Determinants of Relational Contracting for Indian Public Sector Construction Industry

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Statement

I hereby declare that the work presented in this thesis is to the best of my knowledge, original, except as acknowledged in the text. This material has not been submitted, either in whole or in part, for degree at any University.

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ABSTRACT

Relational contracting has been increasingly used as an innovative tool for cost saving, schedule reduction, reduced litigation, improved teamwork, increased trust, stronger relationships, and overall satisfaction for contractual parties. It is also considered as different procurement paradigm in place of a traditional approach to procurement in many countries. Relational contracting has been adopted by many public sector organizations in countries with open economies and has led to benefits, such as cost saving, schedule reduction, and reduced litigation. However, adopting relational contracting is always more difficult for public sector construction organizations than for private sector organizations, because of typical barriers such as a lack of understanding of partnering principles, personal indifference, a mentality that favors the lowest offer, ineffective top management, and lack of positive working level commitment. Many studies have concluded that the traditional adversarial approach to procurement procedures and the culture and attitude of public sector needs changing. Therefore, the implementation of the relational contracting should be addressed through organizational change management strategies in public sector organizations. India is country with a planned economy, and its public sector construction industry operates by traditional contracting. Although infrastructure projects in India are infamous for delays and cost overruns, public sector organizations have improved significantly in the post-liberalization era, due to administrative reforms and global exposure.

In this context, the present study focuses on Indian public sector construction organizations and explores the extent to which relational contracting strategies are being used by these organizations to adopt more relational procurement procedures. It investigates the critical factors for successful relational contracting from the perspective of front-line employees. Front line employees include Junior Engineers and Assistant Engineers who are responsible for day to day management of construction activities.It also develops a relational contracting framework for the management of positive change in public sector organizations. This study employs a case study research methodology, and examines the cases of four public sector construction organizations working across various infrastructure sectors. It uses a mixed methods procedure combining qualitative and quantitative approaches to research for data collection and data analysis.

Based on a comprehensive review of the published literature and semi-structured interviews with 36 top management experts, the level of engagement with relational contracting by the

case organizations is explored. The data is analyzed by pattern matching using cross-case analysis. It is found that many of the organizational strategies being used by the case organizations match relational contracting strategies. However, key partnering strategies for successful relational partnerships such as multiple criteria bid evaluation, incentive mechanisms, soft skill training, and team-building workshops are not employed in the case organizations. Also, it is observed that profit-seeking public sector enterprises have more relational environments, due to more flexibility in raising funds for projects and more global exposure than core public sector organizations funded by the government.

A questionnaire survey was carried among front-line employees of the four case organizations to identify the critical success factors for relational partnership in public sector organizations from the perspective of front-line employees. Data was collected from 202 front line mangers to measure 29 indicators. Structural equation modeling was used for data analysis. The critical factors identified are training, organizational change, commitment of top management, partner selection, and assessment process. Organizational change for partnering emerges as a new critical factor in this study. These findings can be used to improve relational partnering in public sector organizations.

A second round of structured interviews was conducted with same 36 top management experts to validate the relational contracting framework. This framework integrates the success factors for change management in public sector organizations and relational contracting strategies. Micro-interlocutor analysis was used to analyze the qualitative data. The validated framework highlights a crucial need to develop a vision for partnering, to engage in stakeholder analysis and consensus building, to empower front line managers and encourage their participation in plan execution, to hold time-bound review meetings of top management on site to show commitment, and to resolve disputes, ensure fast decision-making, and publish performance reports.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

1.1 Background

The construction industry is an important sector of any economy and contributes significantly to the socio-economic development of countries. The Indian construction industry contributes approximately 8% tothe country's gross domestic product (GDP) (Tripathi and Jha 2018 a).The demand for construction is expected to increase due to several factors, including a massive expansion of the infrastructure sector, industrialization, urbanization, a rise in disposable incomes, and various government initiatives to improve India's residential and transport infrastructure (NITIAayog 2016). The Indian construction industry's compound annual growth rate (CAGR) has remained around11.1% since 2011(EPC-World 2014). The Indian construction sector will remain resilient due to an increased in real estate and infrastructure projects. Over the next 20 years, approximately US$650 billion will be required for urban infrastructure alone (Tripathi and Jha 2018 b).

The Indian public sector construction industry operates according to traditional procurement procedures (CVC-Report 2007). Conventional item rate contracts are generally used, whereby the government provides a detailed design and a bill of quantities for each item to be executed. The contractor payment is based on detailed measurements of items executed on site against the quantities specified in the contract. This traditional procurement mechanism definitively allocates risk among stakeholders. But, in practice, it is fundamentally impossible to accurately predict all the risks and uncertainties associated with a project. Thus, traditional contract do not focus on potential uncertainties, therefore, it fails to account for the cooperative relationship between client and contractor considered critical for the success of a contractual arrangement (Strahorn et al. 2015).

This has resulted in many challenges within the Indian public sector construction industry, such as cost overrun, schedule overrun, adversarial relationships between clients and contractors, delays in dispute resolution, quality and safety issues, low productivity, and shortages of skilled manpower such as site supervisors, quality and safety engineers (MoSPI 2012). Indian public projects are infamous for delays and cost overruns (Singh 2010). The critical factors affecting delays are lack of commitment, inefficient site management, poor site coordination, improper planning, lack of clarity in relation to project scope, lack of communication, and substandard contracts (Doloi et al. 2012). Challenges arise in the tendering phase that affect the viability of projects and delay implementation, and the construction phase is beset with overruns and disputes (PMI-KPMG-Report 2012). Measures to address these challenges include: the streamlining of project approvals and statutory sanctions; investment in sectorial skill development; the adoption of project management practices and lean principles over the entire life cycle of a project; the establishment of national benchmarks for construction quality, sustainability and safety; the adoption of time-bound dispute resolution and prevention techniques; and the strengthening of accountability, transparency and governance in public sector projects (Sawhney et al. 2014). Moreover, many construction companies are in debt as a result of large outstanding claims against the public sector. Of these claims, 64% are pending due to arbitration cases and 8.5% are pending due to court cases (NITIAayog 2016). It takes a long time to award decisions in arbitration and court matters in India. Therefore, a shift towards conciliation is necessary. Also, since most of these claims arise from traditional item rate contracts, the public sector should start using engineering, procurement and construction (EPC) contracts (NITIAayog 2016).

Tabish and Jha (2011 a) evaluated the success factors for public projects in India and identified the necessity for more partnering efforts to overcome the challenges facing Indian public projects. The use of relational contracting has benefited public sector organizations in terms of significant cost saving and schedule reduction (Gransberg et al. 1999; Weston and Gibson 1993), reduced litigations (Abudayyeh 1994), improved communication and teamwork, increased trust, and stronger relationships (Grajek et al. 2000). The cost saving is partnering project is due to completion of project on time and reduced litigations. However, cost of uncertain event could not be saved on partnering project also. , But, partnering has facilitated improvements in workplace atmosphere, making construction a more attractive profession and improving the public image of the construction industry (Nystro¨M 2008).

It is evident from literature that by using relational contracting numerous construction projects have been completed successfully in terms of cost, schedule, quality, effective dispute resolution and overall satisfaction to parties involved. In spite of these successes, Indian public sector construction organizations have not yet adopted relational contracting in the procurement of infrastructure projects. One of the reasons could be attributed to lack of studies to overcome the present challenges of Indian construction industry using the concept of relational contracting.

The present challenges faced by the Indian construction industry could be tackled by adopting relational contracting. In India, prequalification of contractor is only based on financial capacity of the contractor and technical capacity of contractor. This contractor selection procedure suffers from two major deficiencies. First, the selection process does not attach any importance to the past work performance of contractors in terms of quality of work done. Second, a contractor can bid for any number of projects at the same time. Because procurement auctions take place in a decentralized manner in government departments, it is quite possible that a contractor can win award of multiple projects. Such a contractor often fails to handle all the projects satisfactorily due to the limited resources and exceeds the planned schedule and cost and, consequently, compromises on quality (Padhi and Mohapatra 2010). In Australia, general prequalification criteria for implementation of relational contracting have been classified under categories such as technical capacity, financial capacity, quality assurance, time performance, occupational health and safety, human resource management, and skill formation (Kumaraswamy and Matthews 2000). Thus, public sector can set out the proper contractor selection process for relational contracting that will give equal importance to quality of work, safety and environmental issues along with technical and financial capacities.

Indian public sectors are found ignoring the important aspect on quality supervision of the projects. It has been noticed that even though the contract clearly stipulates deployment of site supervisory staff by the contractor, with minimum requisite qualification and experience, but in practice the supervisory staff is invariably found with inadequate qualifications and experience and is also not employed for the full duration of the contract (CVC-Report 2007).With rising complexities of modern construction and large areas of the country being prone to natural disasters, the issue of training of construction quality and safety assessors is area of concern (Planning Commission 2007). These issues can be addressed by relational contracting. Relational contracting can play a big role in facilitating implementation of total quality management (TQM) in construction as partnering promotes open communication amongst the project stakeholders. Open communication enables all participants to be much more integrated, and as a result the barriers to implementation of TQM in construction can be substantially removed (Tang et al. 2006). Also, relational contracting promotes joint responsibility to ensure a safe working environment for all parties. It reduces the risk of hazardous working conditions and avoids workplace accidents (Chan et al. 2003 b).

Arbitration is the method of choice to resolve disputes globally. However, in India, arbitration has been largely ineffective. The Arbitration and Conciliation Act, 1996, is ambiguous about the challenging of awards, and lacks enforceability. With multiplicity of contract forms, varied dispute resolution mechanisms, lack of willingness of parties involved to honor the awards, and no effective implementation mechanism in practice, in most cases the disputes end up in courts of law and remain unresolved for long durations (Planning Commission 2007). Many government organizations from developed countries have documented decrease in litigation through relational contracting. Relational contracting improves the cooperation which has resulted in reduced litigation and an ability to perform existing processes with increased efficiency (Thompson and Sanders 1998). Thus, by using relational contracting, Indian public sector construction industry can minimize the effect of present challenges.

However, the adoption of relational contracting in the public sector construction industry is limited to a small number of developed countries. These are generally countries with an open market economy, since this form of contracting is less popular in countries with a planned economy (Ling et al. 2013 b). It is evident from the literature that the practice of relational contracting is limited to the public sector in developed countries including the USA (Weston and Gibson (1993); (Woodrich 1993); Abudayyeh (1994); Gransberg et al. (1999); Glagola and Sheedy (2002), the UK (Brown et al. 2001); Edkins and Smyth (2006); Yates and Duran (2006)), Australia (Ng et al. (2002); Rowlinson et al. (2006)), Hong Kong (Ling et al. 2013 a), Singapore (Ning and Ling (2014); Ling et al. (2015)), and in countries with an open economy such as Sweden (Nystro¨M 2008) and the Netherlands (Hartmann and Bresnen (2011); Laan et al. (2011)). The relational contracting is adopted in construction industry by using various forms such as project partnering, strategic partnering, project alliancing, strategic alliancing, public private partnership and joint venture. But, most popular form of relational contracting is project partnering. Also, non contractual partnering also benefits from relational practices, but it is not usually categories under relational contracting. The U.S. Construction Industry Institute (CII 1991) has provided the most popular model for excellence in partnering practice. The main aim of partnering processes is to improve the key elements of relational contracting, including commitment (Black et al. (2000); Cook and Hancher (1990); Bresnen and Marshall (2000 b); Cheng et al. (2000a)), mutual objectives/common goals (Adnan et al. (2012); Ling et al. (2006), Bresnen (2007)), equity (Bresnen (2007); Kadefors (2004); Eriksson and Pesa¨Maa (2007)), trust (Drexler and Larson

(2000); Meng (2012); Wong et al. (2005); Xu et al. (2005)), team building (Sakal (2005); Gadde and Dubois (2010); Rahman and Kumaraswamy (2008); Mason (2007)), communication (Doloi (2012); Cheng and Li (2002a); Tang et al. (2006); Love et al. (1998a)) and problem resolution ((Yates and Duran 2006); Bresnen and Marshall (2002); DeVilbiss and Leonard (2000)).

The U.S. Construction Industry Institute (CII 1991) also provides the most widely accepted definition of partnering, which it describes as "a commitment between two or more organizations for the purpose of achieving specific business objectives by maximizing the effectiveness of each participant's resources. The relationship is based on trust, dedication to common goals, and an understanding of each other's individual expectations and values." This definition has formed the basis for many of studies on public sector partnering, including those by Weston and Gibson (1993), Grajek et al. (2000), Glagola and Sheedy (2002), Cho et al. (2010), and Hartmann and Bresnen (2011). However, it is not a suitable definition of public sector partnering. The public sector always has the objective of maximizing benefits to society, unlike the private sector which aims to maximize profit from the project (Robertson and Seneviratne 1995). According to the above definition, trust between partners is the basis for establishing relationships, but, in the case of public sector projects, trust does not develop in the initial phase but rather during the later phases of the project. Moreover, initial trust between contractors and public servants may result in "cozy insider relationships." Such an overreliance on trust may result in favoritism, corruption, or performance planning that is harmful to cooperative relationship (Girth 2012). However, this does not mean that there is not any kind of involvement of trust in procurement of contractor. The contractor selection in public sector is carried out by prequalification process laid by government rules. In prequalification process past performance of contractors are scrutinized and only eligible contractors allow for participation in bidding. The prequalification documents such as references, certificates and other tangible information develop trust in mind of client regarding performance and competence of contractor for carrying out proposed work. This is called as calculus based trust. But, this calculus based trust does not guarantee cooperative behavior during execution of project (Kadefors 2004). Therefore,Jelodar et al. (2016)have proposed that trust be considered an outcome of relational contracting rather than an initial requirement for establishing a partnership.

This implies a need for a separate definition of public sector partnering. In this regard, the definition of partnering provided by Barlow (2000)seems more appropriate. Barlow (2000) has defined partnering as "an approach designed to enhance collaboration between organizations - as a tool for stimulating performance gains at the project level and innovation and learning benefits at the organizational level." Thus, relational contracting provides a framework for the establishment of mutual objectives among the parties and an agreed dispute resolution procedure, as well as encouraging the principle of continuous improvement. This framework promotes trust, cooperation and teamwork in what can be a fragmented process. It encourages industry participants to combine their efforts to achieve project objectives (Naoum 2003). Therefore, relational contracting should be considered a modern organizational process, even though a separate project partnering agreement is drawn up for individual project (Wilson et al. 1995). It is therefore necessary to evaluate the use of relational contracting in relation to organizational change interventions and to assess partnering models as models for organizational development and change. Within this context, this study attempts to develop a relational contracting framework for the Indian public sector construction industry.

1.2 Problem Statements and Research Objectives

A large number of infrastructure projects in India have been delayed due to regulatory clearance setbacks, environmental issues and problems pertaining to land acquisition(PMI-KPMG-Report 2012). Although infrastructure projects in India are infamous for delays and cost overruns, there appears to have been an incremental reduction in these problems over the past two decades due to improvements in the official delivery system (Singh 2010). The Government of India announced a liberalization policy in early 1990. Before that, many state-run businesses were experiencing losses and were not motivated to improve quality in order to grow and become world class. To promote liberalization, the government made special efforts to change the cultural mindset of Indian people, and these state-run businesses were forced to compete with private entrepreneurs (Dana 2000). As administrative reforms were initiated, bureaucracy began to improve. These reforms forced public sector organizations to thoroughly restructure and to streamline their administrative activities (Singh 2009).

This explains the slow but continuous improvement in the Indian public sector. The construction industry, in particular, has seen many global companies working in India, as well as many domestic companies working at international levels. The overseas expansion of

Indian construction companies has provided them with opportunities to develop critical capabilities in design, engineering, supply chain management, project management, and risk identification and mitigation (EPC-World 2014). Working with these companies, public sector organizations have also benefited due to knowledge transfer. For example, the renowned Delhi Metro Rail Project was completed on schedule and within budget (Subramanyan et al. 2012). It is possible that some relational contracting processes have already been adopted by Indian public sector construction organizations, as traditional contracting is complemented by relational contracting behavior and practices (Macneil 1980). Therefore, a systematic inquiry is necessary to measure public organizational strategies against key success factors for relational contracting, such as top management commitment, partner selection, risk and reward, communication, training, teamwork, dispute resolution mechanisms and assessment process. Thus, this leads to general research question "To what extent do Indian public sector organizations possess the characteristics required for relational contracting?" Accordingly, first research objective is;

"To explore the extent to which public sector construction organizations possess the characteristics of relational contracting."

Numerous studies have identified success factors that should be implemented by project participants for them to enjoy the benefits of relational contracting. Some recent studies have identified relational contracting success factors and practices related to public projects. Ling et al. (2015) have found that while mutual trust, mutual understanding, an enthusiastic attitude to teamwork, information sharing, efficient dispute resolution, joint problem solving, and pain-share/gain-share provisions are effective in enhancing the quality of construction project relationship, but these are not widely apparent in Singapore's public projects. Ning and Ling (2014) conducted a survey among public professionals across China, Singapore and Australia, which showed that effective information sharing gives rise to improved relationship quality. Their findings demonstrate the importance of effective social networking for establishing productive relationships among participants across all the parties involved in a public project.

