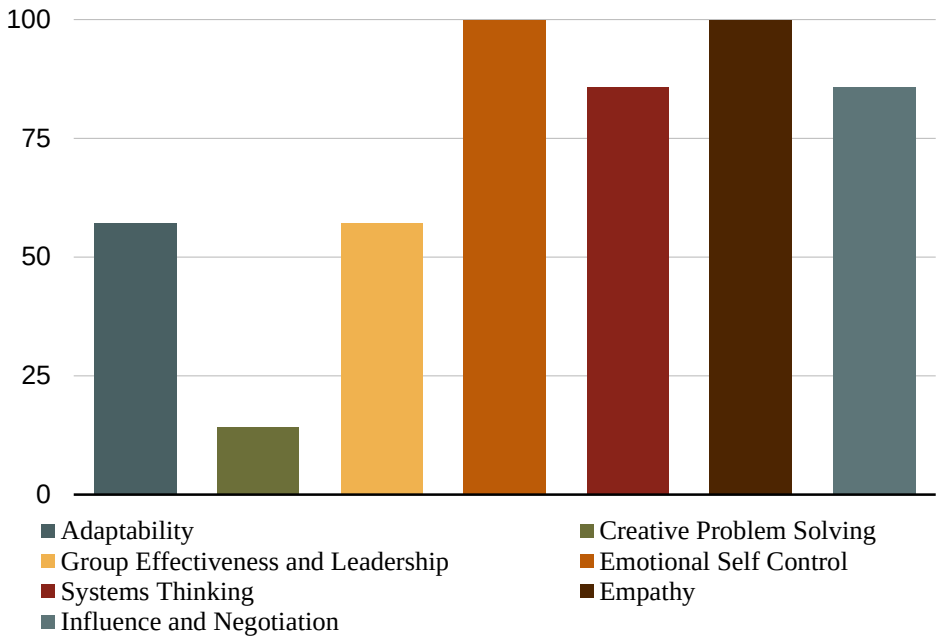

Figure 3.2 Accuracy Rates of Validity Check Phase I for Conflict Case A

Due to the validity check phase I outcomes, it is clear that there is a significant confusion between three competency referred behavioral sets for Case I; *group effectiveness and leadership*, *adaptability* and *creative problem solving.* In order to improve, the three management scenarios at issue are revised for the second phase of the validity check as follows:

- Introducing a new subcontractor company would cause excessive delays. I would keep up with the conditions and propose that Company Y would undertake the unpaid wedges (*adaptability* **revised**).
- Even if the wedges are undertaken for now, it is clear that Company K is unable to carry through this task. I would immediately initiate a tender for a new rough works subcontractor company *(creative problem solving* **revised***).*

- The damage is done. I would initially gather the team around and try to prevent them doing any similar mistakes in future *(group effectiveness and leadership* **revised***)*.

Following the updated behavioral sets for three competencies; *adaptability*, *creative problem solving* and *group effectiveness and leadership*, all 6 respondents attended the second phase of the validity test paired of the proposed behavioral sets and related competencies with 100% correspondence. Even if the absent respondent was attended and did not paired all three competencies accurately, minimum 85,7% of the respondents would have matched the competencies and scenarios with one to one correspondence (Figure 3.3).

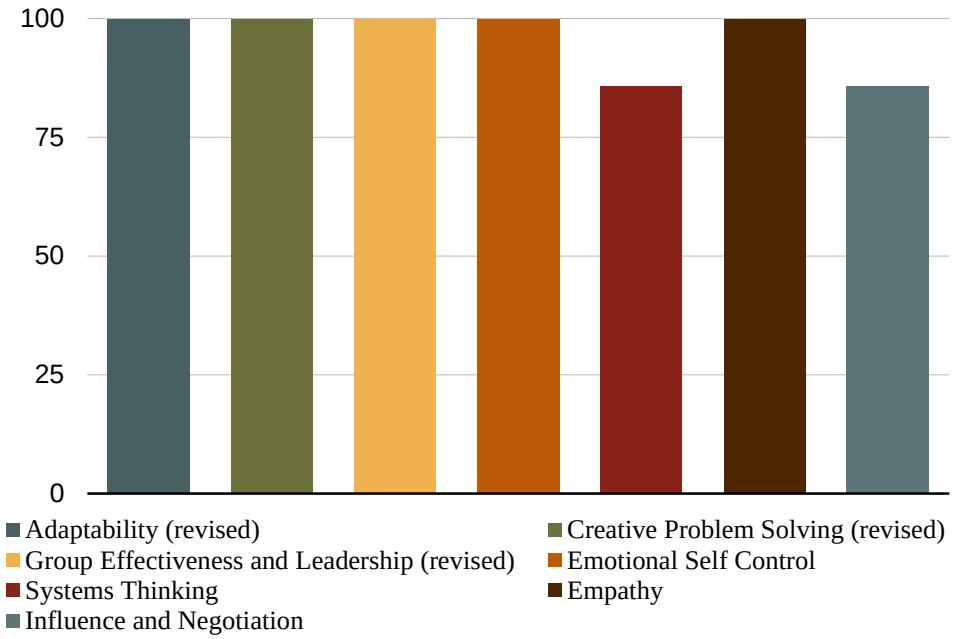

Figure 3.3 Accuracy Rates of Validity Check Phase II for Conflict Case A

Conflict Case B

The case below refers to a problematic situation occurred due to a contractual deficiency, which can be exemplified for a planning conflict. The organization scheme reflecting the sub-ordinate and superior relations for the conflict case is illustrated in Figure 3.4 below.

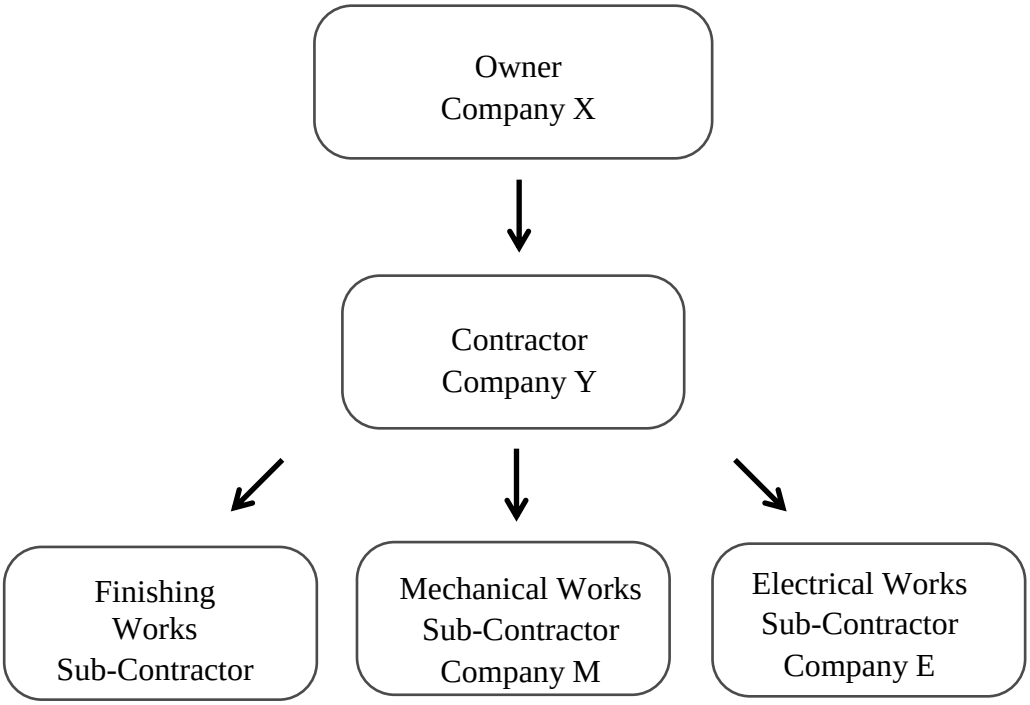

Figure 3.4 Organization scheme for Case B

Since the completion date of the project has passed, all of the subcontractor contracts were expired. However, only the %70 of the total project have been completed yet. Based on this, each one of the three main subcontractor company (The Company I as Finishing Works Subcontractor, The Company M as Mechanical Works Subcontractor and The Company E as Electrical Works Subcontractor) made a

request for a mark-up on their contractural payments for the remaining %30 of the work. They based their requests on the changes in currencies, the increase in the minimum wages and the rate of inflation. It is stated in the contracts that each company will pay a delay penalty if the companies can not complete their executions until the due date of the contract. However, things did not go as planned, and contracts lost their validity from the contract termination date. The Contractor Company Y negotiated with the other parties and founded that all three subcontractor companies will pull out of their jobs unless there is a markup on their contractual prices.

The respondents are presented with seven different management scenarios for Case B, each representing/reflecting one of the seven conflict management competencies:

- I would make a conditional assessment by taking a chance of being more behind the schedule. I would evaluate the effects of changes in dolar/euro currencies, the increase in the minimum wage an the inflation ratio on their remaining workloads. Then, due to the results of this evaluation I may settle for an extra payment or not *(systems thinking)*.
- I would declare that the subcontractors also had role in the project's failure for meeting the deadline. I would not compromise about the markup and I would set forth their final opinion in scathing terms by saying that they can pull out of their jobs *(emotional self-control)*.
- I would offer of assistance to them for acquiring job in the upcoming projects of The Contractor Company Y, if they would settle for a lower price for a markup *(creative problem solving)*.
- We are already behind the schedule, I can not risk any work stoppage. In order to execute the work flow resilient, I would deduct the budgets of other work items to provide the requested markups *(adaptability)*.

- I would explain them pulling out of their jobs before completion would cause negative outcomes for their future jobs. Additionally, I would convince them to withdraw their markup requests unless they would damage their professional relations with the Contractor Company Y *(influence and negotiation).*
- I would like to meet with all the project and planning departments so that they can work together and propose alternative solutions which would cause minimum loss on the budget *(team effectiveness and leadership).*
- I would put myself on their place and agree to pay their claimed mark-ups *(empathy).*

Validity Check Results for Conflict Case B

The results of the first phase of the relational mapping test is distributed to 7 graduate students from Middle East Technical University Building Science Graduate Program is as follows:

- 100% of the respondents paired off with the relevant behavioral sets with the competencies *adaptability, systems thinking, emotional self control, empathy, influence and negotiation* with one-to-one correspondence.
- *Group effectiveness and leadership* and c*reative problem solving* have 85,7% proper matching responses from the participants (Figure 3.5).

Based on these results, Case B is not included in the Validity Check Phase II and all seven scenarios proposed for Case B is accepted for the final questionnaire.

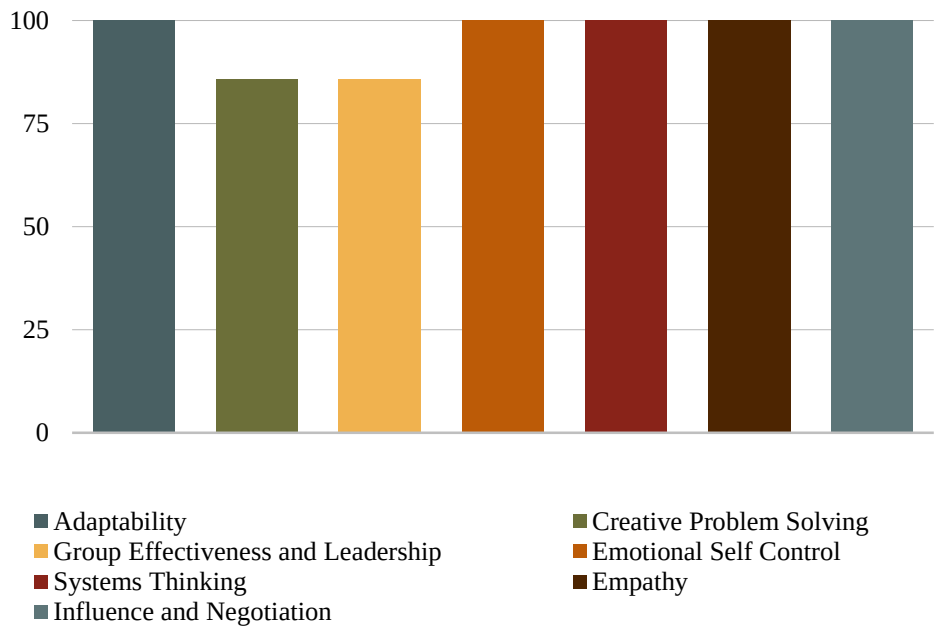

Figure 3.5 Accuracy Rates of Validity Check Phase I for Conflict Case B

Conflict Case C

The case below refers to a problematic situation occurred due to behavioral problems among team members, which can be exemplified for a relational conflict. The organization scheme reflecting the sub-ordinate and superior relations for the conflict case is illustrated in Figure 3.6 below.