In a productive relationship, members collaborate to develop cost-effective solutions to project problems. Therefore, clients, contractors and designers should take concrete actions to improve team relationships (Ling and Tran 2012). Jefferies et al. (2014a) studied public sector alliance projects in Australia, and found that an open-book, no-blame approach is vital for the success of an alliance. These studies have demonstrated the importance of behavioral patterns in relational contracting. Relational contracting in the public sector also depends on the capabilities and skills of the individuals involved (Ke et al. 2015). Specifically, front-line or operational level employees are the experts in their own work; the project team at the operational level has hands-on experience in dealing with everyday issues (Rowlinson et al. 2006). So, it is necessary to enlist the cooperation of front-line employees by involving them and empowering them to make changes themselves (Barnard and Stoll 2010). This gives them a sense of ownership, commitment and significance that positively affects their work performance. They are the real players for change management (Wright et al. 2011).

Although the theory behind relational contracting is relatively simple, it is necessary to evaluate it in relation to the opinions of front-line or operational level employees in the public sector. Front line employees mean front line managers such as Junior Engineers and Assistant Engineers who are responsible for day to day management of construction activities on site. However, all the reported studies are based on the opinions of top management or those of a mixed representative group. No study has highlighted the opinions of front-line managers exclusively. Therefore, a systematic analysis of the relationship between project success and the key success factors for relational contracting such as top management commitment, partner selection, risk and reward, communication, training, teamwork, dispute resolution, and assessment process, must be conducted from the perspective of front-line employees in public projects. Therefore, the second research objective is;

"To measure the relationship between key elements of relational contracting and the success of projects from the perspective of front-line employees."

For most public agencies, relational contracting represents a significant divergence from traditional practices and requires comprehensive strategic planning to achieve transformation at the organizational level (Wilson et al. 1995). This transformation is begun by crafting policies at the level of top management, because a planned approach to change is the most desirable approach in the public sector (Coram and Burnes 2001). Many researchers have proposed models and frameworks for the systemic implementation of partnering in construction projects. For example, Crowley and Karim (1995) have created a conceptual partnering model to change the traditional boundaries between organizations and to combine the participants and their resources in a joint alliance. However, their model does not provide identify how the public sector's rigid boundaries can be made flexible. Li et al. (2001) have proposed a conceptual model based on the cooperative benchmarking approach to partnering (COBAP) in order to initiate behavioral change in organizations. The major constraint in this approach is the inclusion of two members from probable contractor organizations in the COBAP team prior to the bidding for the public sector contract. Anvuur and Kumaraswamy (2007) have constructed a conceptual model of partnering and alliancing in which various partnering strategies are used as tools for strategy change in organizations to improve trust, cooperation and productivity. The authors have argued adopting this model of partnering can bring about a cultural transformation. However, the model does not include micro-level processes for team-building and establishing trust and commitment in a public sector context. Cho et al. (2010) have developed a hybrid model for fast-track projects in the public sector. This framework addresses the key issues encountered by public sector organizations in relation to partnering, but it focuses only on fast-track projects. This model is only suitable for public sector organizations that are already champions in partnering and not for those public sector organizations that want to use partnering to initiate organizational change. Thus, the available partnering models in the literature fail to provide a model for organizational change in a public sector context. This highlights the need for a model for planned organizational change for the adoption of relational contracting in public sector construction projects. Therefore, the third research objective is;

"To develop a relational contracting framework that combines the success factors for public sector organizational change with key elements of relational contracting."

1.3 Research Aim

The aim of this research is to devise a relational contracting framework integrating key elements of relational contracting with success factors of public sector organizational change that meets the needs of public sector construction organizations in India. The following objectives have been identified to achieve this aim:

1) To explore the extent to which public sector construction organizations possess the characteristics of relational contracting.
2) To measure the relationship between key elements of relational contracting and the success of projects from the perspective of front-line employees.
3) To develop a relational contracting framework that combines the success factors for public sector organizational change with key elements of relational contracting.

1.4 Research Scope

This research focuses on partnerships between public sector organizations and private contractors. It does not include subcontractors. Though large numbers of subcontractors work on project but their selection is carried out by main contractor only. There is no direct role of public sector client in selection of sub contractors. Also, sub contractors are not reporting directly to public client therefore no formal relationship is established in public client and sub contractors. In this study, public sector organization refers to an organization directly funded by the government, which in India is popularly termed a government department. It also refers to an organization in which the government holds an equity share, popularly known as a public sector enterprise. The findings of this study are limited to four public sector construction organizations in India, which were selected for data collection. However, these findings can be generalized across the selected cases as the four organizations operate in different infrastructure sectors. The four cases in different infrastructure sectors benefits from the advantage of greater coverage. Also, it incurs the disadvantages of being limited by [i] outcomes which may arise from only one organizational approach and culture in each of these four sectors, that could be an 'outlier' in the respective sector(s), so one does not 'get to see' the 'average' in that sector; and [ii] the four sectors, may by their nature, require different approaches, so one may not be fully justified in directly comparing and consolidating the findings.

Public sector organizations procure projects and services through competitive bidding process and cannot offer long-term relationships with private contractors as would be expected in relational contracting. Moreover, close relationships between public officers and private contractors may lead to cronyism. Therefore, in this study trust is considered an outcome of relational contracting and not as a prerequisite to a relationship.

1.5 Structure of the Thesis

This thesis is structured into seven chapters. The content of the remaining six chapters is outlined below.

Chapter 2: Literature Review

This chapter presents a review of the literature on relational contracting in the construction industry and the various forms of relational contracting. In addition, it identifies the key organizational strategies for implementing relational contracting. It also reviews the literature on organizational change in the public sector and identifies the key success factors for such change. Finally, the gap in the existing research is identified.

Chapter 3: Research Methodology

This chapter explains the research design and the rationale for the selection of case studies as the research methodology. It also discusses the methods used for data collection and analysis. This research employs three methods of data analysis in three phases: cross-case analysis, structural equation modeling (SEM) and micro-interlocutor analysis. All three methods are discussed in detail, and their suitability is explained.

Chapter 4: Results of Cross-Case Analysis

This chapter discusses the results of the cross-case analysis used to address the first research question: “To what extent relational contracting being practiced by Indian public sector construction organizations?” The discussion of cross-case analysis is arranged according to the key elements of relational contracting: top management commitment, partner selection, risk and reward, training, communication, team work, dispute resolution, and assessment process. It is found that within the constraints of government regulations, the organizations studied strive for continuous improvement and that their business processes have changed to resemble relational contracting processes in traditional contracting. However, it is also found that the organizations have not adopted certain key strategies of relational contracting, such as effective collaboration between contractor and client teams, multiple criteria bid evaluation, incentive mechanisms, soft skill training, and team-building workshops.

Chapter 5: The Perspective of Front-line Employees

This chapter discusses the results of the SEM analysis, which addresses the second research question: “What factors motivate front-line employees to effectively implement relational contracting in Indian public projects?”The chapter explains the theoretical construct first, followed by the results of the SEM analysis. The final SEM results suggest that five out of nine factors examined have a significant correlation with the success of relational contracting in terms of cost, time and quality. These are training, organizational change, commitment of top management, partner selection, and assessment process.

Chapter 6: Proposed Relational Contracting Framework

This chapter first presents a conceptual framework for relational contracting in the public sector. Then, it discusses the results of the micro-interlocutor analysis carried out to validate the proposed framework. The proposed framework highlights prominent organizational strategies such as the development of a vision for partnering, stakeholder analysis and consensus- building between stakeholders, empowerment of operational level employees and their participation in the execution plan, time-bound review meetings of top management on site to show commitment, resolution of disputes, fast decision-making, and publication of performance reports.

Chapter 7: Conclusions and Recommendations

This chapter presents the conclusions drawn from the three phases of the research using three methods of data analysis and the contribution to knowledge. It also outlines the research limitations and identifies the scope for future research.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review carried out for this research. The literature on two main topics was reviewed. The extensive literature on relational contracting in the construction industry published in construction management journals was critically reviewed. A structured keyword search for articles published in reputable construction management journals listed by Chau (1997) was conducted using the search engines of the respective journals. Online search tools such as Google Scholar and Scopus were also used in case of inaccessibility of journal web search engine. Various combinations of keywords relating to relational contracting were used for the keyword search. Keywords such as "partnering," "relational contracting," "alliancing," "partnering model," and "partnering framework" were used to ensure that no key articles relating to relational contracting were missed. The abstracts of the articles found using the various search engines were then read to judge the relevance of the papers. After the review of abstracts, 163 articles were identified as relevant. The titles of these articles were then compared to avoid selection of the same paper from two different search engines. The final sample comprised 128 papers, published during the period 1993-2017.

For implementation of relational contracting in any organizational change, Wilson et al. (1995) suggested three levels of intervention such as individual intervention, project intervention and organizational intervention. This means implementation of relational contracting in public sector organization requires change management processes at individual, project and organizational level. Therefore, the literature on public administration and organizational change was reviewed to understand the phenomenon of public sector organizational change. A similar keyword search was carried out to extract relevant articles. Keywords such as "public sector change,""public organization change,""public sector change model,""organizational development in public sector,""public sector management," and "public administration" were used to search Google Scholar and Scopus. After reading abstracts and eliminating duplicate titles, 54 relevant articles were identified.

The chapter first presents a review of the literature on relational contracting in the construction industry. This is followed by a discussion of the various forms of relational contracting being used in the construction industry. The various partnering models are then discussed, and the potential to apply these models to public sector organizations is critically reviewed. The next section discusses the various factors affecting the successful implementation of relational contracting and the key organizational strategies normally adopted for the successful implementation of relational contracting in construction organizations. These organizational strategies determine the success of relational contracting and form the basis of this research. The theory of public sector organizational change and the factors affecting the successful implementation of public sector organizational change are then discussed. Finally, the gaps in knowledge with respect to relational contracting within the context of public sector organizational change are identified.

2.2 Relational Contract in Construction Industry

Macneil (1980) has proposed a theory of relational contracting, which states that informal agreements and unwritten codes of conduct exist between contracting parties and that these are sustained by the potential value of future relationships. An important attribute of relational contracts is the continuation of the relationship between the parties for a significant period. However, public sector organizations cannot guarantee a future relationship since contracts must be won through competitive bidding. Even though public sector organizations cannot offer continuous relationships with single contractors for multiple projects and relationships for single projects are heavily dependent on contractual conditions, Macneil (1985) has claimed that formal contractual relationships are complemented by relational contracting behavior and practices.

A construction project involves various teams such as those of clients, architects, engineers, the main contractor, subcontractors, specialized subcontractors and suppliers. All these teams and their individual team members are connected to each other for the project, but they may have different organizational cultures. If the relationship between the parties is not managed properly then it may adversely affect the project's performance. Relational contracting is an approach for managing the complex relationships between the various construction teams. The foundation of relational contracting is the recognition of mutual benefits through cooperative relationships between the contracting parties (Rahman and Kumaraswamy 2008). Yeung et al. (2012) have stated that the aim of relational contracting is to generate an environment of trust, open communication, and employee involvement. Kumaraswamy et al. (2005) have explained relational contracting in construction industry as follows:

"*It is a working relationship among the construction parties who do not always follow the legal mechanism offered by the written contracts. The parties themselves govern the transactions within mutually acceptable social guidelines. The relationship itself develops obligations between the parties*".

According to the above definition, in relational contracting mutually accepted social guidelines take precedence over written contracts. But Rowlinson and Cheung (2002) have warned that due to greed, which they regard as part of human nature, legally binding documents are also necessary while adhering to the main purpose of relational contracting. Legal documents are essential for both parties to feel secure and to ensure work is "guaranteed." In addition, in the case of the public sector, a transparent system is required, and the government must report to the public. To address potential questions from the public, such as "what if that does not happen," terms must be clearly defined. Relationships based purely on trust do not exist in the commercial world. Therefore, the various forms of relational contracts in construction industry and the variety of terms have been defined (Table 2.1). In the public sector construction industry, commonly used forms of relational contracting include project partnering, project alliancing, and public private partnership. Other forms of relational contracting related to long-term contractual arrangements are unsuitable for use in public sector. Partnering is a basic form of relational contracting that is widely used in public sectors throughout the world. This form of relational contracting can be followed either formally or informally as part of any project procurement method, including design-bid-build and design-build (Sparkling et al. 2017). As most of the public organizations in India use design-bid-build and design-build contracts for projects, this research focuses only on partnering.

Project partnering is a voluntary protocol aimed at enhancing the performance outcome of a project by integrating the client and contractor teams (Sparkling et al. 2017). Partnering must be implemented through a partnering agreement, which should take precedence over a traditional contract unless specifically embedded as such within the contract. This additional agreement encourages the contractor, the consultant and the client to proactively address the project's risks. This means identifying risks before they affect the project and taking joint action to manage the risks (Rowlinson and Cheung 2002). In partnering, all parties involved in a project meet before construction begins and agree to specific management procedures for the project. They decide on team-based approaches to foster cooperation and develop working relationships. The relationships are carefully built upon the tenets of trust, mutual respect, and integrity (Glagola and Sheedy 2002). For this purpose, teams can use tools such as regular meetings, partnering workshops, team-building exercises, declarations of common objectives, and a project charter (Johnson et al. 2013). The teams also attempt to agree on a dispute resolution procedure and encourage the principle of continuous improvement (Naoum 2003).

Table 2.1 Definitions of various forms of relational contracting[Adopted from Yeung et al. (2012)]

Forms of relational contracting	Definition
Project Partnering	A long-term commitment between two or more organizations for the purpose of achieving specific business objectives by maximizing the effectiveness of each participant's resources, this requires changing traditional relationships and developing a shared culture that extends beyond organizational boundaries. The relationship is based on trust, dedication to common goals, and an understanding of each other's individual expectations and values.
Strategic Partnering	The major difference between project partnering and strategic partnering is that the former involves a relationship established for a single project but the latter entails a long-term commitment to at least two projects.
Project Alliancing	This is a cooperative arrangement between two or more organizations that forms part of their overall strategy and contributions to achieving their major goals and objectives for a particular project. With alliancing, there is a "joint" rather than a "shared" commitment. Parties agree on their contribution levels and expected profit beforehand and then place these at risk. If one party in the alliance under-performs, then all other alliance partners are at risk of losing their rewards (profit and incentives) and could even share losses according to the agreed pain-sharing/gain-sharing model.
Strategic Alliancing	The major difference between project alliancing and strategic alliancing is that project alliancing has a defined end, which is most commonly the practical completion date of a project. However, a strategic alliance usually extends beyond a specific project.
Public Private Partnerships	These are collaborations in which the public and private sectors bring their complementary skills to a project for the sake of providing public services. The partners have different levels of involvement and responsibility,
Joint Venture	Joint ventures involve two or more legally distinct organizations (the parents), each of which shares in the decision-making activities of the jointly owned entity.

2.3 Critical Success Factors for Relational Contracting

With the objective of facilitating relational contracting in the construction industry, several studies have focused on identifying the critical factors that affect the successful implementation of relational contracting. For example, Cheng et al. (2000a) have reviewed the literature and identified the critical success factors for partnering to improve the productivity and performance of construction projects. The critical factors identified in their study include effective communication, conflict resolution, adequate resources, management support, mutual trust, long-term commitment, coordination, and creativity. Various studies undertaken to identify the critical success factors for relational contracting in different countries have found similar results. For example, with regard to Hong Kong, Chan et al. (2004) have concluded that establishment and communication of a conflict resolution strategy, willingness to share resources among project participants, clear definition of responsibilities, commitment to a win-win attitude, and regular monitoring of the partnering process are the significant underlying factors for successful partnering. A similar study of the Taiwan's construction industry conducted by Chen and Chen (2007)has found that a collaborative team culture, a long-term focus on quality, consistent objectives and resource sharing are critical factors for successful partnering. Furthermore, Doloi's (2009) study of the Australian construction industry has identified communication, trust, confidence, and joint risk management to be the critical factors for successful relational partnership. Communication was found to be the single most influencing factor, while trust and confidence were found to be mutually inclusive for effective communication. Similarly, Black et al. (2000) have also found trust, communication, and commitment to be critical, along with factors such as a clear understanding of roles, consistency, and a flexible attitude towards relational contracting.

Recent studies on the critical factors for relational contracting have focused on public projects. For example, Ling et al. (2015) has found that mutual trust, mutual understanding, a good attitude to teamwork, information sharing, dispute resolution, joint problem solving and pain-share/gain-share provisions to be effective in enhancing the quality of relationships in the case of public projects in Singapore. Ning and Ling (2014), who conducted a survey among public professionals across China, Singapore and Australia, have found that effective information sharing gives rise to better quality relationships. The success factors for relational contracting are summarized in Table 2.2.

Table 2.2 Success factors for relational contracting identified in the literature

Relational contracting success factors	**Cheng and Li (2002a)**	**Chen and Chen (2007)**	**Chan et al. (2004)**	**Black et al. (2000)**	**Ling et al. (2013 b)**	**Kwan and Ofori (2001)**	**Bresnen and Marshall (2002)**	**Rahman and Kumaraswamy (2005)**	**Beach et al. (2005a)**	**Love et al. (2010)**	**Jefferies et al. (2014a)**
Management commitment	√	√	√	√	√	√		√	√	√	√
Risk /reward mechanism						√		√	√	√	√
Mutual goals and objectives		√	√	√		√	√	√	√	√	√
Trust	√	√	√	√		√		√	√	√	√
Continuous evaluation			√						√	√	√
Open communication	√	√	√	√		√	√	√	√	√	√
Conflict resolution			√		√			√	√	√	√
Early involvement of contractor		√		√			√		√		
Education/training/ learning climate	√				√				√	√	√
Innovation					√				√	√	
Long-term commitment	√	√	√	√	√			√		√	√
Integrated team		√		√	√		√	√		√	√
Partnering experience	√										
Effective coordination	√		√							√	
Continuous improvement	√	√			√					√	
Adequate resources		√		√	√					√	
Partner selection							√	√			

2.4 Partnering Models

Many researchers have developed partnering models by arranging key partnering activities of in a systematic way. These models have been partly developed by attending to the factors affecting the successful implementation of relational contracting. The various models are briefly discussed below, and their suitability for implementing relational contracting in the public sector is assessed.

2.4.1 The Partnering Organization Model

Crowley and Karim (1995) have proposed a conceptual model of partnering, in which the three project participants are the owner, the designer, and the contractor. Together, the form a decentralized pseudo-organizational structure designed to allow greater flexibility in meeting the specific needs of the project. Other stakeholders in the partnering process, such as subcontractors, suppliers, regulatory agencies, and labor unions, are purposely ignored for the sake of clarity. With the formation of a partnering organization, the traditional boundaries between organizations change and new boundaries are formed, which join the participants and their resources into an alliance. This new organization allows scope to solve day-to-day problems, resolve conflicts, expedite decision-making, and increase organizational competence in achieving project goals. The authors have noted that the organizational boundaries of government agencies are typically rigid and impermeable. These agencies are hierarchical, and their departments have well-defined jurisdictions and responsibilities. This traditional bureaucratic system must be overcome to allow public agencies to partner effectively.

The major limitation of this model is that it does not provide guidelines for making the rigid boundaries between the organizations flexible. It is possible that in response to market forces, private organizations may adjust their working culture and become more cooperative in their dealings with counterpart organization. However, achieving this flexibility in rigid public organizations is a difficult task without making deliberate changes at policy level, as well as changing the attitude of public employees.

2.4.2 The Partnering Transformation Process Model

Wilson et al. (1995) have proposed a partnering transformation process model. They have argued that for most construction entities partnering represents a significant divergence from past and current practice. It requires implementing cultural change through the development of a long-term strategic vision and a cultural change intervention plan. The first step in this process model is to identify leaders that will initiate the change. These leaders form the transformation leadership team, which is generally made up of the company's top management, whose main contributions are to make strategic decisions and establish a vision, clear goals, and shared values for the organization. The next step is to form the action research team, which monitors the change at project level and helps the organization match results with intentions. The members of this team manage the partnering process and are responsible for continual diagnosis of potential problems, coordination, and problem solving. In construction companies, these team members may be project managers, supervisors, or existing industry partners.

Although this model proposes the formation of various teams with clear roles and responsibilities to transformation the design and functioning of an organization, it remains conceptual and was never validated in the field validation. Therefore, its viability remains questionable. Also, it fails to provide specific guidelines to minimize disputes in the public sector.

2.4.3 The Partnering Process Model

The partnering process model was developed by Crane et al. (1997). It sets out strategic processes for developing partnering relationships in five phases. The first phase is the owner's internal alignment. The owner organization must determine its reasons for pursuing the partnership and must determine the responsibilities of the two primary partner organizations. In the second phase, the owner selects the contractor by creating an empowered selection team, compiling a list of criteria for partner selection, developing a list of potential partners, and conducting detailed interviews to select the partner. The authors have provided 12 criteria for partner selection. The third phase is the partnering relationship alignment phase. It is designed to help partners in a strategic alliance understand each other's long-term goals and objectives. This phase establishes a general framework for cooperation between the partners through the drafting of an alliance charter. The fourth phase is the project alignment phase, which identifies activities that will support the success of the partnership for the specific project. To accomplish this phase, the partners must first determine each party's criteria for project success. The fifth phase is work process alignment, in which the goals of the partnership are translated into action.

While this model provides detail strategies for each phase, it fails to identify the role of the change agent in achieving the necessary changes. In addition, the study is conceptual and is without field validation. Another drawback is the potential difficulty of allocating appropriate weight to the 12 criteria proposed for partner selection and thus of providing the transparent evaluation required of the public sector. Similarly, partner selection through interview is feasible in the private sector but not in the public sector, where a competitive bidding process must be followed.

2.4.4 The Cooperative Benchmarking Approach to Partnering

Li et al. (2001)have proposed the cooperative benchmarking approach to partnering (COBAP) as a process model that can extend partnering beyond a single project agreement to a long-term alliance. The COBAP process consists of eight stages: developing the COBAP team; planning what is to be improved; assessing the current performance gap; gaining commitment to the needs of change; developing action plans; implementing actions and monitoring progress; gathering feedback to the implemented change; and achieving superior performance. It aims for continuous improvement, which requires the development of a collective learning climate. The authors argue that this model is an improvement on that developed by Wilson et al. (1995), because it eliminates the need for a transformation leadership team to initiate the change effort and an action research team to monitoring the change at the project level.

This model identifies the COBAP team as the agent of change, which controls the process during partnering, and suggests that the team include two representatives from potential contractors. In the public sector, it is not possible to select two representatives from potential contractor organizations before bidding. Also, the study is also conceptual, without validation, and is limited because the suggested strategy can only be adopted in the private sector. Moreover, the model did not provide any strategy making necessary internal changes in public sector organizations before partnering.

2.4.5 A Practical Model of Partnering

Cheng and Li (2004) have constructed a practical model of partnering in three stages: partnering formation, partnering application, and partnering reactivation. This model composed of three parts: an interactive process description of partnering, success factor monitoring, and goals assessment matrices. The interactive process description team outlines the necessary procedures for six interactive processes, which are roles and responsibilities, decisions to be made, precautions, constraints, time consumed, and the logical sequence. The success factor monitoring team streamlines the communication requirements for partnering and establishes key criteria for assessment. The goal assessment matrix has several features that are used to audit the level of attainment of the partnering goals and includes tools for identifying the performance gap. One of the main features of this practical model is the establishment of procedures that espouse project or strategic partnering. The authors have proposed it as a general guide that allows for a certain degree of flexibility. It may be tailored to create modified versions for the specific requirements of construction projects.

The major limitation of this model is that the three processes identified—the interactive process description of partnering, success factor monitoring, and goals assessment matrices—have complicated network arrangement for various activities. This, along with the fact that it is not validated by a field study, means that its viability is questionable. It is difficult to implement this model in the public sector due to its complex reporting structure, and no mechanism is offered to change the hierarchical structure of reporting in the public sector.

2.4.6 A Conceptual Framework for Partnering

Beach et al. (2005a) have developed a conceptual framework for partnering between a main contractor and a supplier organization. This framework is based on three criteria: commitment, processes, and tools. The elements of commitment are management commitment, long-term process, financial investment, preparation of staff, mutual vision and objectives, and equity /shared risk. The process elements are communication, conflict resolution, early involvement, continuous evaluation and improvement of performance, establishment of a learning culture, exchange of knowledge, education and training. The key elements of tools are integrated teams, partnering workshops, an innovative approach and dispute resolution planning. The authors have claimed that adopting this model will result in improvements to the organizational culture of both the main contractor and the suppliers. The partnering relationship outcomes are project success, trust, cultural change, mutual rewards, mutual learning, best value, improved service, and dependency.

The authors have integrated all the key elements of successful partnering into the framework and validated it empirically. However, this model involves targeting both a contractor and a subcontractor and is, therefore, unsuitable for the public sector without modifications to its strategies.

2.4.7 A Conceptual Model of Partnering and Alliancing

Anvuur and Kumaraswamy (2007)have developed a conceptual model of partnering and alliancing. According to this model, partnering is a tool to introduce change or an integration strategy for an organization. It includes key partnering practices such as workshops, champions meetings, charter alliance agreements, team incentives, issue-resolution procedures, periodic performance measures, and training in problem solving and joint decision-making. The outcome of the partnering is to create the essential conditions for optimal contact between cross-functional project workgroups. These conditions include equal status and respect among partners, common goals, cooperative workgroup interactions, support of authorities, and egalitarian norms. After the attainment of these conditions, the work group is transformed into a high performing team, which results in improved performance in terms of cost, quality, scheduling, and innovation, as well as behavioral effects such as trust, cooperation, and productivity.

However, the model is not a complete framework for organizational change as it does not involve internal alignment within an organization before partnering. Furthermore, the model has not been validated. It is only useful for both private and public sectors in the construction phase of a project.

2.4.8 A Partnering Process Model for Public Sector Fast-Track Projects

Cho et al. (2010) have developed a hybrid model for fast-track projects. Their concept of partnering involves seven main activities: making arrangements early in the project, schedule control, definition of the design for fast-track projects, management of the interface among the design participants, team integration, management of design errors and changes, and a strategy for resource and equipment procurement. This is the only framework specifically developed for public sector organization, but it is solely for fast-track projects. The model needs alterations for conventional public projects as very few projects in public sector are designed to be fast track. This model can be implemented by public sector organizations that are already champions in partnering but does not provide sufficient guidelines for public sector organizations that want to implement partnering for the first time.

2.4.9 Partnering Perceived Through Models

The first model presented by Crowley and Karim (1995) is an organization intervention model. It enforces on removing the boundaries between the partnering organizations. These authors specify specific processes such as conflict resolution, communication, removing personality conflicts and identifications of problems to merge the boundaries of partnering organizations. All other models by Wilson et al. (1995), Crane et al. (1997), Li et al. (2001), Cheng and Li (2004), Beach et al. (2005a), Anvuur and Kumaraswamy (2007) and Cho et al. (2010) are process oriented models and describe various processes need to be followed for implementation of partnering. However, the adoption of various processes in partnering organizations should be carried out according to various phases of project life cycle. Crane et al. (1997) identified five phases while Cheng and Li (2004) identified three phases of partnering for implementing the various processes.

The first phase identified by most of the authors is to prepare the organization for partnering. For this purpose, Wilson et al. (1995) suggest to form a team which will decide the vision, mission and clear goals for organization. Crane et al. (1997) suggest that this team will identify business drivers to pursue partnering and to evaluate partnering as the best means to achieve established goals of organization. According to Cho et al. (2010) it is necessary that owner of the project should confirm his needs from the partnering project. At this stage, Li et al. (2001) emphasis on planning on what to be improved and identifying current performance gap. At this phase it is essential to write contract clauses suitable for partnering in unambiguous way. The second phase is to select the contractor who is willing for partnering. This is a crucial step in partnering as partnering success depends on behaviour of partner. For selection of contractor, Crane et al. (1997) suggested various criteria such as project experience, project performance, management team, partnering experience, organizational structure, pricing, incentives, total quality program, safety program, financial strength and sub contracting. After evaluation of contractors on listed criteria, potential contractors should be interviewed for final selection.

After selection of contractor, top management from both side interact with each other to understand the each other expectations. Also, they identify experienced human resources from both the side to implement partnering on project (Cheng and Li 2004). At this stage, Cho et al. (2010) emphasized on formation of integrated project team. After this, team building efforts starts. Anvuur and Kumaraswamy (2007) advocate the use of formal team building sessions for integrated project team and meetings with partnering champion people. They also suggest preparing partnering project charter for future course of actions. Li et al. (2001) emphasis to establish specific action plans for achievement of project goals. Cheng and Li (2004) points out the importance of empowerment of integrated project team for decision making on behalf of the company.

Once the relationship of integrated team is aligned then actual work processes start. During this phase, Beach et al. (2005a) identified that organizations should give careful thought to which information can be shared and which channels and communication processes will be effective. Crane et al. (1997) suggested that during execution top management should be committed to provide appropriate resources. While, Wilson et al. (1995) stress the importance of effective conflict resolution by top management at individual level as well as organizational level. Also, Li et al. (2001) suggest the monitoring of implementation plan to achieve the superior performance as per the project goals. Anvuur and Kumaraswamy (2007) point out that during this phase periodic performance assessment provides the vital feedback in a real time, which facilitates group learning and improvement to influence future learning.

2.5 Key Organizational Strategies for Relational Contracting

To maximize project performance through the adoption of a relational contracting philosophy, it is necessary for all the success factors to be present throughout the life cycle of the project. These success factors must be introduced using various organizational strategies to promote relational contracting. Bresnen and Marshall (2002)have argued that a partnering culture can be developed within an organization through the application of techniques such as rigorous selection procedures, formal team-building exercises, and appropriate financial incentive systems. Formal integrative mechanisms, such as project charters, conflict resolution procedures, team-building workshops and the use of facilitators, are regarded as central for establishing collaborative norms and values. Thus, the aim of this section is to identify various organizational strategies that can facilitate relational contracting success factors. For example ‘training’ is one of the success factors for relational contracting. But what type of training strategies is useful to organization for inculcating relational contracting behavior in project team members. The various organizational strategies that should be adopted by organizations to promote relational contracting have been identified through the literature review and assigned open code to each strategy to facilitate data collection and analysis. The identified organizational strategies are determinants of relational contracting and are discussed below,

2.5.1 Team Work Policy (CM1)

Anvuur and Kumaraswamy (2007) have argued that partnering is a mechanism for transforming a cross-functional project workgroup into a team. Top management plays a pioneering role in developing a team at project level, by introducing the collaborative operational arrangements and discarding traditional working procedures (Rahman and Kumaraswamy 2012). Crowley and Karim (1995) have suggested that top management should focus on increasing informal interactions with employees, stimulating openness and transparency, and developing the confidence and trust of employees for teambuilding.

2.5.2 Cooperative Culture Policy (CM2)

Cheung et al. (2003) have asserted that achieving project partnering objectives depends on the involvement of all members of the project team and requires the commitment and cooperation of the team members. For this purpose, Rahman and Kumaraswamy (2004) have suggested that governments need to introduce initiatives to structure organizational arrangements, such that all the stakeholders work closely together as a coalesced cooperative team.

2.5.3 Deciding Project Objectives (CM3)

Bresnen (2007) has argued that for a successful partnering initiative, top management must engage in coherent, long-term thinking to systematically link partnering with organizational goals and specific project objectives. Strategic planning is therefore essential for setting out a long term “vision” and “mission” for identifying long-term objectives and business plans.

2.5.4 Policy for Continuous Improvement (CM4)

Chen and Chen (2007) have described a policy for continuous improvement which includes planned processes to improve core competencies such as management skills, organizational routines, building a knowledge base, and improving intangible assets to facilitate innovation. Similarly, Manley et al. (2009)have argued that investing in research and development, maintaining a formal system of transferring project learning into continuous business processes, and actively monitoring international best practices are some of the key strategies for continuous improvement during partnering.

2.5.5 The Limited Bid Approach (PRS1)

Eriksson and Westerberg (2011) have suggested that selected tendering for partnering can enhance continuity and long-term cooperation, which is important for reducing cost overruns, improving a contractor's understanding of client's demands and thereby enhancing long-term customer value, improving environmental performance, maintaining a safe and healthy work environment, and improving innovation. Similarly, Pesa¨maa et al. (2009) have explained that limiting the amount of bidders increases the opportunities for continuous work for high performing contractors, which motivates them to cooperate with clients.

2.5.6 A Multi-Criteria Bid Evaluation (PRS2)

Rahman and Kumaraswamy (2005) have emphasized that for relational contracting, lowest price is the least important criteria in contractor selection process. Technical factors such as quality of work, project management capability, adequate resources, safety issues, and technical capabilities are more important factors. Eriksson and Pesa¨Maa (2007) have found that partner selection based on task-related attributes such as a contractor's quality system, environmental management system, project staff, financial records, technical skills, attitude to change, cooperative skills, and references has a significant impact on cooperation during execution.

2.5.7 Financial Incentives (RR1)

Rose and Manley (2011) regard using financial incentives in construction projects as a key means of improving outcomes. In addition, Meng and Gallagher (2012) have stated that the basic principle of incentive contracting is simply to take advantage of contractors' general objective to maximize profits by giving them the opportunity to make more profit if the contract is completed efficiently. Tang et al. (2006) have found that incentives create a proactive, cooperative relationship between the contracting parties and reinforce the cultural shift from a traditional adversarial approach to cooperative contracting.