The Finishing Works Chief of the Contractor Company Y found a fault in a foremen's work and ordered him to fix it in a fairly rigid manner. Afterwards, the foremen walked on the Finishing Works Chief Architect with a malt. This caused a physical and verbal argument among parties.

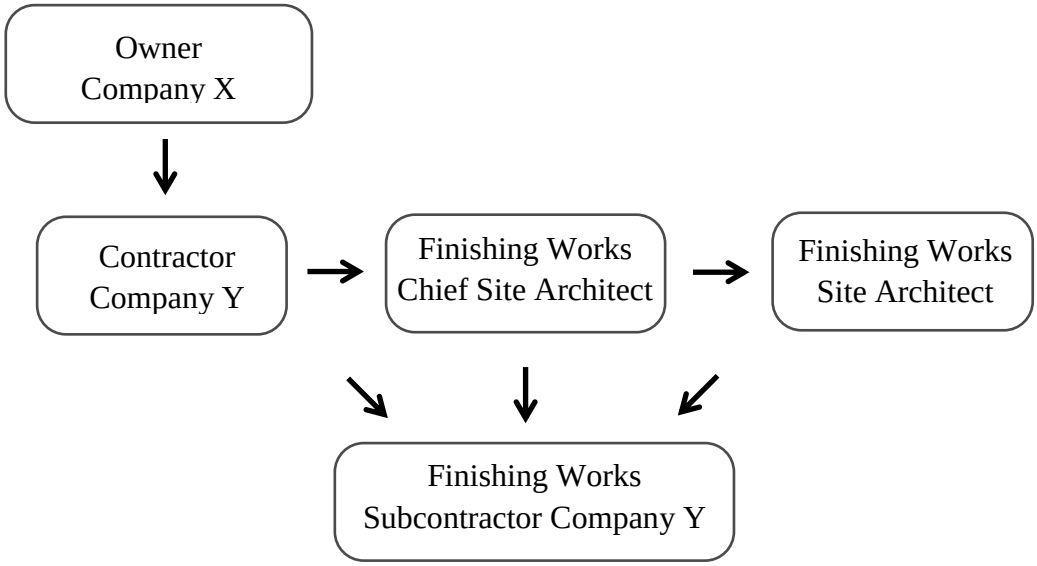

Figure 3.6 Organization scheme for Case C

Following this, the Finishing Works Chief Architect asked Project Manager about the removal of this foremen from the construction site. He said that he would resign, unless the Trim Works Subcontractor Company I would switch the team members by dismissing the mentioned foreman. The Contractor Company Y negotiated with the Trim Works Subcontractor Company I and founded that they need 2 months to restructure a new team. Meanwhile, they would not be able to perform any job in the construction site.

The respondents are presented with seven different management scenarios for Case C, each representing/reflecting one of the seven conflict management competencies:

- I would avoid anything that may harm the team spirit. In any case I would stand behind my employee and try to help him to get his way *(team effectiveness and leadership).*
- I would consider that there might be other underlying reasons behind the foreman's reaction and I would try to comprehend his behavior *(empathy).*

- I would negotiate with the Finishing Works Chief Architect and convince him to compensate and meet halfway with the other party *(influence and negotiation)*.
- I would offer the Finishing Works Subcontractor Company I to move the foreman at issue to another project *(adaptability)*.
- I would assign a Finishing Works Headworker who would serve between the subcontractor team and the Finishing Works Chief Architect and make him to contact directly to the site team *(creative problem solving)*.
- I would blame the Finishing Works Chief Architect for pausing the production due to a situational personal problem and I would declare him that he could resign whenever he wanted *(emotional self control).*
- I would rather to focus on the trigger factors rather than the situation itself. I would remind the site personal about their job descriptions and warn the Finishing Works Architect against his responsibilities about the production checks *(systems thinking).*

Validity Check Results for Conflict Case C

The results of the first phase of the relational mapping test is distributed to 7 graduate students from Middle East Technical University Building Science Graduate Program is as follows:

- 100% of the respondents paired of the relevant behavioral sets with *systems thinking* and *influence and negotiation* accurately.
- Empathy, *group effectiveness and leadership* and e*motional self control* has 85,7% and 71,4% correct matching responses respectively.

- Distinctly, only 57,2% of the participants succeeded to pair *adaptability* and *creative problem solving* with their matching management scenarios (Figure 3.7).

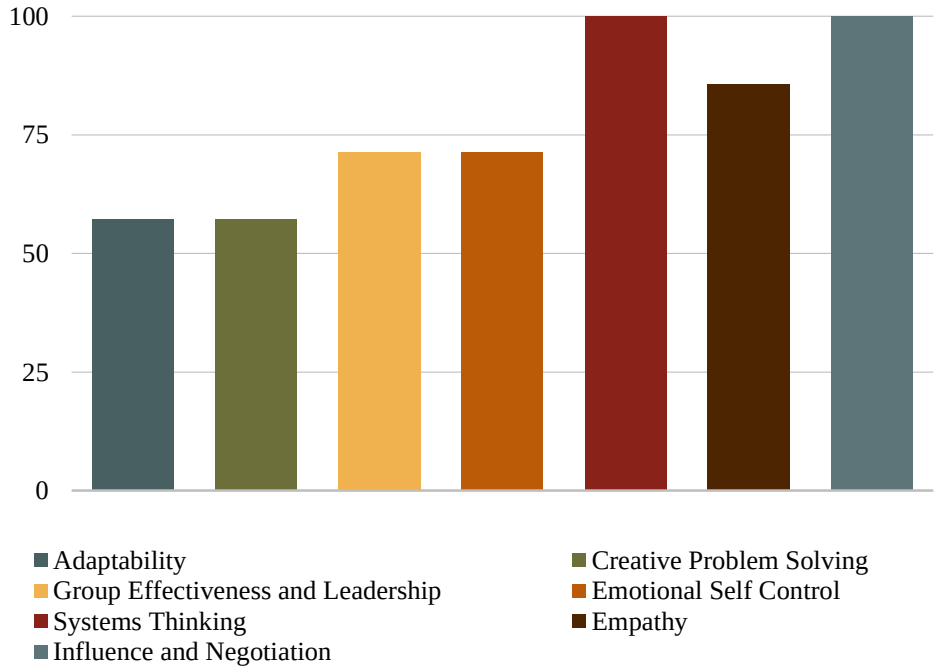

Figure 3.7 Accuracy Rates of Validity Check Phase I for Conflict Case C

Due to the validity check phase I outcomes, it is clear that almost half of the respondents were confused about two behavioral sets and their competency references for Case III; *adaptability* and *creative problem solving*. In order to clarify, the two management scenarios at issue are revised for the second phase of the validity check as follows:

- My priority is sticking to the planned schedule. I would propose to relocate the foreman at issue for a limited time period as a solution in the short haul. Then I would find a permanent solution (*adaptability* **revised**).

- I would assign a Fine Works Headworker who would serve between the subcontractor team and the Fine Works Chief Architect. By this way I could

prevent any direct interaction between the problematic parties *(creative problem solving* **revised**).

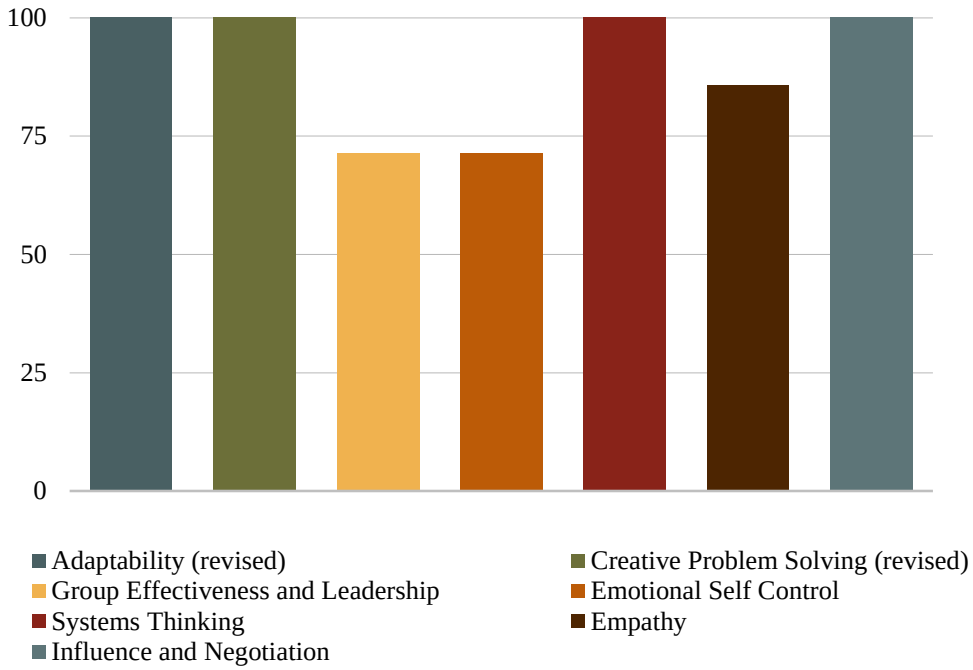

Figure 3.8 Accuracy Rates of Validity Check Phase II for Conflict Case C

Due to the Validity Check Phase I outcomes, the behavioral sets referring to the competencies *adaptability* and *creative problem solving* was updated as above. All 6 of the respondents paired off each behavioral set with its related competency in one to one correspondence. Even if the absent respondent was attended and did not paired all three competencies accurately, minimum 85,7% of the respondents would have matched the competencies and scenarios with one to one correspondence (Figure 3.8).

3.2 Research Method

The finalized *after scenario behavioral rating* questionnaire is administrated via an online survey to reach a broad population of construction managers. In order to gather reliable and unbiased data, the respondents are selected from construction management professionals involved in distinct companies and disciplines with distinct work experiences.

3.2.1 Participants and Execution

The respondents are reached through an online business social network: LinkedIn Corporation ©, which has two main Turkish project management networking groups currently in use:

- Istanbul Project Management Association (IPYD) group with 2.055 active members
- Turkish Project Management Professionals group with 1.730 active members.

Through a detailed screening process, it is identified that; 102 members of the Istanbul Project Management Association (IPYD) group (4,96%) and 84 members of the Turkish Project Management Professionals group (4,85%) are active construction management professionals. After eliminating the ones who are members of both two groups; 166 construction management professionals in total are finalized as a target group.

A mass introductory text presenting initial information about the study and the questionnaire structure is distributed individually to the respondent candidates via LinkedIn messaging system. This text also includes the open web URL of the online

survey for any voluntary participation. The web URL is activated on 07.03.2017 and remained active until 22.03.2017. 166 messages are sent in total and 96 respondents are attended the survey in the defined time period with a response rate of 57,83%. However, 14 of the initial responses are not valid or remained incomplete. As a result of this elimination, the final evaluation is conducted among 82 valid responses with a 49,4% response rate of the surveys initially distributed.

3.2.2 Questionnaire Structure

The distributed questionnaire is structured under four main sections. The first section provides introductory information about the researcher, the institution and the general information about the survey. The second section aims to gather personal data from the respondents about their (1) names, (2) valid electronic mail addresses, (3) experience ranges in the construction sector, (4) current managerial positions they are holding and (5) their gender. Although first three questions are arranged as *optional*, the fourth and fifth questions about managerial positions and gender are structured as *obligatory to answer*. Thereafter, the third section outlines a hypothetical situation of a construction project for the forthcoming conflict cases. The final section of the questionnaire presents three distinct conflict cases and seven management scenarios for each case. In the final section, the respondents are requested to analyze the cases as the project manager of the presented project and rate each management scenario based on their executive preferences based on a Likert scale as 1 being "the one that one definitely do not prefer to exhibit" and 5 being "the one that one definitely prefer to exhibit". Each three questions in the final section is arranged as *obligatory to answer*. The survey is conducted in Turkish which is the mother tongue of all participants.

3.3 Summary of the Chapter

This chapter provided necessary information about the research material and method, in line with the structure and execution of the distributed questionnaire. As a result, an after scenario questionnaire is conducted among 82 construction management professionals. The questionnaire includes three different conflict cases as one from each type (execution, planning and relational conflict). Seven different management scenarios each reflecting one of the construction conflict management competencies (group effectiveness and leadership, systems thinking, creative problem solving, negotiation, adaptability, empathy, emotional self-control) are presented for each case. The scenarios' semantic relations with the relative competencies are validated by Building Science master degree students. The original distributed documents for each validity tests and the questionnaire are attached in the appendices. The evaluation of the obtained data is carried out in the next chapter together with corresponding visual aids.

CHAPTER 4

RESULTS AND DISCUSSION

This chapter mainly focuses on the evaluation of the distributed after scenario behavioral rating through quantitative data outcomes. Initially the occupational and personal information of the participants are described prior to the statistical results and inferences derived from the study. Following that, the overall scores of proposed conflict management scenario alternatives will be calculated for each case individually. Then, an analogy of these scores will be made in order to identify whether there is a level of importance among the seven construction conflict management competencies. Finally, the scores given by male and female respondents were be analyzed respectively to identify any significant difference between their conflict management approaches.

4.1. Sample Population

This section clarifies the personal and occupational statistics of the respondents attended the survey. The first three questions; (1) nominal information, (2) electronic mail addresses and (3) years of experience are optional. Professionals with 10-20 years of experience constitute the dominant clutch with 45,1% of the total sample population. It is followed by 20-30 years (23,2%) and 0-10 years (25,6%). Professionals having experience more than 30 years have the lowest level of participation with 6,1% (Figure 4.1).

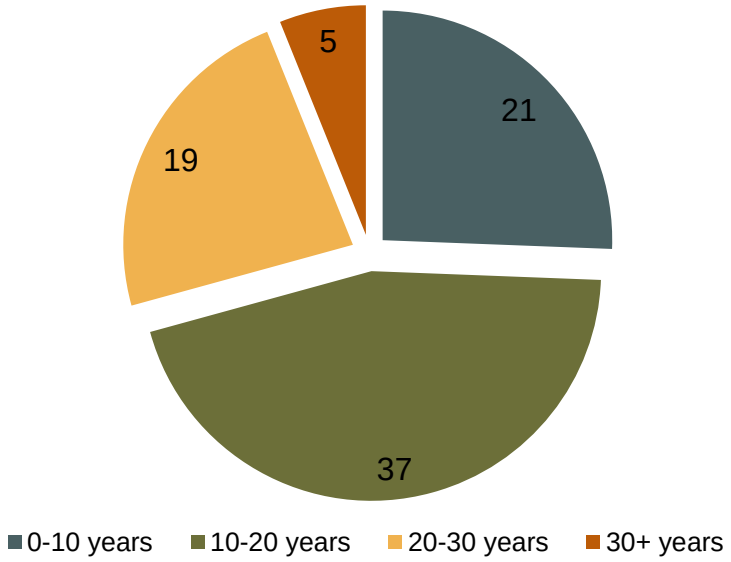

Figure 4.1 Experience Ranges of the Respondents

Although the first three questions are not compulsory, the respondents are obliged to answer the following two questions about their occupational/departmental information and their gender. The highest ratio of participation is from the ones holding the project manager/coordinator positions with 39% (Figure 4.2). The rest of the sample population is composed of the technical office managers/chiefs (23,2%), senior managers/executives (8,5%), construction management consultants (12,2%), site managers (9,8%) and design group managers (7,3%). Projecting the real-time construction environment, there is a significant male dominancy in the sample population.

Although 38 questionnaire requests were sent to female construction managers, only 39,5% of them attended the survey. However, male managers have a better participation ratio with 52,3%. As a result of this, the research group is mostly dominated by men with 81,7% (Figure 4.3).

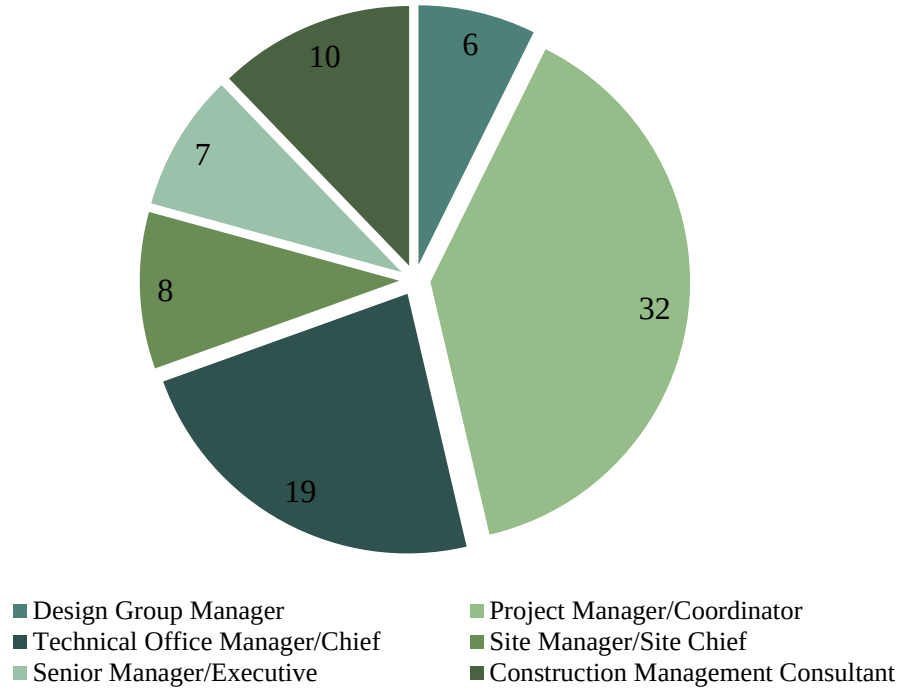

Figure 4.2 Occupational Positions of the Respondents

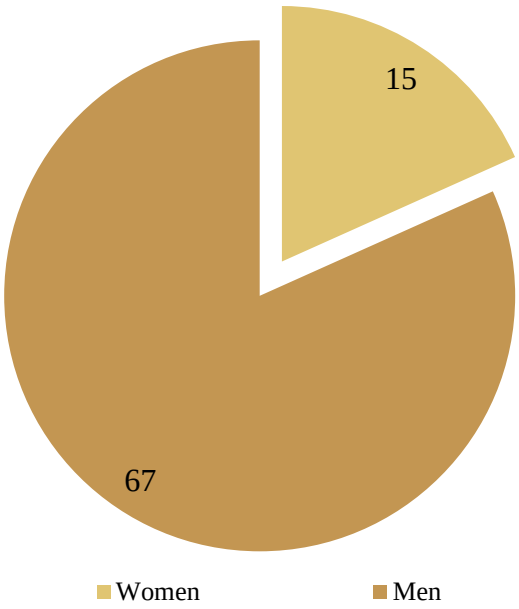

Figure 4.3 Gender Ranges of the Respondents

4.2 Conflict Management Scenario Ratings

Initially, an informative text defining a hypothetical condition of a construction project is situated. Following that, three different conflict cases (execution conflict, planning conflict, relational conflict) and seven distinct management scenarios for each are introduced. As it was presented earlier, each one of these management scenarios refer to a specific competency from the construction conflict management competency list derived in previous chapters. Respondents are asked to rate the presented management scenarios based on their preferences to implement as 1 being "the one that one definitely do not prefer to exhibit" and 5 being "the one that one definitely prefer to exhibit". The behavioral sets rated 4 and above are assigned as "Superior" and the ones rated 2 and below are assigned as "Threshold" performances. By this way, it is aimed to identify the respondents' perception and emphasis on different conflict management competencies in different cases. In this chapter, the overall scores for each competency and prospective "Superior" and "Threshold" performances for each case are evaluated individually.

4.2.1 Ratings for Conflict Case A

Conflict Case A is an execution conflict which occurs in the job performance process and related with the issues about undertaking a certain task. Overall scores for the proposed management scenario alternatives for Case A are differentiated from each other by narrow margins. Overall scores and preference ratios for each competency for this case are presented individually.

Although the scenario referring to "Group Effectiveness and Leadership" leads the field with an overall score of 3,78; it is still under 4, which is the lowest limit for "Superior" performance. Only 63,4% of the participants rated the management

scenario emphasized on “Group Effectiveness and Leadership” with 4 and above, as a “Superior” performance. On the contrary, 18,3% of the respondents rated this competency with 2 and below, as a “Threshold” performance, that they do not prefer to exhibit (Table 4.1).

Table 4.1 “Group Effectiveness and Leadership” Scenario Ratings for Case A

Group Effectiveness and Leadership								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	5	10	15	20	32	82	**3,78**	**1,26**
%	6,10	12,20	18,30	24,40	39	100		

“Group Effectiveness and Leadership” is followed by “Systems Thinking” and “Creative Problem Solving” with 3,43 and 3,29 overall scores respectively. According to the results, only 56,1% of the respondents prefer to exhibit a management scenario referring to “Systems Thinking” and rated it with 4 and above. With a slightly lower score, 41,5% of the attended population rated “Creative Problem Solving” scenario as a “Superior” performance for Conflict Case A. Meanwhile, 31,7% of the respondents do not prefer to exhibit the scenarios emphasized on “Systems Thinking” and 23,2% on “Creative Problem Solving” and rated them with 2 and below (Table 4.2 and Table 4.3).

Table 4.2 “Systems Thinking” Scenario Ratings for Case A

Systems Thinking								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	17	9	10	14	32	82	**3,43**	**1,59**
%	20,73	10,98	12,20	17,07	39,02	100		

Table 4.3 "Creative Problem Solving" Scenario Ratings for Case A

Creative Problem Solving								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	6	13	29	19	15	82	**3,29**	**1,16**
%	7,32	15,85	35,37	23,17	18,29	100		

As it can be seen from the Tables 4.4 and 4.5 below, these are followed by "Influence and Negotiation" and "Adaptability" with 3,01 and 2,94 overall scores. 37,8% of the participants assigned the "Influence and Negotiation" scenario as "Superior" performance with ratings 4 and above. However, 34,1% of the group disagreed them by rating it with 2 and below. With a narrow margin, 37,8% of the respondents rated the scenario referring "Adaptability" with 4 and more while 37,8% rated it as 2 and below.

Table 4.4 "Influence and Negotiation" Scenario Ratings for Case A

Influence and Negotiation								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	9	19	23	24	7	82	**3,01**	**1,15**
%	10,97	23,17	28,05	29,27	8,54	100		

Table 4.5 "Adaptability" Scenario Ratings for Case A

Adaptability								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	13	18	20	23	8	82	**2,94**	**1,24**
%	15,84	21,95	24,40	28,05	9,76	100		

Next, the management scenario referring to "Empathy" has an overall score of 2,29 and it is defined as a "Superior" performance to exhibit by 23,2% of the respondents. However, 63,4% of the population assigned it with ratings 2 and below, as a "Threshold" performance (Table 4.6).

Table 4.6 "Empathy" Scenario Ratings for Case A

Empathy								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	30	22	11	14	5	82	**2,29**	**1,29**
%	36,59	26,83	13,41	17,07	6,10	100		

It is important to note that the "Emotional Self Control" competency needs a different approach. Differently from the other six management scenarios, the one referring to the "Emotional Self Control" is designed as *negatively*. In other words, the respondents who rated this scenario with 4 and above are the ones who do not give emphasis on emotional self control and the ones who rated it with 2 and below are the ones who significantly cares about emotional self control. As a result of this, it can be said that, 54,9% of the respondents prefer to self control their emotions while delivering a conflict management performance for Case A and 23,2% do not give significant importance to it (Table 4.7). In brief, Table 4.8 below indicates the rankings for the management scenarios proposed for Conflict Case A.

Table 4.7 "Emotional Self Control" Scenario Ratings for Case A

Emotional Self Control								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	15	30	18	10	9	82	**2,60**	**1,23**
%	18,29	36,59	21,95	12,20	10,97	100		

Table 4.8 Mean Scores Ranking for Case A

Group Effectiveness and Leadership							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	5	10	15	20	32	82	**3,78**
Systems Thinking							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	17	9	10	14	32	82	**3,43**
Creative Problem Solving							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	6	13	29	19	15	82	**3,29**
Influence and Negotiation							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	9	19	23	24	7	82	**3,01**
Adaptability							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	13	18	20	23	8	82	**2,94**
Emotional Self Control							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	15	30	18	10	9	82	**2,60**
Empathy							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	30	22	11	14	5	82	**2,29**

4.2.2 Ratings for Conflict Case B

Conflict Case B is an example for a planning conflict, which is caused by risk factors disregarded in the project planning phase. Similarly with the previous case, by far most of the population rated the management scenario referring to "Group Effectiveness and Leadership" as a "Superior" performance. It has gathered an overall score of 4,46. While 86,6% of the respondents prioritizes group effectiveness and leadership, 3,7% of them do not prefer it to exhibit for this case (Table 4.9).