2.5.8 Joint Risk Sharing (RR2)

Ling et al. (2006) have reported that clearly defined and equitable risk allocation and sharing arrangements facilitate relational contracting. However, an excessive use of exculpatory clauses and ambiguous terms when allocating risks may lead to disputes. Therefore, Rahman and Kumaraswamy (2004 b) have identified a need for flexible contract conditions that can enable contracting parties to proactively and jointly address known risks and work together to mitigate risks that have not been identified, planned for, or allocated.

2.5.9 Time-Bound Payments to Contractor (RR3)

Cheung et al. (2008) have found that a project's financial situation affects the behavior of the contracting parties. Similarly, Kaluarachchi and Jones (2007) have observed that if a contractors cash flow is not sustained, this puts a constraint on the contractors ability to retain skilled staff which ultimately results in a poor quality product. Therefore, Glagola and Sheedy (2002) have noted that contractors typically seek a reasonable and efficient method of processing payments. If a client establishes this procedure, the contractor is better able to manage the cash flow for the project, which, in turn, maximizes profitability.

2.5.10 Technical Training (TR1)

Beach et al. (2005a) have stated that people within the partnering organizations must be educated in preparation for the operational and cultural change that partnering can entail. The success of this educational process plays a significant role in determining employee commitment and in developing an organizational culture in which knowledge is freely shared with external parties. Rahman and Kumaraswamy (2004) have emphasized the necessity for public sector projects to alter their rules and introduce integrated training programs to improve the knowledge and skills of government officials.

2.5.11 Training in Soft Skills (TR2)

Hartmann and Bresnen (2011) have reported that developing partnering processes is not only a matter of learning new knowledge and adjusting existing working processes but also requires that old routines and behaviors be discarded. Crane et al. (1997) have suggested that employees should be educated about partnering and made to feel that they are a valuable and necessary part of the process. They should understand the goals for the relationship and be able to relate their work to the partnering principles agreed between senior partners in the project, as these principles will not automatically cascade down to the lower tiers (Alderman and Ivory 2007). Briscoe et al. (2001) have advocated that training in soft skills be provided for employees and have suggested that such training be extended to employees of supply chain organizations, where there is no established tradition of training in such skills.

2.5.12 On-the-Job Training (TR3)

Studying the construction of clean room facilities in Canada,Shields and West (2003)have observed that a practical organizational approach to information sharing and the coordination of inter-firm activities and on-the-job classrooms for rapidly training workers in unfamiliar construction techniques and systems have proved successful in partnering projects. Improved communication and information exchange are critical for efficient supply chains and often these will only emerge when clients invest in training (Briscoe et al. 2004b).

2.5.13 Information Sharing (COM1)

Kaluarachchi and Jones (2007) have discussed how established channels of communication between the site and various parties, which can include face-to-face meetings, faxes, emails, and telephone calls, can be used in partnering. Employing appropriate communication methods with respect to the nature of the message reduces the chance of miscommunication. Similarly, Barlow (2000) has found that face-to-face communication is improved when all alliance members share the same office building.

2.5.14 Time-Bound Meetings of Project Team (COM2)

Gottlieb and Haugbølle (2013) have argued that continuous and structured meetings are part of partnering. Meetings are useful for developing an integrated and cooperative environment. Meetings can be daily, weekly, informal, or can be scheduled as needed. This method of communication facilitates openness, team building, effective communication, problem resolution, and timely responsiveness.

2.5.15 Removal of Hierarchical Processes in Communication (COM3)

Kaluarachchi and Jones (2007) have noted that construction projects are dominated by hierarchical communication processes across the supply chain as well as within the organizational structure of participant organizations. This delays or prevents effective sharing of information and knowledge. Bayliss et al. (2004) have suggested that an arrangement involving active participation and open communication helps to move away from the hierarchical structure normally associated with construction projects and allows teams to develop partnerships.

2.5.16 The Formation of a Joint Project Team (TW1)

Li et al. (2001) have found that a partnering team brings organizations together and facilitates joint responsibility for continual diagnosis of issues, coordination and problem solving. Laan et al. (2011) have asserted that it is not only important to select the right employees but also to pay attention to the ways in which these people work together. Furthermore, when assembling a construction partnering team, careful consideration should be given to levels of professional experience, skills in multiple disciplines, and personalities of the members.

2.5.17 Team-building Workshops (TW2)

Chan et al. (2006) have explained that the goals of a partnering workshop are to help the project team establish open and honest communication, to build team spirit, and to develop the partnering charter. The team-building sessions should be held prior to the implementation of the project and should involve key players from different firms, such as engineers, foremen, specialists, lawyers, and other staff. After initial workshops, regular interim workshops are effective in strengthening the partnering spirit among the parties over the life of project.

2.5.18 Specialized Subcontractor Involvement in Design (TW3)

Eriksson and Nilsson (2008)have advocated that specialized subcontractors should be involved in design as this helps to improve operational efficiency in complex and critical projects. Also, since decisions made during the design process have a significant influence on the final cost and timeliness of a project, early input of specialized subcontractors would certainly reduce project time and cost.

2.5.19 Joint Project Planning, Controlling and Monitoring (TW4)

Briscoe et al. (2001) have explained that construction is a sequential activity that relies heavily on detailed planning and programming. Planning skills are crucial and such skills are once again associated with the proficiency of the partner. An expert review of project plans by the people responsible for the work provides an opportunity for identifying areas of waste. It is the project team at operational level which has hands-on experiences and deals with the everyday issues such as design and materials. Tang et al. (2006) have reported that most partnering efforts involve giving project team members increased autonomy by dropping decision-making authority down to the lowest possible level. This improves the effectiveness of decisions, because people with operational level information on the issues can deal directly with each other.

2.5.20 A Joint Risk Identification and Mitigation Strategy (TW5)

Tang et al. (2006)have found that brainstorming for risk identification, joint evaluations of risk, risk reduction and risk response, and periodic document reviews for risk monitoring are the most frequently used techniques in partnering. These ensure that the partnering team not only attempts to avoid problems that are destructive to performance but also to solve the problems by encouraging open discussion of possible solutions.

2.5.21 First Meeting of Top Management from Both Sides to Decide Objectives (TW6)

Kadefors (2004) has argued that formulating mutual objectives provides a deeper understanding of the project's overall goals and the difficulties and possibilities involved in achieving them. On this point, Chen and Chen (2007) have suggested that some initial meetings should be organized to exchange expectations and goals regarding the relationships among the parties.

2.5.22 Preparation of Project Charter (TW7)

Adnan et al. (2012) have defined the partnering charter as a psychological contract or a "handshake" between men and women of honor, which establishes how they agree to work with each other and the major objectives they want to accomplish. Chan et al. (2008) have suggested that the partnering charter should include specific guidelines on issues such as how to ensure safety and reliability, how to complete a quality project in a financially viable and environmentally friendly manner, and how to continuously improve and build a reputation in the industry.

2.5.23 Contractor Involvement in Design (TW8)

Eriksson and Westerberg (2011) have mentioned that in design-build contracts, contractors are procured early based on the project's brief sketches, after which the contractor is responsible for the detailed design. This results in a contractor-focused design, which facilitates solutions with high constructability. Similarly, Laan et al. (2011) have explained that when contractor organizations are responsible for the project design and the construction licenses, this limits opportunistic behavior such as claiming for extra work or delaying obtaining licenses. Moreover, Eriksson (2010) has found that a close collaboration between client and contractor in the early design stages generally develops into a close collaboration throughout the project life cycle.

2.5.24 Alternative Dispute Resolution Mechanisms (DR1)

Ruuska and Teigland (2009b) have attributed the success of partnering projects to the parties' ability to resolve conflict through dialogue. Similarly,Wong et al. (2005) have remarked that implementing alternative dispute resolution (ADR) techniques before litigation and including then in the contract can instill trust in other parties. These contracting parties may feel that their partners are willing to seek a win-win resolution without destroying cooperation. On this point, Yates and Epstein (2006a) have emphasized that contracts should specify time-bound utilization of alternative dispute resolution procedures to avoid claims.

2.5.25 Time-Bound Dispute Resolution (DR2)

Glagola and Sheedy (2002) have reported that timely decisions increase production and reduce the possibility of a conflict escalating into a claim. A shift in the attitude of the parties towards openness and communication considerably reduces administration costs of a contract. For this purpose, Bayliss et al. (2004) have suggested conduct time-bound review meetings to provide a platform for open communication among the contract participants. Such meetings are a valuable platform for airing grievances, which otherwise might remained buried in the organizational hierarchy and become a source of conflict.

2.5.26 A Regular Assessment Process (AP1)

Anvuur and Kumaraswamy (2007) have observed that effective teams translate their shared purpose into specific performance goals and targets and periodically assess their joint performance against these targets. Similarly, Bresnen (2007) has stated that effective evaluation and continuous improvements helps to set standards for judging a project's performance and have a direct effect on partnering. Crane et al. (1999) has also suggested that team members should assess the partnering relationship on a periodic basis. Some important issues that might be addressed include the level of trust among parties, improvement of processes, and the effectiveness of the partnering relationship.

2.5.27 Publication of a Final Report (AP2)

Drejer and Vinding (2006) have argued that evaluating projects according to traditional criteria of time, cost and quality does not reflect the fact that lessons are learned through experience. The use of post-project reviews, systematic evaluation, and accounts of experiences in the final report provides managers with strategies for short-term task performance as well as long-term learning and knowledge accumulation. Furthermore, Meng (2010) has noted that that a final assessment report identifies the key strengths and weaknesses of the relationship.

2.6 Framework for preliminary investigation

The section 2.5 discussed the 27 organizational strategies of relational contracting which need to implement by organization for adoption of relational contracting. These organizational strategies can be grouped under key success factors of relational contracting. The success factors for relational contracting have been presented in Table 2.2. From this table it is observed that key success factors are top management commitment, partner selection method, risk and reward mechanism, training to employee, communication mechanism, team work, dispute resolution mechanism, and assessment mechanism. While trust as a key success factor of relational contracting has not considered in this study, the reason for elimination is mentioned in introduction section. The other success factors such as forming mutual goals and objectives, continuous improvement, early involvement of contractor in design, effective coordination among parties and provision of adequate resources are part of organizational strategies discussed in section 2.5. Figure 2.1 provides the grouping of various organizational strategies under key success factors of relational contracting as a framework. This framework facilitates the preliminary investigations of first and second research objectives.

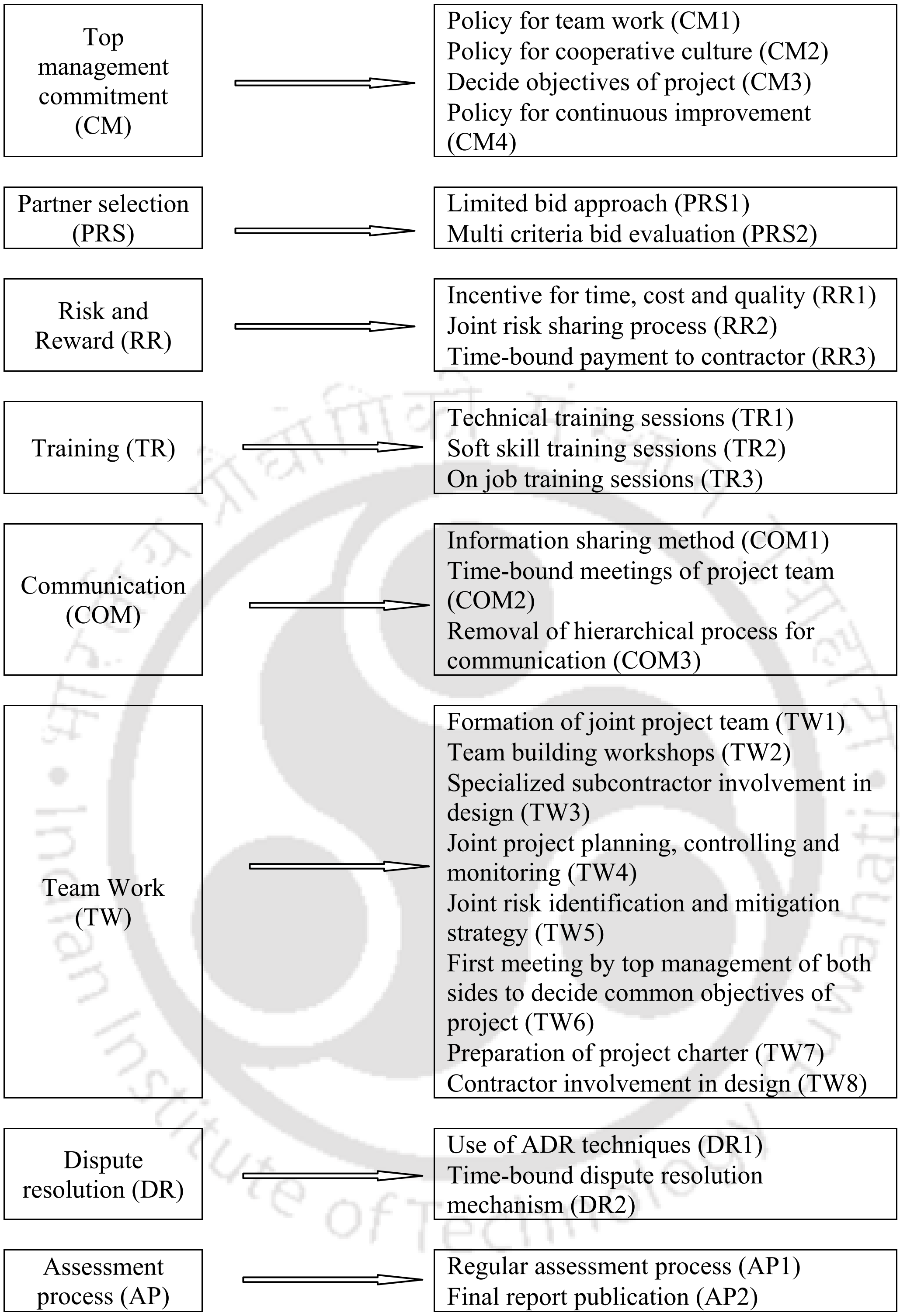

Figure 2.1 Success factors of relational contracting and respective organizational strategies

2.7 Public Sector Organizational Change

Change is considered a “fact of life” for most organizations. The process of change is a continuous sequence of individual and collective events, actions and activities unfolding over time (Buick et al. 2015). Organizational change appears to be happening with increasing frequency and magnitude in both the public and private sectors. However, most of major studies and approaches to change focus on the private sector, and studies that do address the public sector tend to derive their approaches to change from the private sector. Similar changes have taken place and are continuing to take place in the public sector also(Coram and Burnes 2001). In response to increasing public dissatisfaction with public services and as a part of the quest for solutions to the problems of public bureaucracies, governments and other public agencies worldwide have been reinventing themselves and adopting private sector management philosophies and principles (Ates 2004).

According to Barnard and Stoll (2010), there are two main approaches to change management: planned change management and emergent change management. Planned change is an iterative, cyclical, process involving diagnosis of problems, action and evaluation, followed by further action and evaluation. According to this approach, once change has taken place, it should be self-sustaining and long lasting. The purpose of planned change is to improve the effectiveness of the human side of the organization by focusing on the performance of groups and teams. Planned change stresses the collaborative nature of the change effort by the organization, the managers, the recipients of change and the agents of change. They jointly diagnose the organization's problem and jointly plan and design the specific changes (Coram and Burnes 2001). By contrast, an emergent approach to organizational change regards change as so rapid and unpredictable that it cannot be managed from the top down. Instead, it is argued, change should be seen as a learning process, where the organization responds continuously to internal and external environmental changes. This approachfocuses more on “change readiness and facilitating for change” than on setting specific pre-planned steps for each change initiative (Barnard and Stoll 2010). This emergent approach has been criticized due to the fact that change processes vary from situation to situation and from organization to organization (By 2005).

The arrangements and procedures for executing change depends on the behavior and performance of individual workers, whether in the private or public sector (Sinha and Van-de-Ven 2005). Change management practices in the private sector depend on the workers’ ability to fulfill customer needs and generate customer satisfaction. However, public sector workers are not primarily guided by customers' or citizens' wishes. Therefore, change management processes depend on the focus of the change and the type of organization (Jurisch et al. 2013). As the focus of change management in the public sector is entirely different than in the private sector, change in the public sector presents typical barriers to organizational development and interventions. Private sector managers have higher competency levels in relation to "goal and action," which may be attributed to a clear definition of performance measures such as profit and sales. Thus, private enterprises are controlled by markets (Boyatzis 1982). In contrast, organizations under governmental control have more intangible goals, less incentives for cost reduction, and dysfunctional bureaucratic issues such as red tape and rigidity. In addition, funding of public agencies depends on the political and economic importance of the agency and on public expectations (Perry and Rainey 1988). Furthermore, regulation controlling the functioning of public organization depends on political processes. Attempts to change this regulation may occur at a slower pace than market processes, since deliberation and negotiation cause delays in political decision-making. This ultimately reduces the organizational responsiveness of the public sector (Morales et al. 2012).

Public organizations are noted for elaborate hierarchies. Their internal structures are often imposed by government rules, and they are resistant to change and to the delegation of authority. Employees are security conscious, especially in relation to potential political controversy. Therefore, decision-making processes are more cumbersome. Public executives have less control over their organizations than business executives (Perry and Rainey 1988), and public managers have lower job satisfaction, job involvement, and organizational commitment. They are less satisfied with their co-workers and with promotion policies. There is no relation between reward or monetary incentives and performance (Rainey 1983). By contrast, private managers are more aware that rewards are contingent on performance, so their policies promote efficiency. They are personally satisfied with various dimensions of their work (Solomon 1986). Public managers often manage their jobs "despite" the legislature, "despite" the budget office, and "despite" press leaks. However, due to organizational culture that many managers cannot not acknowledge their own successes (Whorton and Worthley 1981).

Commitment and action by top management leaders significantly affect project performance, and the chance of failure is high if top management is not adequately involved in decision-making. Top leaders in the public sector are less committed to fast decision-making (Voet et al. 2015). This may be due to complex bureaucratic procedures entailed indecision-making and constraints on personal decisions due to the necessity of maintaining openness in decision-making and following standard procedures (Boyatzis 1982). For example, competitive bidding is based on the principles of accountability and control, and public administrators are required to follow mandates for competitive bidding even though such practice may cause them to pay more for a product than they would in the open market. They may be criticized for blindly following procedures when they are forced to trade efficiency for accountability (Whorton and Worthley 1981). In contrast, private sector managers are allowed more freedom in strategic decision-making, which leads to improved leadership competencies(Boyatzis 1982).This can be explained by a basic principle of constitutional law, which states that private persons cannot do what is strictly forbidden. However, public servants are more limited in the sense that they cannot do more or less than what they are specifically allowed (Morales et al. 2012). The above restrictions make change management in the public sector a difficult task, which cannot be achieved according to a change management model. Coram and Burnes (2001) have concluded that there is no “one best way” to manage change. The top-down, planned approach to change may well be suitable for a stable public sector bureaucracy. Therefore, it is necessary to identify the success factors for planned organizational change in the public sector.

2.8 Success Factors for Planned Organizational Changes in Public Sector

Junge et al. (2006) have commented that there is no specific generic model for implementing planned organizational change in any public sector organization. The reason could be that organizational development applications in the public sector are conducted in complex political and organizational environments. Moreover, the unique features of public organizations such as their values and structures, the multiplicity of decision makers, stakeholder diversity, and intergovernmental relations make public sector change more challenging but not impossible (Cummings and Worley 2009).

Bale and Dale (1998) have studied the new public sector reforms in New Zealand and have identified the key elements for success, which include establishing clear lines of responsibility between government ministers and their departments, defining performance in an unambiguous and measurable way, delegating authority to chief executives, establishing incentives that reward and penalize results relative to agreed outcomes, and reporting and monitoring performance. In their study of the privatization of the Property Service Agency in the UK, Coram and Burnes (2001) have proposed an approach to change that incorporates both the structural and cultural aspects of change and that recognizes the need to appreciate and respond to the fears and concerns of staff. Ates (2004) has studied cultural change in the Turkish public sector and has found that the hierarchical culture in public sector is a major barrier to change. This can be overcome by gaining the confidence and trust of staff and teaching them new and innovative managerial techniques. Fernandez and Pitts (2007) have studied the conditions under which public managers in the USA favor and pursue change. Their findings show that positive attitude to change, leadership tenure, financial resources, managerial networking, a protective environment, support from staff and political leaders, and discretion in decision-making are some of the important factors that encourage public sector managers to pursue change.

In their study of organizational change in the U.K. National Health Service, Battilana et al. (2010) have found that the success of planned organizational change depends on leadership competence. Leaders should communicate their activities and their vision to others. They should guide others in implementing organizational change and focus their employees' attention on goals. Abdulraheem et al. (2013) have studied planned organizational change in the Nigerian public sector and have concluded that the values of the society in which an organization operates should be understood before change measures are formulated. Voet et al. (2015) have found that when implementing change in the public sector, the commitment of leaders is vital for managing the behavior and commitment of lower tier employees. In their study of change management in the New Zealand public sector, Ahmed et al. (2015) have found that pressure from the external environment is the main trigger for reform in public sector organizations and also various stakeholder have an influence on organizational change.

A review of the above studies shows various determinants affect the outcome of public sector organizational change. Fernandez and Rainey (2006) have identified eight crucial determinants for managing public sector change: the change should be necessary; a plan should be provided; resistance to change should be overcome; top management must be committed; external support should be available; resources should be provided; the change must be adequately managed; and the change should be comprehensive. In a similar way, this study summarizes the critical success factors for public sector change. These are discussed below.

2.8.1 Ensure the Need (EN)

The public sectors undergoes changes when it faces either unprecedented environmental change or external threats or when performance must be improved to ensure the support of stakeholders (Stewart and Kringas 2003). Increasing competition in the wake of increasing globalization is a major antecedent of a variety of organizational changes, ranging from downsizing to comprehensive restructuring within the public sector (Morales et al. 2012). Therefore, managerial leaders must verify and persuasively communicate the need for change. The implementation of planned change generally requires that leaders verify the need for change and persuade other members of the organization and important external stakeholders that change is necessary. To achieve this, public sector leaders can take advantage of mandates, political windows of opportunity, and external influences to verify and communicate the need for change (Fernandez and Rainey 2006).

2.8.2 Develop a Vision (DV)

A top-down, planned approach is appropriate for a public sector bureaucracy (Coram and Burnes 2001). The process of convincing individuals of the need for change often begins with crafting a compelling vision of the change. A vision is an image of the future that is easy to communicate and that appeal to an organization's members. It provides an overall direction for the change process and serves as the foundation from which to develop specific strategies to reach a particular end (Fernandez and Rainey 2006). The content of the vision must be sensible and should be clearly understood by the organization's members as content without clarity is ineffective (Cole et al. 2006).

2.8.3 Stakeholder Analysis (SA)

Many public projects involve a variety of stakeholders such as common people, political leaders, government departments, and implementing agencies. The scrutiny of public opinion renders public projects more vulnerable to environmental changes and variations in expectations (Jurisch et al. 2013). Therefore, support from key external stakeholders is crucial for the success of change efforts. Implementing change without garnering the support of interest groups may speed up the implementation process but at the cost of dissatisfaction and criticism (Fernandez and Rainey 2006). The purpose of stakeholder analysis is to identify the stakeholders in a development intervention, to analyze their knowledge, attitudes and practices with regard to underlying issues, and to classify them in terms of their functional roles (UNDP 2006).

2.8.4 Development of an Execution Plan (DEP)

After analyzing the stakeholders, managers must develop a strategy for implementing change. Planned change should be collaborative in nature, and managers, the recipients of change and the agents of change should jointly diagnose the organization's problem and jointly plan the specific changes (Coram and Burnes 2001). Change processes must be "fit for purpose," with contextually appropriate goals and plans that reflect the specific requirements or conditions of individual organizations (Buick et al. 2015). Change is not a single or continuous process but is constituted by several steps. This means that managers need to consider appropriate strategies, with respect to areas such as communication, training, and reinforcement, for the various stages, rather than deciding on a single approach that can be applied throughout the process. They should also remain flexible and react to changes as they happen (Barnard and Stoll 2010). Thus, new ideas or visions must be transformed in to specific strategies with defined goals and a plan for achieving them. A strategy is a roadmap for change, that offers an organization a direction to take in order to reach the desired end state, identifies obstacles, and proposes measures for overcoming those obstacles (Fernandez and Rainey 2006).

2.8.5 Consensus Building to Overcome Resistance to Change (CBR)

Individuals respond differently to organizational change. For some, change may bring increased satisfaction and the chance to grow and learn, whereas others may react negatively to the smallest change (Cole et al. 2006). It is more difficult to reach a consensus various departments and levels of authority are involved (Jurisch et al. 2013). In the past, many public sector agencies failed to fully adopt change due to an inability on the part of top management to disseminate information about new policies and to convince employees of the need to implement them (Fernandez and Pitts 2007). The primary mechanism for creating readiness for, and acceptance of, change and for institutionalizing changes is the "change message," which must be communicated effectively (Cole et al. 2006). It is necessary to win over staff or, at the very least, to address their concerns and fears (Coram and Burnes 2001). Effective implementation of change requires that employees know what should be achieved and the direction of the change. Clarity reduces employees' uncertainty and wins their support for the change (Buick et al. 2015).

2.8.6 Empowering the Team with Resources (ETR)

Successful change usually requires sufficient resources to support the process. Change is not cheap or without trade-offs. Planned organizational change involves the deployment or redirection of scarce organizational resources towards a host of new activities and involves including developing a plan for implementing the change, communicating the need for change, training employees, developing new processes and practices, restructuring the organization, and testing innovations (Fernandez and Rainey 2006). There is a positive correlation between the availability of financial resources and the positivity of a public sector manager's attitude to change (Fernandez and Pitts 2007). Establishing clear lines of accountability, defining performance, delegating authority and reporting and monitoring performance are core areas of public sector reforms (Bale and Dale 1998). A strategy for reducing employees' resistance to change is to involve them in the change and to empower them to make changes themselves (Barnard and Stoll 2010). If senior management fails to empower employees, the project will not produce the anticipated results (Jurisch et al. 2013).

2.8.7 Commitment of Leadership (CL)

Leaders, or powerful coalitions within organizations, can be a force for change. The presence of powerful internal groups or coalitions who are determined to bring about change is one of the key enabling dynamics allowing organizations to overcome institutional constraints that suppress change (Fernandez and Pitts 2007). The role of leadership is generally seen as essential during the implementation of organizational change, and attention is often focused on senior management or the guiding coalition of change (Voet et al. 2015). When employees see their senior managers committing time and effort to change, they will be more likely to commit to the change and offer moral support (Jurisch et al. 2013). The role of senior management in initiating change is often emphasized, but direct supervisors also play a vital role in implementing change in public sector organizations (Voet et al. 2015). The leadership role of direct supervisors should not be overlooked during organizational change in public sector organization (Voet 2014).

2.8.8 Communication during Institutionalization (COM)

Virtually all organizational changes involve changes in the behavior of organizational members. Employees must learn and routinize these behaviors in the short term, and leaders must institutionalize them over time so that new patterns of behavior displace old ones (Fernandez and Rainey 2006). Communicating accurate and timely information during this change process provides meaningful opportunities for employees to learn about the change (Wright et al. 2011). Regular and effective communication between managers and employees can be facilitated through regular meetings and informal discussions to ensure employees are kept informed of changing circumstances and allow them the opportunity to adjust their behavior accordingly (Buick et al. 2015).

2.8.9 Measuring and Celebrating Progress (MP)

The outcome of change management should be measured according to two criteria. First, the success of change management should be assessed according to how it is perceived by staff at the management and workforce levels. Second, the success should be measured according to improvements in key performance indicators identified in the strategic plan and in annual reports(Stewart and Kringas 2003). As public sector organizations serve multiple constituents with a variety of goals, it is relatively difficult to assess outcomes. This may reflect a greater emphasis in the public sector on evaluating organizational processes rather than outcomes (Robertson and Seneviratne 1995). Therefore, top management is always more interested in "hard" performance measures, which can be used to convince stakeholders (and, where necessary, critics) that the agency is addressing its problems and can be relied upon to deliver its service at the highest possible level of efficiency (Stewart and Kringas 2003).

2.9 Gaps in Knowledge and Research Questions

The first research gap identified in this study is that no existing literature focuses on a planned organizational change model for the adoption of relational contracting in public sector construction projects. Studies of relational contracting generally focus on organizational processes for partner selection, partnering execution, and partnering assessment. The partnering models are reviewed in relation to the success factors for organizational change in the public sector. Table 2.3 presents the similarities and differences between relational contracting models and evaluate them against the success factors for public sector change.

All the partnering models reviewed emphasized on developing a compelling vision statement for organization for adopting partnering. But before preparing the vision statement it is necessary to identify need for partnering. Only three models by Crane et al. (1997), Beach et al. (2005a) and Anvuur and Kumaraswamy (2007) insist of identifying the business drivers for organizations to use partnering as alternate project procurement method. Private organizations undergo changes to accommodate market forces but public organizations rarely have clear objectives for change. They undergo changes when government pushes them for performance improvement (Ring and Perry 1985). Therefore, public managers should carefully analyze the current performance with standard benchmarks and decide whether partnering can address the current performance gap. After this, it is responsibility of public managers to convince the important stakeholders for use partnering in project. Crowley and Karim (1995) and Wilson et al. (1995) put some light on stakeholder analysis but rest of the models are silent on this aspect of change management. As implementation of partnering is an organizational change management process, it is also necessary to convince the organization's employees for change otherwise employees do not support the change with full heart. Only, Wilson et al. (1995) discusses about individual intervention in their model and Beach et al. (2005a) stresses on preparing sub contractors partnering. During execution of partnering, collaborative efforts from both client and contractor side are expected in terms of sharing resources of each others. Crowley and Karim (1995), Crane et al. (1997) and Cho et al. (2010) mention about the empowerment of project team with resources particularly delegating authority of day to day decision making while other models are silent on this particular issue. All most all models focus on key organizational change processes such as commitment of leadership, communication during institutionalization and measuring and celebrating progress. It is observed that most of these models address some of the key focus areas, such as development of a vision, development of execution plan, commitment of leadership, communication during institutionalization, and measurement and celebration of progress. However, other key focus areas, such as ensuring the need for change, stakeholder analysis, consensus building to overcome resistance to change, and empowering the team with resources, are not addressed in most models.

In addition, existing models have suggested strategies for partnering, but these strategies have certain limitations when viewed from the perspective of public sector organizational change. For instance, Crowley and Karim (1995) have suggested creating a joint alliance for partnering, but they are silent on how the public sector rigid boundaries can be made flexible. The cooperative benchmarking approach to partnering (COBAP) proposed by Li et al. (2001) has the major constraint of requiring the inclusion of two members from probable contractor organizations in the COBAP team before bidding, since contractors in the public sector must be selected through an open bidding process. Anvuur and Kumaraswamy (2007) have proposed partnering strategies to improve trust, cooperation and productivity but fail to suggest micro-level processes to realize these cultural transformations. Similarly, the hybrid model developed by Cho et al. (2010) is not designed for public sector organizations that want to use partnering as an organizational change process for the first time. Thus, most the partnering models are underdeveloped in terms of addressing the key success factors of public sector organizational change. There is a need for a relational contracting framework which takes care about processes of public sector organizational change while implementing relational contracting processes. Therefore, the research question is;

"How relational contracting can be incorporated as public sector change management processes in public sector construction organization?"

Table 2.3 Similarities and differences among relational contracting models against success factors for public sector change

Code	**Public Sector Organizational Change – Key Focus Areas**	Crowley and Karim (1995)	Wilson et al. (1995)	Crane et al. (1997)	Li et al. (2001)	Cheng and Li (2004)	Beach et al. (2005)	Anvuur and Kumaraswamy (2007)	Cho et al. (2010)
EN	**Ensure the need**: *Leaders should verify the need to change within particular context of environmental change*			√			√	√	
DV	**Develop a vision**: *Vision communicates a picture of the future that provides overall direction for the change process.*	√	√	√	√	√	√	√	√
SA	**Stakeholder analysis**: *Stakeholder analysis identifies stakeholder's knowledge, attitudes within context of change and convinces for new functional roles.*	√	√						
DEP	**Development of execution plan**: *Develop a course of action jointly to diagnose problems, plan and design the specific changes.*	√	√	√	√	√		√	√
CBR	**Consensus building to overcome resistance to change**: *Develop mechanism for creating individual change readiness and obtains their support for organizational change.*		√				√		
ETR	**Empower team with resources**: *Successful change requires sufficient resources in terms of money, manpower and authority of decision-making for planning, training, communicating, experimenting and innovating.*	√		√					√
CL	**Commitment of leadership**: *If senior managers are committing both time and effort to the change then employees get motivated for equal commitment to the change.*		√		√	√	√	√	√
COM	**Communication during institutionalization**: *Communicating accurate and timely information during change process provides opportunities to employees to learn about the change.*	√		√	√	√	√	√	√
MP	**Measuring and celebrating progress**: *The outcome need to measure as improvement against key performance indicators and satisfaction of employees during change.*		√	√	√	√	√	√	√

The second research gap is that while many studies identify the success factors for relational contracting, no study attributes importance to the opinions of operational level employees. The decision to use relational contracting in project is always taken by top management, and the commitment of top management throughout the project life cycle is considered one of the success factors for relational contracting (Chen and Chen (2007); Love et al. (2010)). However, the commitment of operational level team is also important for implementing organizational change through relational contracting. Operation level team or front line employees means Junior Engineers and Assistant Engineers from public sectors that are responsible for day to day planning, controlling and billing of construction activities. If change is imposed on the lower team in public sector organizations, this directly impacts on their ability to adopt the change. They feel powerless in the face of external pressure and may withdraw their support for the change (Buick et al. 2015). It is necessary to build a coalition with the operational level team, to transfer ownership to the team, and to making everyone a "hero" (Al-Haddad and Kotnour 2015). The direct participation of the lower-level team is crucial for overcoming resistance to change. The team members should be motivated to bring about change themselves (Barnard and Stoll 2010). The successful implementation of public sector organizational change requires a hybrid model combining lower-level participation with direction from top management (Fernandez and Rainey 2006).