Table 4.9 "Group Effectiveness and Leadership" Scenario Ratings for Case B

Group Effectiveness and Leadership								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	1	2	8	18	53	82	**4,46**	**0,86**
%	1,22	2,44	9,76	21,95	64,63	100		

Correlatively with the Case A, " Creative Problem Solving" and "Systems Thinking" are the second and third competencies with highest overall scores of 3,77 and 3,65. As it is illustrated in the Table 4.10 below, 65,9% of the participants think that the scenario referring to "Creative Problem Solving" deserves a score of 4 or above. However, 13,4% of the population are against their judgement and assigned it as a "Threshold" performance with scores of 2 and below. Accordingly, "Systems Thinking" scores 4 and above by the 64,6% of the population, although 25,6% do not agree upon (Table 4.11).

Table 4.10 "Creative Problem Solving" Scenario Ratings for Case B

Creative Problem Solving								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	6	5	17	28	26	82	**3,77**	**1,18**
%	7,32	6,10	20,73	34,15	31,71	100		

Table 4.11 "Systems Thinking" Scenario Ratings for Case B

Systems Thinking								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	12	9	8	20	33	82	**3,65**	**1,47**
%	14,63	10,98	9,76	24,39	40,24	100		

According to the 57,3% of the respondents, the scenario referring to "Influence and Negotiation" is worth to exhibit and rated it with 4 and above. However, 25,6% the participants do not prefer to perform this management scenario and rated it with 2 and below. Concurrently with Case A's results, "Influence and Negotiation" can only remains forth with an overall score of 3,52 (Table 4.12).

Table 4.12 "Influence and Negotiation" Scenario Ratings for Case B

Influence and Negotiation								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	9	12	14	21	26	82	**3,52**	**1,36**
%	10,98	14,63	17,07	25,61	31,71	100		

The next competency in the ranking is “Adaptability” with an overall score of 2,77. Analogous with the results of the previous case, only 28,1% of the respondents assigned the “Adaptability” scenario as a “Superior” performance, while 43,9% rated it with 2 and below as a “Threshold” performance (Table 4.13).

Table 4.13 “Adaptability” Scenario Ratings for Case B

Adaptability								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	14	22	23	15	8	82	**2,77**	**1,22**
%	17,07	26,83	28,05	18,29	9,76	100		

The scenario referring to “Empathy” brings up the rear with an overall score of 2,62. Only 19,5% of the population rated it with 4 and above, whereas 47,6% think it is not worth to exhibit in Conflict Case B (Table 4.14).

Table 4.14 “Empathy” Scenario Ratings for Case B

Empathy								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	10	29	27	14	2	82	**2,62**	**0,99**
%	12,20	35,37	32,93	17,07	2,44	100		

As it is stated for the previous case, the scenario referring to the competency “Emotional Self Control” should be analyzed negatively due to the scenario development. By scoring that scenario with 4 and above, 12,2% of the respondents claim that they prefer to deliver a conflict management performance without making

more of an effort on controlling their emotions. On the contrary, the 76,8% of the population assign it as a "Threshold" performance, which they do not prefer to perform (Table 4.15). In substance, Table 4.16 below summarizes the rankings for the management scenarios proposed for Conflict Case B.

Table 4.15 "Emotional Self Control" Scenario Ratings for Case B

Emotional Self Control								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	43	20	9	7	3	82	**1,87**	**1,14**
%	52,44	24,39	10,98	8,54	3,66	100		

Table 4.16 Mean Scores Ranking for Case B

Group Effectiveness and Leadership							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	1	2	8	18	53	82	**4,46**
Creative Problem Solving							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	6	5	17	28	26	82	**3,77**
Systems Thinking							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	12	9	8	20	33	82	**3,65**
Influence and Negotiation							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	9	12	14	21	26	82	**3,52**
Emotional Self Control							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	43	20	9	7	3	82	**1,87**
Adaptability							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	14	22	23	15	8	82	**2,77**
Empathy							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	10	29	27	14	2	82	**2,62**

4.2.3 Ratings for Conflict Case C

Conflict Case C exemplifies a relational conflict that occurred among a subordinate and a manager, caused by inefficient job definition and lack of coordination. Distinctly from the previous two cases, "Adaptability" has the highest overall score , 4,18, among all of the seven management scenarios proposed for Case C. It is important to note that, the "Adaptability" scenario is the only one scores above 4 for this case. Hence, it is the only performance that can be assigned as a "Superior" one. As it can be seen from the Table 4.17, a serious amount of the respondents think that delivering a conflict management scenario focusing on "Adaptability" is convenient and rated it with 4 and above. In contradistinction to them, 9,8% of the population regards this scenario as inadequate to perform in such a case.

Table 4.17 "Adaptability" Scenario Ratings for Case C

Adaptability								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	3	5	8	24	42	82	**4,18**	**1,08**
%	3,66	6,10	9,76	29,27	51,22	100		

In analogy to the results of the two previous cases, "Creative Problem Solving" scenario is ranked second among the seven management scenarios proposed for Case C. Although its overall ranking is below the lowest limit of a "Superior" performance, 63,4% of the participants prefer to deliver and rated it with 4 and above. However, 18,3% of the population dissent and rate it with 2 and below (Table 4.18).

Table 4.18 "Creative Problem Solving" Scenario Ratings for Case C

Creative Problem Solving								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	5	10	15	27	25	82	**3,70**	**1,20**
%	6,10	12,20	18,29	32,93	30,49	100		

The next three competencies are ranked in the list by narrow margins. "Influence and Negotiation" scored only 0,18 points more than "Systems Thinking" and "Group Effectiveness and Leadership" in the overall ranking. While 47,6% of the participants rated "Influence and Negotiation" scenario as a "Superior" performance, 39% of them also think that it is suitable to deliver the performance in the scenario referring "Systems Thinking" and rated it also with 4 and above. However, 28% and 36,6% of the respondents do not prefer to exhibit the "Influence and Negotiation" and "Systems Thinking" performances for Case C respectively (Tables 4.19 and 4.20). "Group Effectiveness and Leadership" scenario also ranked forth with exactly the same weighted mean score with "Systems Thinking". 29,3% of the 82 people attended the survey asserted that they do not prefer to exhibit a scenario focusing on "Group Effectiveness and Leadership". Conversely, 35,4% of them do prefer to deliver the relative performance (Table 4.21).

Table 4.19 "Influence and Negotiation" Scenario Ratings for Case C

Influence and Negotiation								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	12	11	20	25	14	82	**3,22**	**1,30**
%	14,63	13,41	24,39	30,49	17,07	100		

Table 4.20 "Systems Thinking" Scenario Ratings for Case C

Systems Thinking								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	13	17	20	18	14	82	**3,04**	**1,33**
%	15,85	20,73	24,39	21,95	17,07	100		

Table 4.21 "Group Effectiveness and Leadership" Scenario Ratings for Case C

Group Effectiveness and Leadership								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	10	14	29	21	8	82	**3,04**	**1,15**
%	12,20	17,07	35,37	25,61	9,76	100		

Along the same line with the previous two cases, the "Empathy" scenario ranked last among the seven conflict management scenarios proposed. Only 7,3% indicate that they can prefer performing the "Empathy" referred management scenario, while 73,2% of the participants do not favor that conflict management performance to deliver (Table 4.22).

Table 4.22 "Empathy" Scenario Ratings for Case C

Empathy								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	28	32	16	6	0	82	**2,00**	**0,92**
%	34,15	39,02	19,51	7,32	0	100		

The scenario referring to "Emotional Self Control" is the last one to be calculated. As it was stated previously, this scenario's ratings are analyzed negatively. This

means that; 10,9% of the respondents who rated it with 4 and above, do prefer to exhibit a conflict management performance without concerning about controlling their negative emotions. However, 71,9% of them do not prefer to deliver a management performance without self controlling their impulses (Table 4.23). The Table 4.24 below summarizes the rankings for the management scenarios proposed for Case C.

Table 4.23 "Emotional Self Control" Scenario Ratings for Case C

Emotional Self Control								
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**	**StD**
N	33	26	14	5	4	82	**2,04**	**1,13**
%	40,24	31,71	17,07	6,10	4,88	100		

The second important analysis in addition to the scenario ratings is, the respondents' approaches in terms of choosing the "ideal" one. On the contrary to the previous studies generalizing the conflict management styles as the "best" or the "worst", the results reflect a different situation. Although their scenario preferences differ, 46,3% of the participants think that there can be multiple "ideal" management scenarios for Conflict Case A. Similar to this, more than half of the sample population (56,1%) rate two or more scenarios with 5 points (the one that they definitely exhibit) for Conflict Case B. Along the same line, 40,2% of them give the highest point to more than one scenarios for Conflict Case C.

Table 4.24 Mean Scores Rankings for Case C

Adaptability							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	3	5	8	24	42	82	**4,18**
Creative Problem Solving							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	5	10	15	27	25	82	**3,70**
Influence and Negotiation							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	12	11	20	25	14	82	**3,22**
Systems Thinking							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	13	17	20	18	14	82	**3,04**
Group Effectiveness and Leadership							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	10	14	29	21	8	82	**3,04**
Emotional Self Control							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	33	26	14	5	4	82	**2,04**
Empathy							
	1	**2**	**3**	**4**	**5**	**Total**	**Mean**
Number	28	32	16	6	0	82	**2,00**

4.3 Summary of the All Three Cases

Although there is not a common list of importance for construction conflict management competencies; the superimposed graphic above indicates certain outcomes about the relations among all (Figure 4.4):

- Before negotiating with one of the parties involved, the participants mostly preferred using their “creative problem solving” competencies for all three cases.
- Empathy is with the lowest score in all three cases. This indicates that most of the respondents do not appeal to develop empathy towards their opponents.
- The respondents give significant importance to their “group effectiveness and leadership” competencies in the planning and execution conflicts. However, in a relational conflict, they do prioritize the project’s interests, rather than their teams and subordinates.
- According to the target group, the most important thing in a relational conflict is adapting the situation as quickly as possible and minimizing the conflict effect on the budget and schedule.
- The conflict situation in Case A is an execution conflict, emerged due to some departments’ mishandling their duties. Interestingly, the participants do act more self controlled then they are in other two cases. They prefer to prioritize their team effectiveness and do not impose a penalty on the ones responsible.