Also, importance of operation level employees has been reflected in literature of stakeholder management of project. Stakeholder engagement in construction project aims at involving all project stakeholders in the planning, decision making and implementation of the project, so as to reduce conflicts and establish clear project priorities. It can be viewed as a management tool to promote collaboration, a social learning platform to establish shared goals, and an ethical need to maintain fairness and equity (Mok et al. 2015). Karlsen (2002) identified line organization is an important stakeholder, equal to other stakeholders like clients, end users, contractors/suppliers, public authorities who are equally causing problems and uncertainty for the project. Project manager need to understand the line organization's issues better because they are affecting on project performance and collaboration. They are helpful to (1) establish a plan for evaluating progress on zero harm or zero accident targets for the project, (2)provide a plan for minimizing disruption caused by the construction process e.g., traffic congestion, dust, and noise, (3) incorporate safety prevention techniques that prevent or minimize occupational hazards and risks during construction and (4) establish partnering strategies for resolving interpersonal conflicts among project stakeholders (Valdes-Vasquez and Klotz

2013). Also, project team has a good understanding of the relationships with other stakeholders which come in contact during construction stage. Generally, other stakeholders directly communicate with the project team, and supervise the process of construction (Yang et al. 2010). Therefore, project manager need to attune to social environment of organization so that project team can work together as a coherent unit (Yang et al. 2011).

Although many of these points appear to be common sense, the review of the literature on relational contracting in public sector has revealed that the vital role of operational level employees has been overlooked by researchers. Table 2.4 presents information on various studies and nature of sample used for data collection in those studies. It can be observed that all of these studies focus on the opinions of top management or a mixed representative group. Hence, it is necessary to explore the success factors for relational partnering from the perspective of operational level employees in the public sector. Therefore, the research question is;

"*Which of the factors considered critical to relational contracting do front-line-employees most closely associate with project success?*"

Table 2.4 Type of studies to identify success factors for relational contracting

Sr. No.	Reference	Type of organizations		Type of respondents			Research Method		Sample size
		Private	Public	TLM	MLM	FLE	Empirical	Qualitative	
1	Black et al. (2000)	√		√	√		√		78
2	Ng et al. (2002)		√	√	√			√	6
3	Chan et al. (2004)	√		√	√		√		78
4	Rahman and Kumaraswamy (2005)	√	√	√	√		√		91
5	Chen and Chen (2007)	√	√	√	√	√	√		221
6	Doloi (2009)	√	√	√	√		√		97
7	Love et al. (2010)		√	√	√			√	21
8	Chen et al. (2012)	√		√	√		√		42
9	Ning and Ling (2014)	√	√	√	√	√	√		104
10	Jefferies et al. (2014a)		√		√			√	12
11	Lahdenperä (2017)	√	√	√				√	8

Legends: **TLM** – Top Management Level; **MLM-** Middle Management Level; **FLE** – Front-line employee

2.10 Summary

This chapter reviews relational contracting in the construction industry and presents various definitions of relational contracting. Eight partnering models for relational contracting are reviewed and the limitations of these models for public construction projects are also addressed. The key organizational strategies for the successful implementation of relational contracting in construction organizations are identified through a review of the relevant literature. The review results in the identification of 27 organizational strategies, which are used as the determinants for relational contracting implementation in public sector organizations. To understand the role of organizational change in initiating relational contracting in public sector organizations, the chapter also reviews organizational change theory. The review leads to the identification of nine key success factors for public sector organizational change. A review of relational contracting from the perspective of public sector organizational change reveals gaps in the literature.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the methodology adopted for this research. A case study methodology was used to answer all three research questions with separate method of data collection and data analysis for each research question. Researchers have used case studies for many purposes: (i) to *explore* new areas and issues where little theory is available or measurement is unclear; (ii) to *describe* a process or the effects of an event or an intervention, especially when the event affects many different parties; and (iii) to *explain* a complex phenomenon (Patton and Appelbaum 2003). Although case studies are typically used for exploratory purposes, they may actually be more powerful when used for explanatory purposes, that is, for their ability to answer questions of how and why (Kohn 1997). Case studies are especially suitable for exploring business relationships, because they can capture the dynamics of phenomena and provide multidimensional views of situations in specific contexts (Järvensivu and Törnroos 2010).

This chapter begins by explaining the research design adopted for this study. The next section provides information on the organization selected as the case study for this research. Then, the three method of analysis used in for the three stages of data collection to answer the three research questions are discussed. These are cross-case analysis, the structural equation model, and micro-interlocutor analysis.

3.2 Research Design

The research design is a logical plan which starts with an initial set of questions to be answered and ends with a set of conclusions. This plan can be considered a “blue print of research dealing with at least four problems: what question to study, what data are relevant, what data to collect and how to analyze the results” (Yin 2003). A research design is necessary for any research investigation in order to maximize the conditions of validity and reliability. The research design based on well defined theoretical construct with clear objectives is called as tight research design (Miles et al. 2013). A tight research design was prepared for this study. Tight designs are advisable when researcher is new to qualitative studies and are looking at better understood phenomenon within a familiar culture. They save time and provide clarity on the data collection procedure. The research design for the present study is presented in figure 3.1.

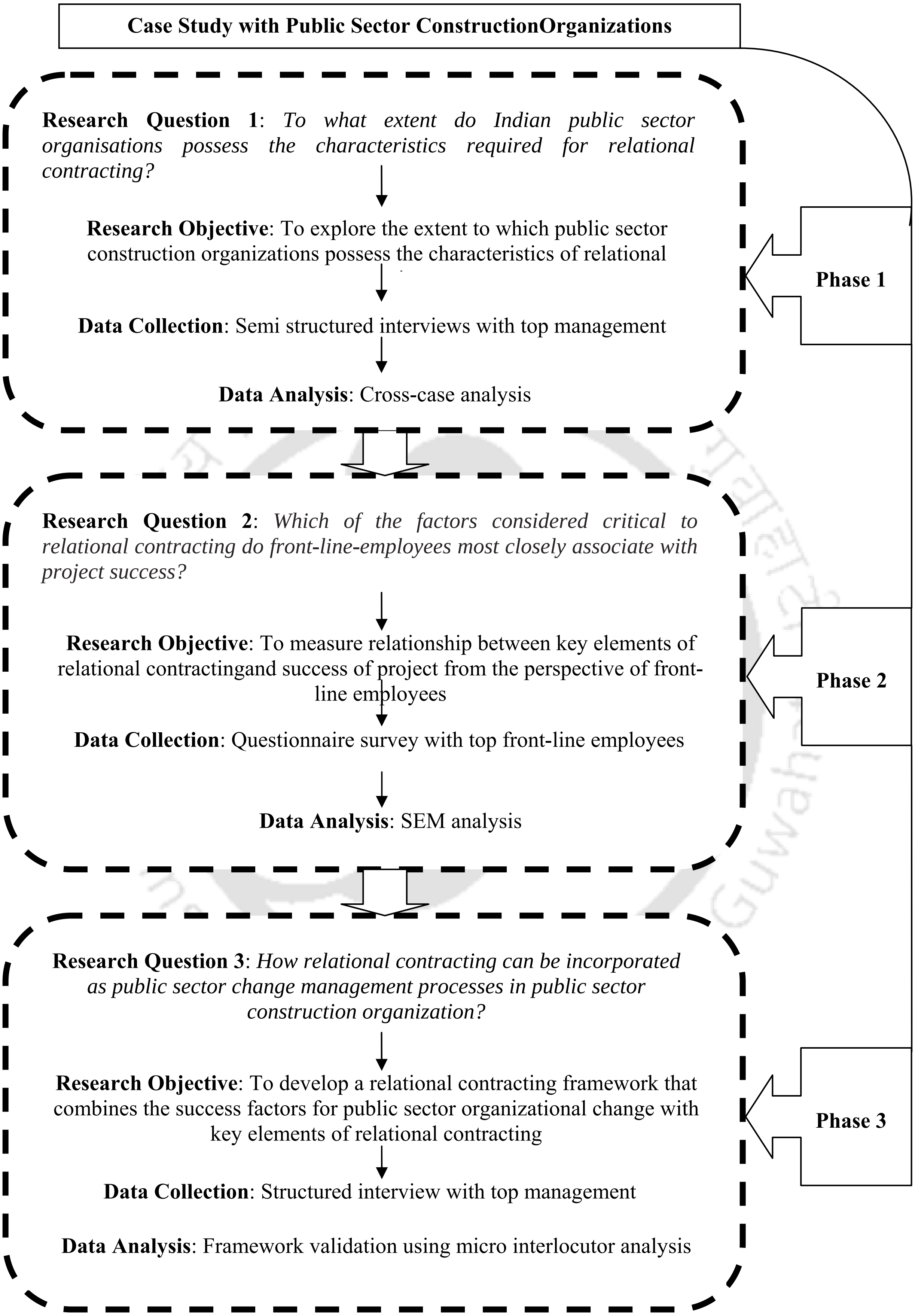

Figure 3.1: - Research design for present study

The research questions address a gap in knowledge, and the research objective is to fill this gap. The rationale for defining the research question is the same as the rationale for research that tests hypotheses. Without a research focus, it is easy to become overwhelmed by the huge volume of data. Hence, defining a specific research question within a broad topic enables the investigators to specify the kind of organization to be approached and the kind of data to be gathered (Eisenhardt 1989).

This research aims to answer three research questions related to relational contracting in public sector construction organizations. Obviously, the research questions guided selection of public sector construction organization for data collection. Multiple case designs are desirable when the intent of research is description, theory building, or theory testing. In addition, multiple cases yield more general research results (Benbasat et al. 1987). Patton and Appelbaum (2003) have noted that case study research does not rely on random sampling techniques. Rather, the case study researcher must strategically select a case that is pertinent to the object of study and that will allow the subject to be investigated fully. It makes sense to choose cases such as extreme situations and polar types in which the process of interest is transparently observable (Eisenhardt 1989).

The cooperative behavior is characterized by reciprocal moves. If client behaves cooperatively, then he can expect a reciprocating cooperative response from the contractor Cheung et al. (2008). If a contractor's cash flow is not maintained by ensuring timely payment, then the contractor's behavior may become opportunistic and aggressive and may be focused solely on self-interest, regardless of detrimental consequences for the collaborator. This behavior is prevalent in Indian public sector projects, in which unavailability of timely funds is a major obstacle for successful completion (PMI-KPMG-Report 2012). Therefore, for the present study two core government departments, whose projects are directly funded by the government, have been selected. The remaining two organizations are profit-seeking public sector enterprises and do not directly depend on the government for funding. This will be useful to understand whether relational contracting behavior of contracting parties depends on funding to the projects. As the four cases have been selected on the basis of four different funding patterns the results can be generalized from one case to the next on the basis of match to the underlying theory, not to a larger universe (Miles et al. 2013).

The question of how many cases to study had to be addressed as a part of the multiple case design. There are no precise guidelines on this, and the literature on case studies rarely specifies a particular number of cases. This decision is left to the researcher. The information richness of the cases is fundamental when deciding the number of cases (Perry 1998). McCutcheon and Meredith (1993) have suggested that between 4 and 10 case studies are sufficient in research relating to operations management. Accordingly, the top management of seven public sector construction organizations were contacted for this study, but only four organizations agreed to take part. These organizations stipulated the condition that the name of their organization should not be revealed. Therefore, the organizations are referred to as Case A, Case B, Case C and Case D.

For data collection and analysis, mixed methods (i.e., qualitative and quantitative) were adopted to achieve the research objectives. McCutcheon and Meredith (1993) have advocated combining qualitative and quantitative approaches to case studies in order to meet the specific objectives of research. The use of quantitative data prevents researchers from being misled by vivid but false impressions in qualitative analysis. Also, quantitative evidence strengthens the rationale or theory revealed by qualitative data (Eisenhardt 1989). For this study, data collection was carried out in three separate phases. In the first phase, qualitative data was collected to explore the four public sector organizations' level of engagement of with relational contracting. The data was analyzed using the pattern matching technique of cross-case analysis. In the second phase, a quantitative method was used to collect data. A questionnaire survey was carried out among front-line employees of the four public sector construction organizations. The data was used to measure the relationship between the key elements of relational contracting and project success from the perspective of front-line employees. Structural equation modeling (SEM) was used to analyze the data. In the third phase, qualitative data was collected to develop a framework for relational contracting in public sector construction organizations. Micro-interlocutor analysis used to validate the proposed framework. The details of the data collection and analysis in the three phases are discussed in separate sections.

3.3 Case Study Organizations

For this study, seven public sector construction organizations were contacted depending on funding pattern such as funded through central or state government budgets or own revenue generation. Three organizations refused to take part in the study on the ground that prior permissions are necessary from their respective ministries. Four public sector construction organizations consented to take part in the study. As taking permissions from ministries was difficult and time consuming task only four organizations were considered for this study. The first organization is a state government public works department, hereafter called Case A. This organization has a glorious history and has operated for over 150 years. It is involved in the construction of state highways, major district roads, bridges, and official government buildings. It directly depends on the government to fund its projects.

The second organization is a government-owned public sector enterprise, hereafter called Case B. It is involved in the construction of power plants and the generation of power. This is profit-seeking public sector organization and is the second largest power generation company in India. It generates funds from internal revenue and loans from financial institutions for the construction of power plants.

The third organization is a public sector enterprise owned by the central government, hereafter called Case C. It is involved in the construction of housing and commercial and institutional complexes, water supply, and sanitation projects for various central government organizations. This is also profit-seeking public sector organization and receives funds from the client organizations it works for. It also generates internal revenue from property development and does not depend on any direct funding from the central government.

The fourth organization is a central government department that constructs railways, bridges, stations, and residential and official buildings for its own department. Hereafter, it is called Case D. This organization is directly dependent on the central government budget for financing of its construction projects.

Yin (2003)has advised that after selecting the cases, the researcher should be clear on the boundaries of cases with respect to context of the case study, specific geographic area being considered, and the specific period being studied. Accordingly, and since it is extremely difficult to study even a single public sector organization whose operations are spread across the country, a geographical boundary had to be set. Although the public sector organizations execute projects across various geographic areas, the same organizational strategies are used across all the regional offices as per government rules and regulations. Hence, the study was confined to a single regional office of each organization. Thus, for case A and case B, Nagpur regional offices were studied, while for case C and case D, Mumbai regional offices were studied, as these geographic areas were convenient for data collection.

3.4 Cross-case analysis

In the first phase of data collection, qualitative data was collected to address the first research question, “*To what extent do Indian public sector construction organizations possess the characteristics required for relational contracting?”* This question provides the study proposition: To implement relational contracting, a set of organizational strategies needs to be adopted. These organizational strategies should be evaluated to judge the extent to which relational contracting has been adopted and promoted within the organization.

The study proposition focuses the researcher’s attention of the researcher specifically on what should be addressed within the scope of study (Yin 2003). Accordingly, an extensive review of the literature on relational contracting was carried out to identify the organizational strategies necessary for implementing relational contracting in a construction organization. These organizational strategies are discussed in section 2.5. They provided a guideline for drafting the questions for the primary data collection and for the theoretical framework for the multiple case studies (Aaboen et al. 2012).

Prior to collecting evidence, it is necessary to determine the appropriate unit of analysis for the focus of the study (Benbasat et al. 1987). As a general guide, the unit of analysis is related to the way the initial research question is defined (Yin 2003). Thus, the research question guided an organization as a unit of analysis.

Initially, a pilot case study was conducted using a public sector organization funded by the central government. The selection of this particular organization for the pilot study for the convenience of the researcher as the organization was more approachable. Perry (1998) has stated that the purpose of a pilot study is not to test the interview protocol; rather it is an integral part of developing the interview protocol.