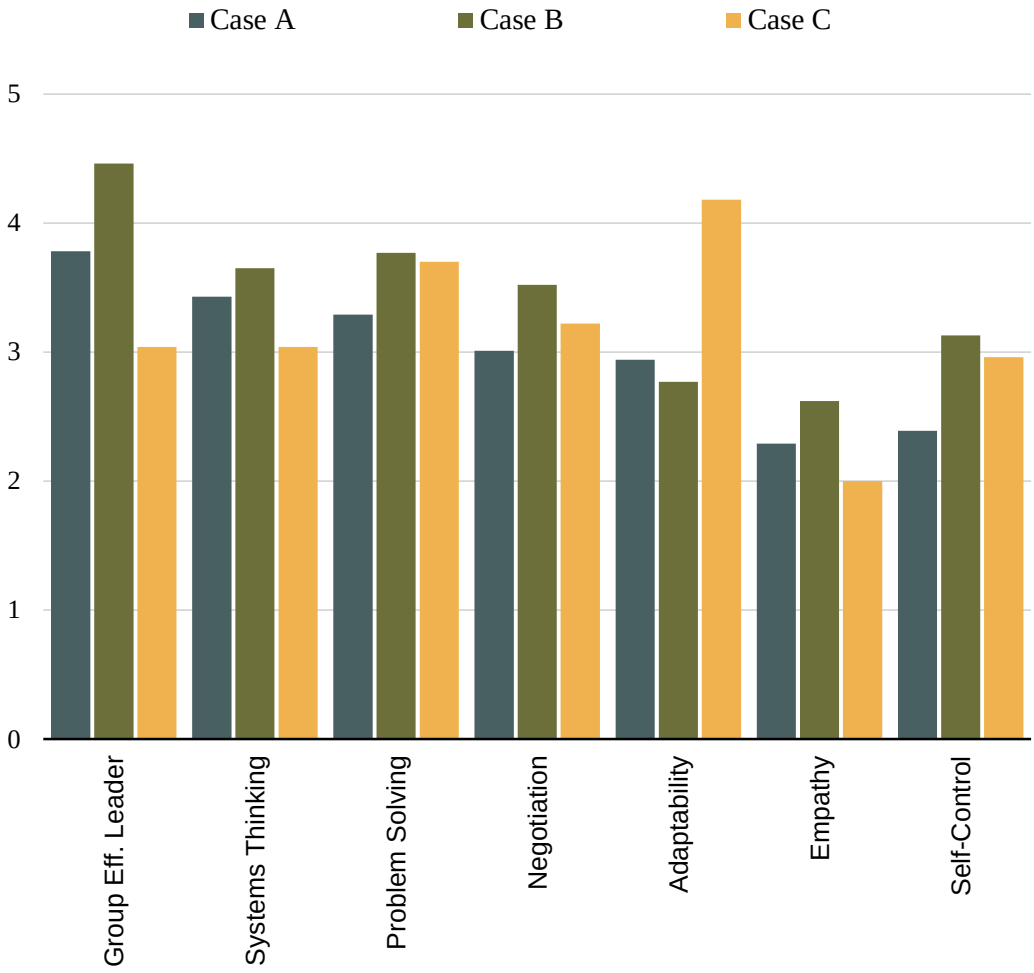

Figure 4.4 Comparison of overall scores of Cases A, B and C

4.4 Comparisons of the Results in terms of Gender

In order to determine any significant difference in conflict management approaches of construction managers in terms of their gender, the numerical data driven from the questionnaire is transferred to a statistical analysis program called SPSS22. Statistical tests are conducted in order to identify any significant difference between the male and female participants scenario preferences at the level of 5% significance, based on the severity of any error occurrence. The tests are conducted via the statistical analysis program; SPSS22. Initially, an analysis for normal distribution is conducted for each parameter through Kolmogorov Smirnov and Shapiro methods. They investigate any significant difference between an observed distribution and a specified population distribution. Due to these tests, a normal distribution is considered to be present if $p < 5\%$ or skewness/kurtosis values are greater than -1,96 and lower than +1,96 (the critical values at 0,05 significance level). Secondly, prior to each t-test, an individual Levene's test (one factor ANOVA) is conducted. A Levene's test identifies whether the variances of two populations are equal and which type of 2 tailed t-test should be used (Appendix D). If the p value of a scenario generated in the Levene's test is less than the significance level of 5%, it shows a significant difference in the variances and it should be continued with a 2 tailed unequal variance t-test. On the contrary, for the scenarios resulted in higher p values in Levene's tests (than 5%), are continued with 2 tailed equal variance t-tests. The t-tests investigate the significance of the difference between the means of two different populations. The official results of the t-tests are presented in Appendix E.

Three different statistical hypotheses are proposed for each case, presented as follows:

Hypothesis I

Null Hypothesis: There is no significant difference between the population means of the scores given by male and female participants for the scenarios proposed for Case A (execution conflict).

H_0: $\mu 1-\mu 2=0$ for all seven cases, where;

μ 1=mean score of females, $\mu 2$=mean score of males,

H_A: $\mu 1-\mu 2\neq 0$ for at least one competency's population mean.

The results are analyzed through a significance level of 0.05 (5%). An individual Levene's test and a 2 tailed t-test is conducted for each competency. The data outputs of the Levene's tests are shown in Table 4.25 below. The data inputs of t-tests for all seven competencies are provided in Tables 4.26 and 4.27 followed by the t-test results presented in Table 7.1:

Table 4.25 *p* values from the Levene's test for Hypothesis I

	p value	t-test type
Systems Thinking	0,52 > 0,05	equal variance
Emotional Self Control	**0,028 < 0,05**	**unequal variance**
Creative Problem Solving	0,06 > 0,05	equal variance
Adaptability	0,81 > 0,05	equal variance
Influence&Negotiation	0,65 > 0,05	equal variance
Empathy	0,81 > 0,05	equal variance
Group Effect.&Leadership	**0,04 < 0,05**	**unequal variance**

Table 4.26 Detailed data lay-out for Hypothesis I

Systems Thinking							
	1	2	3	4	5	Total	Mean
Women	3	0	0	2	10	15	4,07
Men	14	9	10	12	22	67	3,28
Emotional Self Control							
	1	2	3	4	5	Total	Mean
Women	5	7	2	1	0	15	1,93
Men	10	23	16	9	9	67	2,76
Creative Problem Solving							
	1	2	3	4	5	Total	Mean
Women	1	3	3	2	6	15	3,60
Men	5	10	26	17	9	67	3,22
Adaptability							
	1	2	3	4	5	Total	Mean
Women	2	4	2	6	1	15	3,00
Men	11	14	18	17	7	67	2,93
Influence and Negotiation							
	1	2	3	4	5	Total	Mean
Women	3	1	7	3	1	15	2,87
Men	6	18	16	21	6	67	3,04
Empathy							
	1	2	3	4	5	Total	Mean
Women	4	6	2	1	2	15	2,40
Men	26	16	9	13	3	67	2,27
Group Effectiveness and Leadership							
	1	2	3	4	5	Total	Mean
Women	0	1	1	3	10	15	4,47
Men	5	9	14	17	22	67	3,63

Table 4.27 Means and StDs for Hypothesis I (1: Women and 2: Men)

	Gender	Mean	StD	Gender	Mean	StD
Systems Thinking	1	4,07	1,62	2	3,28	1,55
Emotional Self Control	1	1,93	0,88	2	2,76	1,26
Creative Problem Solving	1	3,60	1,40	2	3,22	1,10
Adaptability	1	3,00	1,25	2	2,93	1,25
Influence&Negotiation	1	2,87	1,19	2	3,04	1,15
Empathy	1	2,40	1,35	2	2,27	1,29
Group Effect.&Leadership	1	4,47	0,92	2	3,63	1,28

As a result of the statistical analysis, aach individual test resulted different p values for each seven scenario and the results are provided below (Table 4.28). The t-test results for this case shows that gender do not have any significant effect on respondents' ratings for the six scenarios reflecting; Systems Thinking, Creative Problem Solving, Adaptability, Influence and Negotiation and Empathy.

However, as the p values for the t-tests of **"Group Effectiveness and Leadership"** and **"Emotional Self Control"** resulted below the significance level of 0.05, it indicates a significant difference between the ratings of male and female participants. Based on these results, H0 for the Hypothesis I is rejected; there are two competencies which's scores are significantly affected by the respondents' gender in terms of Conflict Case A.

Table 4.28 *p* values from the 2 tailed t-tests for Hypothesis I

	p value
Systems Thinking	0,08 > 0,05
Emotional Self Control	**0,005 < 0,05**
Creative Problem Solving	0,26 > 0,05
Adaptability	0,84 > 0,05
Influence&Negotiation	0,59 > 0,05
Empathy	0,72 > 0,05
Group Effect.&Leadership	**0,006 < 0,05**

Hypothesis II

Null Hypothesis: There is no significant difference between the population means of the scores given by male and female participants for the scenarios proposed for Case B (planning conflict).

H_0: $\mu 1-\mu 2=0$ for all seven cases, where;

μ 1=mean score of females, $\mu 2$=mean score of males,

H_A: $\mu 1-\mu 2\neq 0$ for at least one competency's population mean.

The results are analyzed through a significance level of 0.05 (5%). An individual Levene's test and a 2 tailed t-test is conducted for each competency. The data outputs of the Levene's tests are shown in Table 4.29 below. The data inputs of t-tests for all seven competencies are provided in Tables 4.30 and 4.31.

Each individual test resulted different p values for each seven scenario and the results are provided below (Table 4.32).

Table 4.29 *p* values from the Levene's test for Hypothesis II

	p value	t-test type
Systems Thinking	0,63 > 0,05	equal variance
Emotional Self Control	0,11 > 0,05	equal variance
Creative Problem Solving	0,76 > 0,05	equal variance
Adaptability	0,73 > 0,05	equal variance
Influence&Negotiation	0,77 > 0,05	equal variance
Empathy	0,99 > 0,05	equal variance
Group Effect.&Leadership	**0,000 < 0,05**	**unequal variance**

The statistical analysis results for this case shows that gender do not have any significant effect on respondents' ratings for the six scenarios reflecting; Systems Thinking, Emotional Self Control, Creative Problem Solving, Adaptability, Influence and Negotiation and Empathy. However, as the p value for the t-test of **"Group Effectiveness and Leadership"** resulted below the significance level of 0.05, it indicates a significant difference between the ratings of male and female participants. Based on these results, H0 for the Hypothesis II is rejected; there is one competency which's score is significantly affected by the respondents' gender in terms of Conflict Case B.

Table 4.30 Weighted Means for Hypothesis II (1: Women and 2: Men)

	Gender	Mean	StD	Gender	Mean	StD
Systems Thinking	1	4,00	1,65	2	3,57	1,43
Emotional Self Control	1	1,47	0,84	2	1,96	1,19
Creative Problem Solving	1	3,40	1,24	2	3,85	1,16
Adaptability	1	2,87	1,19	2	2,75	1,24
Influence&Negotiation	1	3,60	1,45	2	3,51	1,35
Empathy	1	2,20	1,01	2	2,72	0,97
Group Effect.&Leadership	1	4,87	0,35	2	4,37	0,92

Table 4.31 Detailed data lay-out for Hypothesis II

Systems Thinking							
	1	2	3	4	5	Total	Mean
Women	3	0	1	1	10	15	4,00
Men	9	9	7	19	23	67	3,57
Emotional Self Control							
	1	2	3	4	5	Total	Mean
Women	10	4	0	1	0	15	1,47
Men	33	16	9	6	3	67	1,96
Creative Problem Solving							
	1	2	3	4	5	Total	Mean
Women	2	0	6	4	3	15	3,40
Men	4	5	11	24	23	67	3,85
Adaptability							
	1	2	3	4	5	Total	Mean
Women	2	4	4	4	1	15	2,87
Men	12	18	19	11	7	67	2,75
Influence and Negotiation							
	1	2	3	4	5	Total	Mean
Women	2	1	4	2	6	15	3,60
Men	7	11	10	19	20	67	3,51
Empathy							
	1	2	3	4	5	Total	Mean
Women	4	6	3	2	0	15	2,20
Men	6	23	24	12	2	67	2,72
Group Effectiveness and Leadership							
	1	2	3	4	5	Total	Mean
Women	0	0	0	2	13	15	4,87
Men	1	2	8	16	40	67	4,37

Table 4.32 *p* values of 2 tailed t-tests for Hypothesis II

	p value
Systems Thinking	0,31 > 0,05
Emotional Self Control	0,14 > 0,05
Creative Problem Solving	0,18 > 0,05
Adaptability	0,73 > 0,05
Influence&Negotiation	0,81 > 0,05
Empathy	0,07 > 0,05
Group Effect.&Leadership	**0,01 < 0,05**

Hypothesis III

Null Hypothesis: There is no significant difference between the population means of the scores given by male and female participants for the scenarios proposed for Case C (relational conflict).

H_0: $\mu 1-\mu 2=0$ for all seven cases, where;

μ 1=mean score of females, $\mu 2$=mean score of males,

H_A: $\mu 1-\mu 2\neq 0$ for at least one competency's population mean.

The results are analyzed through a significance level of 0.05 (5%). An individual Levene's test and a 2 tailed t-test is conducted for each competency. The data outputs of the Levene's tests are shown in Table 4.33 below. The data inputs of t-tests for all seven competencies are provided in Tables 4.34 and 4.35. Each individual test resulted different p values for each seven scenario and the results are provided below (Table 4.36).

Table 4.33 *p* values from the Levene's test for Hypothesis III

	p value	t-test type
Systems Thinking	0,63 > 0,05	equal variance
Emotional Self Control	0,67 > 0,05	equal variance
Creative Problem Solving	0,22 > 0,05	equal variance
Adaptability	**0,01 < 0,05**	**unequal variance**
Influence&Negotiation	0,77 > 0,05	equal variance
Empathy	0,09 > 0,05	equal variance
Group Effect.&Leadership	0,38 > 0,05	equal variance

As a result of statistical analysis, gender do not have any significant effect on respondents' ratings for the five scenarios reflecting; Emotional Self Control, Creative Problem Solving, Adaptability, Influence and Negotiation and Empathy. However, as the p values for the t-tests of **"Group Effectiveness and Leadership"** and **"Systems Thinking"** resulted below the significance level of 0.05, it indicates a significant difference between the ratings of male and female participants. Based on these results, H0 for the Hypothesis III is rejected; there are two competencies which's scores are significantly affected by the respondents' gender in terms of Conflict Case C.