The primary evidence was collected through semi-structured interviews. The interviews were structured to ensure that key topics concerning relational contracting were covered, while the interviews were open-ended to allow the interviewer to explore hidden information during the course of discussion. Open-ended questions bring out a general picture of organizational practices based on the understanding of the respondents (Kwawu and Hughes 2007). Annexure I provide the interview questions. For the present study, access to the interviewees was sought through personal contacts. The interviewees from each organization were selected based on their position in the organizational hierarchy. Seven personnel representing the top management of each organization were interviewed. Two senior project managers from contractor organization working consistently with each of these organizations were also interviewed. Thus, 36 interviews were conducted during the period January 2016 to April 2016 (Table 3.1).

Table 3.1 Participant's Profile

Designation	No. of Participants	No. of years of Experience (Average)
Chief Engineer	8	33.5
Deputy Chief Engineer	5	32.4
Superintending Engineer	7	32.5
Executive Engineer	8	31.75
Contractor's General Manager	4	34.5
Contractor's Project Manager	4	29.25
Total	36	32.41

Each interview lasted between 45 minutes and 2 hours, and the interviews were transcribed. During the preparation of transcripts, data was coded using a deductive coding method proposed by Miles et al. (2013). The organizational strategies used to promote relational contracting in an organization were identified through the literature review. All these strategies were assigned a "code" (section 2.5). These codes were used during the analysis of each interview to identify the data corresponding to each strategy. Later, all the data collected from the36 interviews related to each strategy code was combined for the purposes of storage and further analysis.

Secondary data was collected from each organization in the form of contract documents, administrative documents such as correspondence with contractors, minutes of meetings, government resolutions, project progress reports, and project quality reports. Coding was also used to analyze the secondary data. The documents were read, important statements were highlighted, and corresponding strategy codes were assigned. Then all the important statements for each organization were recorded under their strategy codes. This provided a matrix of secondary data sorted by strategy code and case organization. This secondary data was then used to cross-check the information collected from the interviews against each strategy code. This facilitated the triangulation of the collected data. The corroboration of data collected through primary and secondary sources was used for cross-case analysis.

In addition, several visits were undertaken to the project site of each organization. The visits provided an opportunity for informal conversations with the operational level employees responsible for the construction activities at the site. The visits also provided an understanding of the processes followed at the site. This helped in the triangulation of information received from primary and secondary sources. Triangulation ensures the validity and reliability of the data (Eisenhardt 1989).

During data collection, the researcher should pay attention to construct validity, internal validity, external validity and reliability (Yin 2003). Construct validity establishes correct operational measures for concept being studied. To achieve construct validity, the researcher should use multiple sources of evidence. Internal validity establishes a causal relationship, whereby certain conditions are shown to lead other conditions. Qualitative data is particularly useful for understanding why emergent relationships do or do not hold. When the qualitative data provide a good understanding of the relationship in terms of why or what is happening, internal validity is established. Internal validity is established through pattern matching (Eisenhardt 1989). External validity establishes the domain within which the study's findings can be generalized. External validity can be achieved by testing a theory using a single case and replicating the findings in a second or third case study. Thus, multiple cases can facilitate generalization and ensure external validity. Reliability demonstrates that the operations of the study such as the data collection procedures can be repeated with the same results. The goal is to minimize errors and biases in a study. Yin (2003) has argued that the proper documentation of case studies and the development of a case study protocol can solve the problem of reliability.

Analysis of case study data is one of the least developed areas. Yin (2003) has proposed five techniques for analyzing case studies: pattern matching, explanation building, time series analysis, logic models and cross-case synthesis. Relying on theoretical propositions is the most preferred analytic strategy as it provides the researcher with a theoretical orientation for analyzing the case study. Cross-case analysis is the most suitable technique for analyzing multiple cases, since it enables identification of similarities and differences and the reasons for them. Eisenhardt (1989) has argued that cross case analysis improve the accuracy and reliability of the theory and ensures that it closely fits the data.

For the present study, the case studies were analyzed using within-case analysis followed by cross-case analysis, as per the theoretical propositions. Within-case analysis aids familiarity with the data and preliminary theory generation, while cross-case analysis forces investigators to look beyond initial impressions and view the data through multiple lenses (Aaboen et al. 2012). For each case, the within-case analysis began with an analysis of the interview transcripts according to the strategy codes. Data from the case studies was displayed using an array of word tables based on a whole set of features. Eisenhardt (1989) has advised use of word tables for detailed descriptions of each case as per the theoretical construct. It allows the unique patterns of each case to emerge, before patterns are generalized across cases. The word tables from each case analysis were examined to identify similarities, differences and cross-case patterns. Data from secondary sources was also corroborated with primary data in the cross-case analysis. The word table was then arranged according to cross-case patterns. The interpretations and findings from the corroboration of data were used to establish logical relationships among the key elements of relational contracting. The findings were also verified against existing literature to identify similarities and differences. Eisenhardt (1989) has suggested that comparison with conflicting literature builds internal validity, raises the theoretical level, and sharpens construct definitions, while comparison with similar literature increases generalizability, improves construct definition, and also raises the theoretical level.

3.5 Structural Equation Modeling (SEM)

The second phase of the study entailed using a questionnaire survey as the preferred approach to answer the second research question, "*Which of the factors considered critical to relational contracting do front-line-employees most closely associate with project success?*"The review of previous studies on the success factors for relational contracting guided the design of the questionnaire. The factors adopted for the study were commitment of top management, partner selection, training, communication, team work, dispute resolution, risk and rewards, assessment process, and organizational change. Using a five-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree), responses were sought from the respondents on the degree of agreement or disagreement on the role of the various factors on the success of relationship partnering in their projects. The questionnaire was comprised of two sections. The first section was designed to record general information about the respondents such as qualification, relevant industry experience and job profile in the present organization. The second part of the questionnaire included a list of the statements or questions relating to the various factors. Respondents were requested to award a score on the factors depending on the degree of their agreement or disagreement with the statement. The questionnaire is attached as Annexure II. This questionnaire was tested for comprehensiveness using a pilot study with a four-member focus group before administering the survey among front-line employees. A focus group is a qualitative approach to obtaining data from a purposely selected group of individuals in order to gain an in-depth understanding of the social issue under consideration (O.Nyumba et al. 2018). This group of individuals provides valuable information about their personal experiences, beliefs, perceptions, and attitudes. For this study, four highly experienced, operational level employees from the public sector with keen academic interests were selected for the focus group. The questionnaire was discussed with them so that its format and language could be easily understood by the targeted operational level employees. The feedback from the pilot study was used to refine the questionnaire for primary data collection.

As the study was on front-line operational level employees of public sector organizations, organizations with a government stake in their management were the focus of the survey. The questionnaire was distributed among 400 operational level employees of four case organizations. The operational level employees included junior engineers (the lowest technical post) and assistant engineers (one post higher than junior engineer). The questionnaire was distributed personally during visits to the project offices of the four organizations. The purpose of the research and the meaning of relational partnering were also explained to respondents. Working practices and their effect on success of the project were discussed informally. This data collection was carried out during the period September 2016 to December 2016. Out of 400 questionnaires, 202 valid responses were obtained directly through face to face collections and emails.

Table 3.2 shows the profile of the respondents in terms of years of experience in the organization. The response rate was 50.5% which was deemed good. All the respondents are qualified engineers, holding either a diploma or a degree in civil engineering. These operational level employees are responsible for day-to-day planning, supervision, monitoring, quality control, reporting, and paying contractors.

Table 3.2 Profile of the Survey Respondents

Years of experience	Case A	Case B	Case C	Case D	No. of participants
Less than 5 years	5	10	6	4	25
5 to 10 years	8	9	5	8	30
10 to 20 years	25	27	12	16	80
Above 20 years	20	14	16	17	67
				Total	202

After collecting the responses to the questionnaire survey, the structural equation model was constructed. The first step towards this to estimate the reliability of the dataset using Cronbach's alpha. Using SPSS, Cronbach's alpha was computed for each of the variables/constructs. The next step after checking for reliability was to develop the measurement model. The measurement model was then subjected to confirmatory factor analysis (CFA) to determine its convergent validity and discriminant validity (Hair et al. 2010). Convergent validity is tested based on factor loading, composite reliability (CR), and average variance extracted (AVE), while discriminant validity is assessed based on average variance extracted. The AMOS software package was used to carry out the CFA. The values obtained for factor loading of the constructs were then examined to identify significant interrelationships between the constructs and to determine the critical factors. The measurement model was then tested for goodness of fit. The goodness of fit (GOF) shows how well the hypothesized model reproduces the covariance matrix between the latent variables. In other words, the model is first hypothesized (based on a theory) and then sample data is used to test it. This determines the goodness of fit between the hypothesized model and the sample data. Various GOF indices can be used measure the suitability of different aspects of a model (Shah and Goldstein 2006). Six indices were used in this study to measure the model's goodness of fit comprehensively. The indices were: (i) χ^2/df (degrees of freedom) index; (ii) normal fit index (NFI); (iii) Tucker-Lewis index (TLI); (iv) comparative fit index (CFI);(v) incremental fit index (IFI) and (vi) root-mean-squared error of approximation (RMSEA).

The next step in the development of the structural equation model was to modify the measurement model using the initial hypothesized theoretical construct. This conceptual SEM model was then subjected to a similar sequence of analyses including CFA, and tests for goodness of fit. The factor loading values obtained from the CFA were examined to ascertain that all the variables had a value above 0.5.The variables with factor loading values below 0.5

were then removed from the conceptual model. The final SEM model was then subjected to another similar sequence of CFA and tests for goodness of fit. The paths in the final structural equation model with p-values less than 0.05 were then identified and the corresponding latent variables of those paths were identified as critical factors.

3.6 Micro-interlocutor analysis

In the third phase of data collection, qualitative data was collected to answer the third research question, *"How relational contracting can be incorporated as public sector change management processes in public sector construction organization?"* The objective was to develop and validate a relational contracting framework integrating the success factors of public sector organizational change and the key elements of relational contracting. As the implementation of relational contracting in organizations is a decision made by top management, it was necessary to obtain the opinions of top management on the feasibility of adopting organizational strategies in the proposed relational contracting framework. Therefore, a qualitative data collection method was adopted as this is the preferred approach for addressing research questions and objectives of a descriptive nature (Fellows and Liu 2008).

The data was collected through structured interviews. The proposed framework was developed integrating the key organizational strategies for implementing relational contracting (explained in section 2.5) and the success factors for planned organizational change in public sector (explained in section 2.7) and results of first and second phase of research. It was observed from result of first and second phase that specific strategies need urgent attention of policy makers. Such lacking strategies were focus area of investigations during validation process. The questionnaire for the structured interviews was developed based on strategies suggested in proposed framework. The questionnaire is presented in Annexure III. The second round of interviews was conducted with the same 36 experts consulted in first phase of data collection during the period April 2017 to May 2017. Table 3.1 presents the profiles of the experts. Of the 36 experts, 28 were members of the top management teams of the four case organizations and the remaining 8 experts were represented the top management of contractor companies that worked consistently with these case organizations. Top management representatives from contractors were included for the purpose of triangulation of information gathered from public sector top management. Each interview lasted for between 45 and 120 minutes. This round of interviews was conducted to validate the framework and to obtain expert comments for further improvement. The confirmation was carried by checking the level of agreement of each respondent for each strategy included in the framework for relational contracting in public sector. All the interviews were transcribed.

Finally, the findings were validated using the technique of micro-interlocutor analysis suggested by Onwuegbuzie et al. (2009). This method of analysis does not consider a focus group as a unit of analysis. The disadvantage of considering a focus group as a unit of analysis is that it accommodates the opinions of individuals rather than having people agree to a majority view verbally by using statements such as "I agree" or "Yes." This does not provide the substantial statements of agreement or disagreement essential for research (Leech and Onwuegbuzie 2007).

In this study, confirmation was conducted by checking the agreements and disagreements of each respondent on each strategy with justification and presenting the outcome in the form of a matrix. The matrix indicates how many respondents provided substantive statement indicating consent or dissent for the identified strategies. Consent and dissent statements were categorized in four categories such as "very strong dissent,""moderate dissent,""very strong consent," and "moderate consent."Each interview was analyzed for substantial statements pertaining to each strategy and these were marked as per the above four categories. Furthermore, a four-point scale (1 for very strong dissent, 2 for moderate dissent, 3 for moderate consent, and 4 for very strong consent) was used to evaluate the 36 respondents' views on the degree to which a particular strategy would be useful for adopting relational contracting in the public sector. The overall score representing the consensus of all the respondents' viewpoints on each strategy was calculated as a mean value of all the respondents' scores using the above-mentioned four-point scale.

The main purpose of the micro-interlocutor analysis was to understand the extent to which the respondents agreed on the feasibility of each strategy. But merely counting a frequency of consent and dissent was not sufficient, and importance was given to respondents' statements within a meaningful context. This helped to validate any inferences made about the consensus (Onwuegbuzie et al. 2009). At the same time agreement on a particular strategy was explained with reference to explanations provided by experts.

3.7 Summary

This chapter discusses the research methodology adopted for the present study, which is the case study method. The research design adopted for the case studies followed the research design proposed by Yin (2003). Four public sector organizations were selected and three methods of data collection were used to address the research questions. For the first research question, qualitative data was collected from members of the top management of the case organizations and this data was analyzed using cross-case analysis. For the second research question, quantitative data was collected from front-line employees of case organizations and this data was analyzed using SEM. To address the third research question, again qualitative data was collected from top management and the data was analyzed using micro-interlocutor analysis.

CHAPTER 4: RESULTS OF CROSS-CASE ANALYSIS

4.1 Introduction

The objective of this chapter is to identify the extent to which relational contracting is being practiced in Indian public sector construction organizations. For this purpose, qualitative data from four case study organizations was collected. The organizational strategies that promote relational contracting identified in the literature review are used to explore the extent to which relational contracting is being practiced in the case study organizations. The organizational strategies are grouped under the key elements of relational contracting: top management commitment, partner selection, risk and reward, training, communication, team work, dispute resolution and assessment process.

This chapter first discusses the procedure for the case analysis, which consists of data display using word tables and pattern identification using cross-case analysis. In the second section, the findings of the cross-case analysis are analyzed to judge the extent to which relational contracting is being used in the case study organizations. In the last section, the findings of the cross-case analysis are summarized.

4.2 Case Analysis

The primary data was collected through semi-structured interviews. Multiple respondents from each case organization were selected for the purposes of comparing opinions and eliminating extreme viewpoints. Comparing the opinions of various respondents on the topics under investigation helped to increase the internal consistency and the validity of data (Yin 2003). Also, the secondary data collected through various documents from each organization was corroborated using notes from informal discussions with many operational level managers. The case study data was first coded using open codes for the key elements of relational contracting, i.e., top management commitment, partner selection, risk and reward, training, communication, team work, dispute resolution and assessment process. After this, axial coding was carried out for the 27 organizational strategies that promote relational contracting in organizations. The interview transcripts, field notes, and secondary documents were corroborated to arrive at a "within-case analysis" for each organization. Thus, the eight key relational contracting processes and the 27 organizational strategies identified in the literature review were used to develop a framework for within-case analysis.

To facilitate cross-case analysis, first the case study data from each case organization was combined and presented as a tabular display (Table No. 4.1) using the 27 organizational strategies for the effective implementation of relational contracting. In the second step, a five-point scale was used to score each organizational strategy for each organization. The five-point scale used was as follows: (i) ++ (double plus) very high, (ii) + (plus) high, (iii) +/- (plus and minus) average, (iv) - (minus) low, and (v) -- (double minus) very low.

The combined score was then calculated for each organizational strategy by aggregating the individual scores of primary data, secondary data and data from field notes. This score highlights the strength of evidence for each case organization with respect to the organizational strategy promoting relational contracting. The strength of evidences provided the basis for across-case analysis of the case study findings (Table no. 4.2).