Table 4.34 Weighted Means for Hypothesis III (1: Women and 2: Men)

	Gender	Mean	StD	Gender	Mean	StD
Systems Thinking	1	3,67	1,24	2	2,90	1,32
Emotional Self Control	1	1,67	0,98	2	2,12	1,15
Creative Problem Solving	1	4,27	1,10	2	3,57	1,20
Adaptability	1	4,07	1,53	2	4,21	0,96
Influence&Negotiation	1	3,60	1,24	2	3,13	1,30
Empathy	1	2,20	1,15	2	1,96	0,86
Group Effect.&Leadership	1	2,80	1,26	2	3,09	1,12

Table 4.35 Detailed data lay-out for Hypothesis III

Systems Thinking							
	1	2	3	4	5	Total	Mean
Women	1	2	2	6	4	15	3,67
Men	12	15	18	12	10	67	2,90
Emotional Self Control							
	1	2	3	4	5	Total	Mean
Women	9	3	2	1	0	15	1,67
Men	24	23	12	4	4	67	2,12
Creative Problem Solving							
	1	2	3	4	5	Total	Mean
Women	1	0	1	5	8	15	4,27
Men	4	10	14	22	17	67	3,57
Adaptability							
	1	2	3	4	5	Total	Mean
Women	2	1	1	1	10	15	4,07
Men	1	4	7	23	32	67	4,21
Influence and Negotiation							
	1	2	3	4	5	Total	Mean
Women	1	2	3	5	4	15	3,60
Men	11	9	17	20	10	67	3,13
Empathy							
	1	2	3	4	5	Total	Mean
Women	5	5	2	3	0	15	2,20
Men	23	27	14	3	0	67	1,96
Group Effectiveness and Leadership							
	1	2	3	4	5	Total	Mean
Women	3	3	4	4	1	15	2,80
Men	7	11	25	17	7	67	3,09

Table 4.36 *p* values of 2 tailed t-tests for Hypothesis III

	p value
Systems Thinking	**0,04 < 0,05**
Emotional Self Control	0,16 > 0,05
Creative Problem Solving	**0,04 < 0,05**
Adaptability	0,74 > 0,05
Influence&Negotiation	0,21 > 0,05
Empathy	0,35 > 0,05
Group Effect.&Leadership	0,38 > 0,05

CHAPTER 5

CONCLUSION

This chapter initially presents a brief summary of the study; including its research questions, objectives and methodology. Then, the survey findings are illustrated together with the discussions utilizing the outcomes. Although the survey provides quantitative results, it also motives qualitative inferences and indications. Therefore, outcome-oriented discussions are made for the use of the construction conflict management practice. Then, after highlighting the limitations of the study; the chapter concludes with the recommendations and guidance for the relevant future studies.

5.1 Summary

Due to its complex structure, construction projects are commonly prone to encounter conflict situations more than any other industry. Any poorly assigned risk factor will eventually end up as conflict situations on an ongoing basis in a construction projects life cycle. These conflict situations lead to schedule and payment delays, cost overruns, rework and cost and time consuming litigations. Moreover, if a conflict situation is not clearly managed, it would hereafter eventuate as claims, counter claims or disputes which can only be resolved by a third-party intervention. In brief, it can be said that conflicts are one of the biggest dilemmas in the construction sector. They cannot be ignored, they cannot be prevented and they cannot be ruled out; yet, they continue to expand project budgets and durations negatively. Due to

this indispensability, the "managerial challenge" about construction management is mostly about how these conflict situations are handled. Although construction industry is still not welcoming enough to any femininity, the increasing amount of woman construction managers indicate that female are also volunteered to accept this challenge. Although a great deal of research has been conducted regarding the importance of conflict management in construction projects, unfortunately there is not any addressing the issue of manager's gender on conflict management behavior. Nevertheless, there has been an ongoing debate in the literature, as whether male and female managers prefer different conflict management styles considering the whole management practice. It is seen from the subsequent literature that, several researchers preferred gathering information based upon the respondent's previous conflict situation experiences. Since the conflict management behavior is notably related to the characteristics of the conflict, this causes considerable lapses in the survey results dramatically. Due to this fact; this study has taken a different approach:

First, a competency list for effective construction conflict management performance is derived from the relevant literature. Next, an after scenario questionnaire is distributed to 82 construction managers. This questionnaire includes three different construction conflict cases referring to an execution, a planning and a relational conflict respectively. The participants are asked to rate the seven conflict management scenario alternatives given for each case due to their preferences to exhibit. Each one of these scenarios reflect one of the seven competencies initially identified. It is important to note that; the validity of the relations between these management scenarios and the competencies they refer are checked via a relational mapping test as an initial step. The overall means for each scenario and their relative comparisons with respect to respondents' gender are demonstrated with necessary tables and graphics. Relative comparisons among the overall scores and their

correlations with gender as a subject variable is investigated through SPSS22 with Levene's Tests and Independent Samples 2-tailed t-tests.

5.2 Main Results

The statistical data derived from the after scenario questionnaire provided substantial outcomes for three main research questions. Each is discussed in detail below:

- Is there a one ideal management approach for everyone in each conflict case or are there multiple ideal alternatives for effective conflict management?

It is possible but not necessarily for this study's sample population. The results show that, almost half of the respondents claim two or more conflict management scenarios as a "superior" performance for the relevant case. As only seven alternative scenarios are offered for each, it should be noted that; there may be limitless amount of "superior" management approaches for each and every conflict case. In all three cases presented for this study, a noticeable amount of the respondents places equal importance on different parameters and claim multiple conflict management approaches as "the one she/he definitely exhibit". This indicates that; the "ideal" management approach for a construction conflict case can differ due to the manager's priorities regarding the project and it may vary in a limitless amount.

- Is there a general *level of importance (weight)* among these seven competencies, or is their relative importance circumstantial?

The rankings are different for each of the three cases. This indicates the lack of a common list of importance among these seven construction conflict management

competencies. However, a detailed look to the rankings indicate other noteworthy outcomes:

(1) The competency "empathy" is the least rated one in all three cases as reflecting a *threshold* performance. This shows that, in construction conflict situations, managers do not prioritize the opponent's interests and needs. This may be due to the aggressive and harsh characteristics of the industry. However, further studies should be conducted to reach a valid statement.

(2) "Group effectiveness and leadership" has the highest overall score in the first two cases (execution and planning conflicts) even the execution one is caused by the team's mishandling. This may be due to the fact that, there is a possibility to foresee and prevent these kinds of conflicts in a project's life cycle. In this case, managers do prioritize their team's effectiveness in order to decrease the chances to face with similar conflicts in future. However, the "adaptability" scenario significantly ranked the highest in the third one which is a relational conflict. This may conclude that; when it comes to a conflict situation caused by an incoordination between a superior and her/his subordinate, most of the managers place importance on adapting to the current situation and moving forward as quickly as possible. This indicates that; the situational characteristics of a conflict case may designate the "ideal" management performances to deliver.

(3) Attended construction managers prefer to delegate duties to their teams and try to deliver instructing performances in planning and execution conflict cases. However, if a team member is involved in a relational conflict due to individualistic problems, they do not prioritize the team's effectiveness and prefer to emphasize on the project's welfare.

(4) Regardless of the conflict type, most of the respondents rate the scenarios referring to “emotional self-control” as moderately threshold performances in all three cases. These scenarios include management performances disregarding self-controlling nerves and negative emotions. As a result, it can be said that; construction managers do not assign nettlesome actions and behaviors in conflict cases as constructive and effective.

- Is there a significant difference between the ratings of male and female construction professionals given to the proposed scenarios?

The t-test results indicate that women significantly scored higher in some of the proposed competencies when compared to their male counterparts. However, these competencies differ from case to case. Women respondents significantly rated higher for the “group effectiveness and leadership” scenario in an execution conflict presented in Case I (execution conflict). This indicates that, women in this sample population are significantly more prone to deliver the highest rated (superior) conflict management performance than men. Another outcome shows that, women give significantly more importance to self-controlling their nerves and emotions more than their male counterparts for the Conflict Case I (execution conflict). This supports the general idea of men being more aggressive and gallant in construction conflict situations. Similarly, women respondents are significantly more prone to deliver the management scenario reflecting “group effectiveness and leadership” for Conflict Case II (planning conflict). It is important to note that, this is also the highest ranked competency among all 82 participants. Differently, women do not show a significance in the “adaptability” ratings for Case III (relational conflict), which has the highest overall score for that case. However, they significantly give higher scores to the second and third ranked competencies, “creative problem

solving" and "systems thinking". Three main inferences can be made based on these results:

(1) Despite the biased judgements about women in managerial positions being more emotional, sensitive and weak; these results show that mostly gender do not have any effect on emotional approaches to conflict situations. Rather, women significantly less prefer to deliver an uncontrolled, impulsive conflict management for Case I when compared to the men.

(2) Despite their women counterparts, 67 male managers do not show any significance in their ratings for the proposed conflict management scenarios. This shows that being women may make a positive difference in some construction conflict cases. However, being a man in a construction conflict situation do not have any favorable impact upon the effectiveness of his conflict management performance.

(3) As women's ratings do show significant differences in the first two cases (an execution and a planning conflict), this may indicate that women are more prone to deliver a more effective performance in these kind of construction conflicts. However, two cases definitely remain incapable for making this kind of a general statement; a further study should be conducted.

5.3 Discussion

Despite the fact that the number of women entering construction sector is rapidly increasing, the culture of construction industry is still perceptibly masculine (Gale & Cartwright, 1995). Any woman intents to get in the industry has to face with a male culture with the image of hard drinking, aggressive, sexist and hard playing

side of masculine gender role (Gale A. W., 1992). Certain studies from the popular literature claim that, any increase of female appearance in construction sector may positively decrease the masculine domination and the "butch" environment in the industry and may ease managing conflict conditions. Although this thesis takes a different approach from most of the relevant studies conducted so far, it supports this idea in some aspects. Due to the results, women construction managers are more prone to deliver the highest scored performances in task based conflict cases presented in this study. At this point, a fundamental question that lacks an answer is about the reason behind this significance: Although the majority of the respondents are men and they have a greater impact on the mean values calculated for each scenario, how is it possible that women significantly score higher in certain scenarios?

Along with the studies rejecting any significant difference on conflict management behaviors in terms of gender, (Gunkel *et. al*., 2016; Korabik *et. al*., 1993; Odetunde, 2013), Klenke (2003) suggests that nowadays women managers do not prefer conforming gender based stereotypes. As a result of this, the conflict management style differences in between genders are disappearing. This is mostly because, women in male oriented organizations need to adapt themselves in the masculine weather around. Beyond all of the arguments in this case, women in construction business do not assign themselves as "feminists" (Gale & Cartwright, 1995). Because if they want to proceed, they need to fit themselves in this masculine culture which have been unintentionally promoted as male centric (Gale A. W., 1992).

The significant difference identified in this study may be an unforeseen outcome of this adaptation process. All respondents collaboratively defined the superior ones among the conflict management scenarios proposed. However when stepped back and thought critically, it can be seen that the superior performances are

identified by the majority of the population; men. The limited number of women attended the survey may only forced or passively lead themselves to “act like a man”. Kadayifci Pehlivanlı (2015) argues that the gender codes and impressions referring to “the ideal” in engineering sector depicts a “male” professional. Similarly in this study’s case, male professionals address the superior performances and state their preference alignments.

The significance in this study can be the result of women managers’ perceptions of construction sector’s norms. Within the bounds of possibility, women in construction business feel themselves in need to assimilate and conform the current culture (Arditi el. al., 2013). Due to this assimilation, women try to hide their feminine traits and “be a man” to survive in a world which’s rules are defined by their male associates. Nominately, being a women may have a positive impact upon conflict management behaviors of construction management professionals depending on the context. However, this may not be due to their female gender orientations and feminine stereotypes. Rather than that, this situation can be a result of an ongoing active or passive assimilation and forced conformance of women in the male dominated construction sector. Women in construction are gradually turning into men: They think like men or -in that case- manage conflicts like men regarding the rules they made from that day to this. It is another discussion topic whether this situation affects women construction managers’ performances or do they feel like assimilated or segregated. However, it is now clear that being a woman in construction sector is mostly about “fitting in”, even in one of the most social line of construction business: in managing conflicts.

Ideally, there should be homogenous gender distribution in all construction projects and none of the women professionals in the sector feels themselves

subject to any gender discrimination. Although there seems to be much progress to be made, these studies touching on the subject may give others a lead.

Unfortunately, the heterogeneous distribution of the sample population makes any generalization about conflict management behavior differences of men and women inconsistent for now. However, this study identifies that women construction managers are significantly more prone to adopt conflict management behaviors identified as "superior performances" by the majority, aka; men.

5.4 Limitations of the Study

There were some limitations for this study due to the limited time spared for the questionnaire and availability of the respondents. First, in order to keep to minimize the time required for the questionnaire, the presented conflict cases are limited to three. Although each represent one of the construction conflict types; there should be more case based surveys conducted for broader statements.

Secondly, most of the prospective respondents cannot spare their time to participate to a relatively long questionnaire. This is why the sample population is limited to 82 management professionals from the construction sector, and 15 of them are only women. Unfortunately, there is a limited amount of women holding construction manager positions. Considering, the women population attended the survey remain insufficient. If the study could have been distributed to a wider and a more homogenous population, the results could be more accurate and precise.

Finally, it is important to note that these results only reflect responses to three hypothetical cases on a theoretical basis. One should take into consideration that the real life conflict cases come into existence in a more tense and more complex

environments. Although the cases aim to situate the respondents in same conflict conditions, their responses in real life may vary with their responses to an online questionnaire.

5.5 Recommendations for Further Studies

This thesis analyses the respondents' conflict management approaches with respect to their gender, through seven competencies for effective construction conflict management. Differently from the previous studies, it uses hypothetical conflict cases to locate the participants in the same problematic situations. As this is an initial step for a case-based construction conflict management research, further studies with a greater number of cases and respondents are valuable to carry this type of performance evaluation a step forward. In addition to the limited amount of conflict cases presented and the respondents, the numerical differences between male and female participants still remains as an issue. The results indicate that women managers significantly prefer to exhibit the highest scored conflict management performance scenarios for the task based conflicts. However, due to the excessiveness of the male managers attended the survey, it is still possible to claim that the mean values derived are mostly their reflections. In order to make a more significant statement, the target group should be enlarged with a more homogenous gender distribution. A study with an equivalent distribution of the respondents in terms of their gender can be more consistent to rely on.

Although each one of the management scenarios proposed refers to a specific competency individually, it is important to note that a combined management scenario referring to two or more of these competencies can also be a defined as a superior performance. Moreover, it is important to note that none of these seven competencies guarantee any effective or superior conflict management performance. They are key performance indicators which can be improved, combined and

enhanced. Due to this, a further study investigating a prospective pattern between the responses of male and female participants will be valuable for the relevant literature to identify the differences between the preference sets of male and female respondents. This prospective pattern among these seven competencies may indicate any significance between construction managers' conflict management performances in terms of different variables.

In addition to these, the sample population's characteristic differences can also cast a shadow upon the results. Although all of the respondents are in construction management practice, their educational and occupational backgrounds can affect their preferences. Any further study focusing on an identified sample population with same backgrounds or equal occupational positions may generate more consistent outcomes.

Above all, this survey reveals a need for a study focusing on the assimilation of women managers in construction industry. As it was stated previously, this thesis indicates that, women construction managers significantly prefer what their male counterparts state as "superior". A survey focusing on women managers' swaying to "what men think" or "what they do" will be valuable to identify the -hopefully- unintentional assimilation in the construction industry

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APPENDIX A

VALIDITY CHECK PHASE I

A RELATIONAL MAPPING TEST

This relational test was distributed with respect to validate the research material for the master's thesis of "Gender in Construction Conflict Management: A Study Through a Competency Based After Scenario Behavioral Rating". It is an ongoing study at Building Science Graduate Program in Middle East Technical University aims to identify whether gender has any influence on construction managers approaches to conflict situations.

The conflict management scenarios below are proposed for managing three different conflict cases in a construction project. Each one of these behavioral sets-management scenarios- intended to reflect a certain conflict management competency. It is expected from you to couple each one of the proposed behavioral sets to the one competency from the list you relate. Please write the scenario number to the empty boxes behind the competency names.

This research is conducted anonymously; any personal information is not required. Thank you for your time and contribution.

26.12.2016
İzel ÜNSAL
Supervisor: Assoc. Prof. Dr. Ali Murat TANYER

A.1 CONFLICT MANAGEMENT SCENARIOS FOR CASE A

NO	CONFLICT MANAGEMENT SCENARIOS
1	I would initially leave off and evaluate the case. I would prefer analyzing every trigger factor up until this point and then develop an action plan on this basis.
2	I would hire the technical team who missed out informing me about the case earlier and the accountant who forgot to take the bank letter of guarantee from the K Company away.
3	In order to prevent any work stoppage, I would propose that the contractor Y Company would undertake the unpaid wages of the workers prior to negotiating the future of K Company in the project.
4	As we are already behind the schedule, we can not venture any more delays. Due to this I would immediately declare a notice of termination for the contract and initiate a tender for another rough works company.
5	I would initiate negotiations with K Company in order to convince them to transfer their entire budget to this project. I would deduct the budgets of other work items for providing them an additional payment in order to complete the remaining 60% of the project.
6	I would put myself on the K Company's place and try to find a satisfactory solution for both parties, bearing in mind that this may put the project more behind the schedule.
7	I would delegate this to the technical department, which is the most prevalent one in terms of the project budget and schedule. Moreover, I would demand from them to develop a solution that may compensate their mistakes about not informing me about the K Company's economical situation earlier.

	COMPETENCIES	SCENARIO
A	Systems Thinking	
B	Emotional Self Control	
C	Creative Problem Solving	
D	Adaptability	
E	Influence&Negotiation	
F	Empathy	
G	Group Effect.&Leadership	

A.2 CONFLICT MANAGEMENT SCENARIOS FOR CASE B

NO	CONFLICT MANAGEMENT SCENARIOS
1	I would make a conditional assessment by taking a chance of being more behind the schedule. I would evaluate the effects of changes in dolar/euro currencies, the increase in the minimum wage an the inflation ratio on their remaining work loads. Then, due to the results of this evaluation I may settle for an extra payment or not.
2	I would declare that the subcontractors also had role in the project's failure for meeting the deadline. I would not compromise about the markup and I would set forth their final opinion in scathing terms by saying that they can pull out of their jobs.
3	I would offer of assistance to them for acquiring job in the upcoming projects of The Contractor Y Company, if they would settle for a lower price for a markup.
4	We are already behind the schedule, I can not risk any work stoppage. In order to execute the work flow resilient, I would deduct the budgets of other work items to provide the requested markups.
5	I would explain them pulling out of their jobs before completion would cause negative outcomes for their future jobs. Additionally, I would convince them to withdraw their markup requests unless they would damage their professional relations with the Contractor Y Company.
6	I would like to meet with all the project and planning departments so that they can work together and propose alternative solutions which would cause minimum loss on the budget.
7	I would put myself on their place and agree to pay their claimed mark-ups.

	COMPETENCIES	SCENARIO NO
A	Systems Thinking	
B	Emotional Self Control	
C	Creative Problem Solving	
D	Adaptability	
E	Influence&Negotiation	
F	Empathy	
G	Group Effect.&Leadership	

A.3 CONFLICT MANAGEMENT SCENARIOS FOR CASE C

NO	CONFLICT MANAGEMENT SCENARIOS
1	I would avoid anything that may harm the team spirit. In any case I would stand behind my employee and try to help him to get his way.
2	I would consider that there might be other underlying reasons behind the foreman's reaction and I would try to comprehend his behavior.
3	I would negotiate with the Fine Works Chief Architect and convince him to compensate and meet halfway with the other party.
4	I would offer the Fine Works Subcontractor I Company to move the foreman at issue to another project for a limited time period prior to a permanent solution.
5	I would assign a Fine Works Headworker who would serve between the subcontractor team and the Fine Works Chief Architect. By this way I could prevent any direct interaction between the problematic parties.
6	I would blame the Fine Works Chief Architect for pausing the production due to a situational personal problem and I would declare him that he could resign whenever he wanted.
7	I would rather to focus on the trigger factors rather than the situation itself. I would remind the site personal about their job descriptions. In order to prevent any similar problem, I would warn the Fine Works Architect against his responsibilities about the production checks.

	COMPETENCIES	SCENARIO NO
A	Systems Thinking	
B	Emotional Self Control	
C	Creative Problem Solving	
D	Adaptability	
E	Influence&Negotiation	
F	Empathy	
G	Group Effect.&Leadership	

APPENDIX B

VALIDITY CHECK PHASE II

A RELATIONAL MAPPING TEST

The validity check phase II was distributed with respect to validate the research material for the master's thesis of "Gender in Construction Conflict Management: A Study Through a Competency Based After Scenario Behavioral Rating". It is an ongoing study at Building Science Graduate Program in Middle East Technical University aims to identify whether gender has any influence on construction managers approaches to conflict situations.

The conflict management scenarios below are proposed for managing three different conflict cases in a construction project. Each one of these behavioral sets-management scenarios- intended to reflect a certain conflict management competency. It is expected from you to couple each one of the proposed behavioral sets to the one competency from the list you relate. Please write the scenario number to the empty boxes behind the competency names.

This research is conducted anonymously; any personal information is not required. Thank you for your time and contribution.

02.01.2017
İzel ÜNSAL
Supervisor: Assoc. Prof. Dr. Ali Murat TANYER

B.1 CONFLICT MANAGEMENT SCENARIOS FOR CASE A

NO	CONFLICT MANAGEMENT SCENARIOS
1	Introducing a new subcontractor company would cause excessive delays. I would keep up with the conditions and propose that Company Y would undertake the unpaid wedges
2	Even if the wedges are undertaken for now, it is clear that K Company is unable to carry through this task. I would immediately initiate a tender for a new rough works subcontractor company
3	The damage is done. I would initially gather the team around and try to prevent them doing any similar mistakes in future

	COMPETENCIES	SCENARIO NO
A	Creative Problem Solving	
B	Adaptability	
C	Group Effect.&Leadership	

B.2 CONFLICT MANAGEMENT SCENARIOS FOR CASE C

NO	CONFLICT MANAGEMENT SCENARIOS
1	My priority is sticking to the planned schedule. I would propose to relocate the foreman at issue for a limited time period as a solution in the short haul. Then I would find a permanent solution
2	I would assign a Fine Works Headworker who would serve between the subcontractor team and the Fine Works Chief Architect. By this way I could prevent any direct interaction between the problematic parties

	COMPETENCIES	SCENARIO NO
A	Creative Problem Solving	
B	Adaptability	

APPENDIX C

CONFLICT MANAGEMENT PERFORMANCE EVALUATION

AN AFTER SCENARIO QUESTIONNAIRE

Welcome to an after scenario questionnaire distributed with respect to provide necessary data for a masters study by İzel ÜNSAL, about "Conflict Management in Construction Projects". It is an ongoing study at Building Science Graduate Program in Middle East Technical University. This survey aims to evaluate the competencies of project managers in managing conflicts in construction projects. Three separate hypothetical conflict cases have been defined for this assessment. Participants are expected to carefully evaluate the 7 solution scenarios proposed for each conflict case regard as the contractor's project manager.

All personal information obtained under the survey will be used anonymously only for academic purposes.

Thank you very much for your time and dedication.

İzel ÜNSAL
Supervisor: Assoc. Prof. Dr. Ali Murat TANYER

PERSONAL INFORMATION

1) Name and Surname:

2) Electronic Mail Address:

3) Experience Range in Construction Business:

- 0-10
- 10-20
- 20-30
- 30+

4) Your Occupational Position/Department:

- Site Manager/Site Chief
- Design Group Manager
- Technical Office Manager/Chief
- Project Manager/Coordinator
- Senior Manager/Executive
- Construction Management Consultant

4) Your Gender:

- Female
- Male

GENERAL INFORMATION

All three of the hypothetical conflict cases are subjected to one single construction element; a mixed use project in Ankara,Turkey with 40.000 m2 construction area. Please read the background information below and analyze all conflict cases and proposed management scenarios within this context:

X Company is in the job owner position while Y Company is in the contractor. All contracts with the four main subcontractor firms were signed: (1) The K Company as Rough Works Subcontractor, (2) The I Company as Trim Works Subcontractor, (3) The M Company as Mechanical Works Subcontractor and (4) The E Company as Electrical Works Subcontractor. The planned project completion date was specified in each contract together with the requests for bank letters of guarantee.

Although the project has a planned duration for 3 years, 1,5 years later the start date of production, one of the trade association files a claim against the project for project stoppage. As a result of this stoppage, any production, fabrication and construction business can not be done in the project site for 6 months. After the rescission of the stoppage decision from the court, the project have been progressing with time extension due to the agreements between X and Y Companies.

CONFLICT CASE A

The unskilled labour forces, headworkers and foremen of the Rough Works Subcontractor K Company have been in work stoppage due to their unpaid wages. Only 40% of the project scope in the contract have been completed yet and the rough works have already been 3 months behind the planned schedule. When the technical office of Y Company analyzed this quarterly delay, they identified that the Rough Works Subcontractor K Company had been already suffering a loss due to the comparisons of hourly wage bills and interim payments. However, as there was not a request for mark-up from K Company, the technical office did not take any action. The subcontractor K Company made a mistake in fact and miscalculated their planned day/number of floors finished ratio. As a result of this, K Company had to provide more workforce than the stipulated and sustained a financial loss.

The Contractor Y Company negotiated with the other party and founded that the Rough Works Subcontractor K Company would declare their withdrawal from the contract in consequence of their economical inadequacy. Besides, it has been founded that, the accountant of Y Company had forgotten to take the bank letter of guarantee from the K Company subsequent to the signature of contract.

Please evaluate the 7 solution scenarios regard as the Contractor X Company's project manager and rate them from 1 to 5 as 1 being "the one that you definitely do not prefer to exhibit" and 5 being "the one that you definitely prefer to exhibit".

1 **2** **3** **4** **5**

I would initially leave off and evaluate the case. I would prefer analyzing every trigger factor up until this point and then develop an action plan on this basis.

○ ○ ○ ○ ○

I would hire the technical team who missed out informing me about the case earlier and the accountant who forgot to take the bank letter of guarantee from the K Company away.

○ ○ ○ ○ ○

Introducing a new subcontractor company would cause excessive delays. I would keep up with the conditions and propose that Company Y would undertake the unpaid wedges.

○ ○ ○ ○ ○

Even if the wedges are undertaken for now, it is clear that K Company is unable to carry through this task. I would immediately initiate a tender for a new rough works subcontractor company.

○ ○ ○ ○ ○

I would initiate negotiations with K Company in order to convince them to transfer their entire budget to this project. I would deduct the budgets of other work items for providing them an additional payment in order to complete the remaining 60% of the project.

I would put myself on the K Company's place and try to find a satisfactory solution for both parties, bearing in mind that this may put the project more behind the schedule.

The damage is done. I would initially gather the team around and try to prevent them doing any similar mistakes in future.

CONFLICT CASE B

Since the completion date of the project has passed, all of the subcontractor contracts were expired. However, only the %70 of the total project have been completed yet. Based on this, each one of the three main subcontractor company (The I Company as Trim Works Subcontractor, The M Company as Mechanical Works Subcontractor and The E Company as Electrical Works Subcontractor) made a request for a mark-up on their contractural payments for the remaining %30 of the work. They based their requests on the changes in currencies, the increase in the minimum wages and the rate of inflation. It is stated in the contracts that each company will pay a delay penalty if the companies can not complete their executions until the due date of the contract.

However, things did not go as planned, and contracts lost their validity from the contract termination date. The Contractor Y Company negotiated with the other parties and founded that all three subcontractor companies will pull out of their jobs unless there is a markup on their contractual prices.

Please evaluate the 7 solution scenarios regard as the Contractor X Company's project manager and rate them from 1 to 5 as 1 being "the one that you definitely do not prefer to exhibit" and 5 being "the one that you definitely prefer to exhibit".

1 **2** **3** **4** **5**

I would make a conditional assessment by taking a chance of being more behind the schedule. I would evaluate the effects of changes in dolar/euro currencies, the increase in the minimum wage an the inflation ratio on their remaining work loads. Then, due to the results of this evaluation I may settle for an extra payment or not.

○ ○ ○ ○ ○

I would declare that the subcontractors also had role in the project's failure for meeting the deadline. I would not compromise about the markup and I would set forth their final opinion in scathing terms by saying that they can pull out of their jobs.

○ ○ ○ ○ ○

I would offer of assistance to them for acquiring job in the upcoming projects of The Contractor Y Company, if they would settle for a lower price for a markup.

○ ○ ○ ○ ○

We are already behind the schedule, I can not risk any work stoppage. In order to execute the work flow resilient, I would deduct the budgets of other work items to provide the requested markups.

○ ○ ○ ○ ○

I would explain them pulling out of their jobs before completion would cause negative outcomes for their future jobs. Additionally, I would convince them to withdraw their markup requests unless they would damage their professional relations with the Contractor Y Company.

I would like to meet with all the project and planning departments so that they can work together and propose alternative solutions which would cause minimum loss on the budget.

I would put myself on their place and agree to pay their claimed mark-ups.

CONFLICT CASE C

The Trim Works Chief of The Contractor Y Company found a fault in a foremen's work and ordered him to fix it in a fairly rigid manner. Afterwards, the foremen walked on the Trim Works Chief Architect with a malt. This caused a physical and verbal argument among parties. Following this, the Trim Works Chief Architect asked Project Manager about the removal of this foremen from the construction site. He said that he would resign, unless the Trim Works Subcontractor I Company would switch the team members by dismissing the mentioned foreman. The Contractor Y Company negotiated with the Trim Works Subcontractor I Company and founded that they need 2 months to restructure a new team. Meanwhile, they would not be able to perform any job in the construction site.

Please evaluate the 7 solution scenarios regard as the Contractor X Company's project manager and rate them from 1 to 5 as 1 being "the one that you definitely do not prefer to exhibit" and 5 being "the one that you definitely prefer to exhibit".

1 **2** **3** **4** **5**

I would avoid anything that may harm the team spirit. In any case I would stand behind my employee and try to help him to get his way.

○ ○ ○ ○ ○

I would consider that there might be other underlying reasons behind the foreman's reaction and I would try to comprehend his behavior.

○ ○ ○ ○ ○

I would negotiate with the Fine Works Chief Architect and convince him to compensate and meet halfway with the other party.

○ ○ ○ ○ ○

My priority is sticking to the planned schedule. I would propose to relocate the foreman at issue for a limited time period as a solution in the short haul. Then I would find a permanent solution.

○ ○ ○ ○ ○

I would assign a Fine Works Headworker who would serve between the subcontractor team and the Fine Works Chief Architect. By this way I could prevent any direct interaction between the problematic parties.

I would blame the Fine Works Chief Architect for pausing the production due to a situational personal problem and I would declare him that he could resign whenever he wanted.

I would rather to focus on the trigger factors rather than the situation itself. I would remind the site personal about their job descriptions and warn the Fine Works Architect against his responsibilities about the production checks.

APPENDIX D

LEVENE'S TEST RESULTS

Table D.1 Levene's Test Results for Hypothesis I (Case I)

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
Systems Thinking	Equal variances assumed	0,423	0,517	1,749	80
	Equal variances not assumed			1,701	20,156
Emotional Self Control	Equal variances assumed	4,991	0,028	-2,416	80
	Equal variances not assumed			-3,010	28,307
Creative Problem Solving	Equal variances assumed	3,665	0,059	1,137	80
	Equal variances not assumed			0,973	18,028
Adaptability	Equal variances assumed	0,059	0,809	0,209	80
	Equal variances not assumed			0,209	20,675
Influence&Negotiation	Equal variances assumed	0,210	0,648	-0,540	80
	Equal variances not assumed			-0,528	20,277
Empathy	Equal variances assumed	0,060	0,806	0,354	80
	Equal variances not assumed			0,343	20,070
Group Effect.&Leadership	Equal variances assumed	4,417	0,039	2,407	80
	Equal variances not assumed			2,965	27,743

Table D.2 Levene's Test Results for Hypothesis II (Case II)

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
Systems Thinking	Equal variances assumed	0,239	0,627	1,032	80
	Equal variances not assumed			0,941	18,986
Emotional Self Control	Equal variances assumed	2,659	0,107	-1,510	80
	Equal variances not assumed			-1,883	28,327
Creative Problem Solving	Equal variances assumed	0,095	0,759	-1,345	80
	Equal variances not assumed			-1,286	19,820
Adaptability	Equal variances assumed	0,120	0,729	0,344	80
	Equal variances not assumed			0,352	21,341
Influence&Negotiation	Equal variances assumed	0,086	0,770	0,236	80
	Equal variances not assumed			0,226	19,792
Empathy	Equal variances assumed	0,000	0,996	-1,855	80
	Equal variances not assumed			-1,798	20,091
Group Effect.&Leadership	Equal variances assumed	13,765	0,000	2,040	80
	Equal variances not assumed			3,418	59,778

Table D.3 Levene's Test Results for Hypothesis III (Case III)

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
Systems Thinking	Equal variances assumed	0,238	0,627	2,074	80
	Equal variances not assumed			2,160	21,730
Emotional Self Control	Equal variances assumed	0,180	0,673	-1,415	80
	Equal variances not assumed			-1,570	23,546
Creative Problem Solving	Equal variances assumed	1,529	0,220	2,075	80
	Equal variances not assumed			2,190	22,070
Adaptability	Equal variances assumed	7,203	0,009	-0,460	80
	Equal variances not assumed			-0,344	16,547
Influence&Negotiation	Equal variances assumed	0,088	0,768	1,263	80
	Equal variances not assumed			1,301	21,453
Empathy	Equal variances assumed	2,975	0,088	0,935	80
	Equal variances not assumed			0,779	17,694
Group Effect.&Leadership	Equal variances assumed	0,785	0,378	-0,881	80
	Equal variances not assumed			-0,817	19,265

APPENDIX E

t-TEST RESULTS

Table E.1 t-Test Results for Hypothesis I (Case I)

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
Systems Thinking	Equal variances assumed	**,084**	0,78308	0,44772
	Equal variances not assumed	0,104	0,78308	0,46040
Emotional Self Control	Equal variances assumed	0,018	-0,82786	0,34264
	Equal variances not assumed	**,005**	-0,82786	0,27500
Creative Problem Solving	Equal variances assumed	**,259**	0,37612	0,33072
	Equal variances not assumed	0,343	0,37612	0,38657
Adaptability	Equal variances assumed	**,835**	0,07463	0,35652
	Equal variances not assumed	0,837	0,07463	0,35773
Influence&Negotiation	Equal variances assumed	**,591**	-0,17811	0,32973
	Equal variances not assumed	0,603	-0,17811	0,33706
Empathy	Equal variances assumed	**,724**	0,13134	0,37074
	Equal variances not assumed	0,735	0,13134	0,38287
Group Effect.&Leadership	Equal variances assumed	0,018	0,83980	0,34897
	Equal variances not assumed	**,006**	0,83980	0,28324

Table E.2 t-Test Results for Hypothesis II (Case II)

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
Systems Thinking	Equal variances assumed	**,305**	0,43284	0,41938
	Equal variances not assumed	0,358	0,43284	0,45974
Emotional Self Control	Equal variances assumed	**,135**	-0,48856	0,32348
	Equal variances not assumed	0,070	-0,48856	0,25952
Creative Problem Solving	Equal variances assumed	**,182**	-0,45075	0,33511
	Equal variances not assumed	0,213	-0,45075	0,35053
Adaptability	Equal variances assumed	**,732**	0,12040	0,35045
	Equal variances not assumed	0,728	0,12040	0,34167
Influence&Negotiation	Equal variances assumed	**,814**	0,09254	0,39158
	Equal variances not assumed	0,824	0,09254	0,41019
Empathy	Equal variances assumed	**,067**	-0,51642	0,27843
	Equal variances not assumed	0,087	-0,51642	0,28724
Group Effect.&Leadership	Equal variances assumed	0,045	0,49353	0,24197
	Equal variances not assumed	**,001**	0,49353	0,14437

Table E.3 t-Test Results for Hypothesis III (Case III)

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
Systems Thinking	Equal variances assumed	**,041**	0,77114	0,37189
	Equal variances not assumed	0,042	0,77114	0,35697
Emotional Self Control	Equal variances assumed	**,161**	-0,45274	0,31996
	Equal variances not assumed	0,130	-0,45274	0,28840
Creative Problem Solving	Equal variances assumed	**,041**	0,69950	0,33704
	Equal variances not assumed	0,039	0,69950	0,31936
Adaptability	Equal variances assumed	0,647	-0,14229	0,30964
	Equal variances not assumed	**,735**	-0,14229	0,41308
Influence&Negotiation	Equal variances assumed	**,210**	0,46567	0,36884
	Equal variances not assumed	0,207	0,46567	0,35796
Empathy	Equal variances assumed	**,353**	0,24478	0,26192
	Equal variances not assumed	0,446	0,24478	0,31412
Group Effect.&Leadership	Equal variances assumed	**,381**	-0,28955	0,32859
	Equal variances not assumed	0,424	-0,28955	0,35432