Table 4.1 Evidence of relevant Organizational Strategies

Organizational strategies	**Case A**	**Case B**	**Case C**	**Case D**
Top Management Commitment for internal alignment				
Policy for team work and cooperative culture	Contract clause states to provide cooperation to contractor	All kinds of assistance to contractor for timely completion of project	Business strategy to cooperate all the parties to maximize the profit	Contract clause states that contractor has to cooperate
Policy for innovation and continuous improvement	Educate employee, adopt their suggestions in working and reward them for success	Educate employee, adopted EPC contract and global bidding for latest technology	Educate employee, project designs from reputed consultant selected through competitive bidding	Project designs from reputed consultant selected through competitive bidding and design vetting from reputed academia
Decide objectives of project	Strict to government norms and not project specific	As per the requirement of project decided by top management specialized team	As per the requirement of project decided by project team with consent of client	As per the availability of budget decided by top management
Partner Selection				
Limited bid approach	Contractors registered in various categories only can apply	Technical and financial prequalification are very stringent, only reputed companies qualify, Global bidding for large projects	Registered contractors can apply for project cost up to Rs. 50 crores, Stringent prequalification for high value project to qualify reputed companies	Only for specialized project, otherwise bid open for all government registered contractors
Multi criteria bid evaluation	Financial and technical prequalification only	Financial and technical prequalification only	Financial and technical prequalification only	Financial and technical prequalification only
Risk and Reward				
Joint risk sharing process	Protection against extra work, excess work, price escalation, design risk, delay due to unavoidable reasons and assistance in statutory approvals	Protection against extra work, excess work, price escalation limited up to 20% of bid price and assistance in statutory approvals	Limited risk sharing only if project duration is more than 18 months	Protection against excess work up to limited extent and price escalation for specific projects

Table 4.1 continued

Organizational strategies	**Case A**	**Case B**	**Case C**	**Case D**
Time-bound payment to contractor	Provision of contract clause but depends on availability of fund	Billing break up with mutual consent, monthly payment and loan facility	Provision of monthly payment but depends on timely deposits from client	Within 7 days after bill submission
Incentive for time, cost and quality	Absent, but penalty is waived off if satisfactory regain of progress of work	Absent	Absent	Absent
Training				
Technical training sessions	Continuous process but limited to organizations employee only	Continuous process for both teams	Continuous process but limited to organizations employee only	Limited, Only when employee promoted to higher level
On job training sessions	As per the project requirement for both teams	Mandatory for both teams	Absent	Safety training to contractor employee with contractor's cost
Soft skill training sessions	Absent	Absent, but felt necessity	Continuous process but limited to organizations employee only	Absent
Communication Mechanism				
Information sharing method	Writing letters, emails and telephonic conversations	Writing letters, emails and face to face communication as it mandatory to establish full fledge office at site by both parties	Writing letters, emails and face to face communication as it mandatory to establish office at site by both parties	Writing letters, emails and telephonic conversations
Time-bound meetings of project team	Weekly or alternate week and followed precisely	Daily and followed precisely	Daily and followed precisely	Weekly or alternate week and followed precisely
Time-bound meetings by top management	Monthly and followed precisely	Monthly and followed precisely	Monthly and followed precisely	Monthly and followed precisely
Removal of hierarchical process for communication	Hierarchy needs to follow	Hierarchy needs to follow	Hierarchy needs to follow	Hierarchy needs to follow

Table 4.1 continued

Organizational strategies	**Case A**	**Case B**	**Case C**	**Case D**
		Team Work		
First meeting by top management of both sides to decide common objectives of project	Followed precisely	Many meetings carries out before actual execution starts	Many meetings carries out before actual execution starts	Followed precisely
Formation of joint project team	Each team works individually	Yes, separate teams for each sub works	Each team works individually	Each team works individually
Team building workshops	Absent	Absent	Absent	Absent
Contractor involvement in design	Yes, in design build contract	Yes, because of EPC contract	No, design is carried out through consultants selected through competitive bidding	No, design is carried out through consultants selected through competitive bidding
Specialized subcontractor involvement in design	Yes, but subcontractor should be registered with organization	Yes, because of EPC contract but responsibility of main contractor	No, it is responsibility of lead consultant to involve specialized consultants	No, design is carried out through consultants selected through competitive bidding
Joint project planning	No, Contractor's responsibility	Broad planning is carried out with mutual consent while day to day planning is contractor's responsibility	Project planning is carried out by contractor and finalize with consent of client	Project planning is carried out by contractor and finalize after approval of Engineer-in-charge
Joint project controlling and monitoring	Followed precisely, also surprise visits by separate quality control wing	Followed precisely, responsibility of joint project team of individual sub work	Followed precisely	Followed precisely, also surprise visits by separate vigilance wing
Joint risk identification and mitigation strategy	All possible and permissible assistance to contractor for risk mitigation	All possible and permissible assistance to contractor for risk mitigation	All possible and permissible assistance to contractor for risk mitigation to limited risks	All possible and permissible assistance to contractor for risk mitigation

Table 4.1 continued

Organizational strategies	Case A	Case B	Case C	Case D
Preparation of project charter	Absent	Partly, billing break up, time schedule planning and field quality plan is prepared with mutual consent before execution starts	Absent	Absent
Dispute Resolution Mechanism				
Use of ADR techniques	Appeal to higher authorities step by step and at last appeal to Committee of Secretaries	Negotiation during monthly review meetings with top management of both sides	Grievance Redresser Committee consists of senior people	Absent, No authority to top management to sanction any financial claim
Time-bound dispute resolution mechanism	Each authority has to call contractor for negotiation and give decision within specified time limit	Unresolved issues kept a side till completion of work	No time limit	No time limit
Assessment process				
Regular assessment process	Monthly progress report based on quantum of work done, cost and time to be communicated in writing to top management	Monthly progress report based on quantum of work done, cost and time to be present in monthly review meeting of top management	Monthly progress report comparing with milestone to be submitted to client	Monthly progress report based on quantum of work done, cost and time to be communicated in writing to top management
Final report publication	Detailed ABC report including success and barrier stories	Detailed project report including success and barrier stories	Absent	Absent, but final drawings are kept as a record

Table 4.2 Relative strengths of relational contracting strategies adopted by case study organizations

Sr. No.	Key relational contracting elements and Codes	Code	Organizational strategies	Case A	Case B	Case C	Case D
1	Top management commitment (CM)	CM1	Policy for team work	+/-	++	++	+/-
		CM2	Policy for cooperative culture	+	++	+	+/-
		CM3	Decide objectives of project	-	++	++	+
		CM4	Policy for continuous improvement	++	++	++	++
2	Partner selection (PRS)	PRS1	Limited bid approach	++	++	+	+/-
		PRS2	Multi criteria bid evaluation	N.A.	N.A.	N.A.	N.A.
3	Risk and Reward (RR)	RR1	Incentive for time, cost and quality	N.A.	N.A.	N.A.	N.A.
		RR2	Joint risk sharing process	++	++	+	+
		RR3	Time-bound payment to contractor	+/-	++	+/-	++
4	Training (TR)	TR1	Technical training sessions	+	++	++	+
		TR2	Soft skill training sessions	N.A.	N.A.	+	N.A.
		TR3	On job training sessions	+	++	+	+
5	Communication (COM)	COM1	Information sharing method	++	++	++	+
		COM2	Time-bound meetings of project team	+	++	++	+
		COM3	Removal of hierarchical process for communication	+/-	+/-	+/-	+/-
6	Team Work (TW)	TW1	Formation of joint project team	-	++	-	-
		TW2	Team building workshops	N.A.	N.A.	N.A.	N.A.
		TW3	Specialized subcontractor involvement in design	+	++	-	-
		TW4	Joint project planning, controlling and monitoring	-	++	++	-
		TW5	Joint risk identification and mitigation strategy	++	++	+/-	+/-
		TW6	First meeting by top management of both sides to decide common objectives of project	++	++	++	++
		TW7	Preparation of project charter	N.A.	+/-	N.A.	N.A.
		TW8	Contractor involvement in design	++	++	-	-
7	Dispute resolution (DR)	DR1	Use of ADR techniques	++	+	+/-	-
		DR2	Time-bound dispute resolution mechanism	++	+/-	-	-
8	Assessment process (AP)	AP1	Regular assessment process	++	++	++	++
		AP2	Final report publication	N.A.	++	N.A.	N.A.

4.3 Discussion

This section discusses the findings of the cross-case analysis for the four case organizations. It focuses on the key elements of relational contracting: top management commitment, partner selection, risk and reward, training, communication, teamwork, dispute resolution, and assessment process.

4.3.1 Top Management Commitment

Commitment and support from the top management of an organization is one of the key elements of successful partnering (Harback et al. 1994). Support from senior management is required to initiating and lead partnering as it is senior managers who are responsible for formulating strategy and providing direction for business activities (Cheng et al. 2000b). Cheng and Li (2001) have divided the processes of partnering into three stages (i.e. formation, application, and completion) and have equated these processes with the model of change process. As partnering, with its focus on collaborative teamwork and a win-win relationship, differs from a traditional adversarial relationship, top management should play the role of change agent. An important step in this direction is for top management to support teamwork (Cheng and Li 2002b).

Different opinions have been expressed on how to introduce a teamwork culture. One view is that this requires a change in culture, while another suggests that such a culture transformation could be achieved using formal techniques such as rigorous selection procedures, formal team-building exercises, and appropriate financial incentive systems (Bresnen and Marshall 2002).

An important indicator that top management is committed to partnering is the assignment of senior executives to deal with partnering matters. It can be observed from the case data that none of the case organizations assigned dedicated senior executives to oversee the partnering process. The project managers of case organizations B and C were, however, given limited freedom by top management to set project-specific goals and engage in a cooperative relationship with contractors. In the case of public sector projects, projects are procured through a competitive bidding process and government regulations traditionally discourage close relationships between public clients and private contracting parties (Rahman and Kumaraswamy 2004). The commitment of top management in public sector construction organizations to introduce the mutual trust and long-term collaboration depends to a large extent on current regulations and initiatives provided by the government for radical improvement in the industry. Some governments, therefore, have made partnering a pre-tender requirement for publicly funded building projects (Beach et al. 2005b).

However, in case of the organizations in this study, no evidence was observed to show that initiatives or regulations had been undertaken by the government to ensure the commitment of the top management to developing a collaborative environment. In fact, the recently amended rules and regulations for procurement of publicly funded projects make it mandatory to follow the procurement process of competitive bidding and award the project to the lowest bidder. The General Financial Rules 2017, which govern the procurement process for public sector projects in India, place emphasis on ensuring efficiency, economy, transparency, accountability, and competition in public procurement (DoE 2017).As a result, no formal partnering policies have been formulated by any of the case organizations. One respondent from case organization A stated that the Ministry's guidelines had to be adhered to and that no one wanted to take risks at individual level. However, it was observed in some of the case organizations that the top management had indirectly promoted practices facilitating partnering at the project level. The traditional win-lose philosophy was adopted by case organizations while drafting the standardized contract agreements, which resulted in most of the risk being transferred to the contractors. However, the case organizations understood the need to create a cooperative environment to reap the benefits of partnering. In line with this, one of the respondents from case organization C stated that

"*....facilitating cooperation with contractors in day-to-day working is a part of organizational culture now, because if a project gets delayed due to non-cooperation on our side, then it directly affects the profit of our organizations*."

Similarly, in the case of organization B, it was observed that typical bureaucratic inertia gave way to risk-taking action with respect to the obligations for obtaining necessary environmental clearances when one of their senior executives stated that

"*….in an ongoing high-value project, it is the responsibility of the contractor to get environmental clearance from the Ministry and this is clearly mentioned in the contract. But when this process gets delayed due to certain reasons on the contractor's side, then the client takes this responsibility and gets the environmental clearance on time*."

By contrast, a formal approach to promoting a collaborative culture was adopted by case organization A in the form of contractual clause in the contract agreement, but the intended benefits could not be achieved without an organization-wide change in culture. Similarly, one of the respondents from case organization D stated that

"… these people are not ready to come out of the traditional master/slave concept. They cooperate only when there is political pressure to meet targets or when the contractor offers some financial benefit".

The difference in attitudes towards partnering between the two sets of organizations—case organizations B and C versus case organizations A and D might be attributed to the differences in the form of these organizations. Case organizations B and C are profit-seeking public sector organizations, which are aligned with the partnering philosophy that not extending the necessary assistance and cooperation to contractors during execution could lead to delays and could directly affect profit margins. These organizations preferred to adopt an informal approach to promote a partnering culture at project level. The other two organizations are core government departments funded by the government to execute government developmental projects. Although these organizations understand the benefits of partnering, as is evident from the incorporation of a clause promoting cooperation with contractors during project execution, the governance structure of these organizations prevents them deviating from mandatory procedures and regulations for engaging with contractors.

4.3.2 Partner Selection

Selection of partners is traditionally conducted through competitive bidding in the case of publicly funded projects. Public procurement acts normally require submission of bids from contractors in order to enhance competition and transparency. The competitive route seeks to gain short-term profits by passing on risks and pressuring contractors to lower their prices (Korczynski 1996). However, such an approach hampers the development of lasting relationships (Ahola et al. 2008) as it increases the risk of conflict (kadefors 2005). This approach had also been criticized for hindering contractor input regarding planning and technical solutions (Dubois and Gadde 2002) and making parallel design and construction impossible, which leads to longer project duration (Cheung et al. 2001).

Love et al. (1998b)have noted that procurement determines the responsibilities and authority in the construction process. The procurement process design can affect the degree of cooperation between the partners (Briscoe et al. 2004a). In order to promote a collaborative environment, Eriksson and Pesämaa (2007) have proposed a sequential procurement model that facilitates cooperation. This model demands a different kind of approach with early involvement of contractors for joint specification, together with incentive-based compensation, limited bid invitation, and evaluation of contractors based on task-related attributes. An evaluation of the case organizations on the above-mentioned elements for a cooperative procurement process reveals that various practices are adopted by the organizations with respect to some of the elements.

The publicly funded case organizations strictly adhere to the public procurement acts when selecting contractors for their projects. The traditional process of inviting bidders after drawing up a tentative specification of the project was practiced by all the organizations. In the case of organizations C and D, it was observed that most projects are procured through design-bid-build contracts, where the specification and design of the projects were prepared by consultants. Case organization D appoints consultants through competitive bidding, while case organization C chooses from a pre-approved panel of consultants when time for bidding is short. Otherwise, this organization also uses competitive bidding for consultant selection. Although none of the case organizations adopted the practice of joint specification, limited flexibility for involving contractors in technical specifications for projects is provided for in the Indian public procurement act (i.e., General Financial Rules 2017) when bidding is conducted in two stages.

With respect to selection of contractors, case organizations B and D used competitive tendering for selection of contractors, whereas case organizations A and C practiced limited bid invitation by inviting bids from a panel of contractors .Furthermore, case organization C had a policy of limiting the bid to the panel contractors for projects with a value up to INR 50 crore, while, for projects costing more than INR 50 crore, they practiced competitive bidding for contractor selection. A respondent from case organization C stated that using competitive bidding for high-value projects allowed them to select experienced and reputable contractors, who, needing to protect their reputation for future business transactions, maintained a collaborative environment. The chief engineer of this organization mentioned that

"… though the basic aim of contractor companies is to earn maximum profit from the project, reputable contractor companies cooperate in all phases of project and do not compromise on quality to maintain the reputation in market".

Limiting the bidding to a panel of contractors should provide opportunities for continuous learning and relationship-specific investments. However, these benefits were not observed in the case of organization C, which had limited bidding to a panel of contractors for low-value projects. This highlights the fact that the clients (public construction organizations) are still concerned with obtaining the lowest possible price for a project rather than maximizing value, and so continue to insist on competitive tendering.

Fixed-price contracts such as item rate contracts, lump sum contracts, and percentage rate contracts were used by the case organizations to compensate contractors. Reimbursement contracts such as cost-plus contracts, which are include cost incentives that reward (or penalize) contractors whose final costs are below (or above) target were not used by any of the case organizations. With respect to evaluation of bids, the traditional approach of price-based bid evaluation coupled with fixed-price compensation was adopted by all the case organizations. To evaluate bidders, the traditional approach of prequalifying bidders based on their technical and financial capacities was adopted by all the case organizations. In addition, information gathering on earlier experiences on other projects, seeking confidential references on the quality of earlier works from previous clients, and scrutiny of financial records and litigation were undertaken by the case organizations. However, the key attribute of collaborative skills was not considered when prequalifying bidders. In Australia, general prequalification criteria recommended by Construction Industry Development Agency have been classified under categories such as technical capacity, financial capacity, quality assurance, time performance, occupational health and safety, human resource management, and skill formation (Kumaraswamy and Matthews 2000). In such case, clients are incentivizing to make the cultural shift from single project tendering to partnering. This implies refocusing from lowest cost to a cost/quality balance (Franco et al. 2004). Thus, the procurement systems adopted by the case organizations, while they included some elements of cooperative procurement procedures, omitted critical elements such as incentive-based compensation, early involvement of contractors for joint specification, and collaborative skills evaluation.

4.3.3 Communication

Communication is a fundamental element of successful partnering. In a traditional contract, communication and information exchange is normally executed at the contract level. However, the successful implementation of partnering demands that communication is both open and effective. According toCheng and Li (2001), open communication refers to the free flow of ideas, knowledge, skills, and technology through effective channels. Moreover, partnering requires the timely sharing of information and the maintenance of an open line of communication connecting all project team members(Chan et al. 2004). Various methods have been proposed for effective communication, ranging from informal oral communication to meetings and written communications. Face-to-face meetings, fax, email and telephone calls are some of the communication methods commonly used in the construction industry. Email is the fastest means of communication but is not appropriate for complex communication. Face-to-face interviews are more appropriate for complex communication, but they take more time.

The case study data shows that all the organizations use various methods of communication, including fax, emails, and telephone conversations. Emails and telephone conversations were reported to be the most widely used medium but official letters were still used as a means of record keeping. Formal communication introduces rigid rules and guidelines, which result in formal relationships between parties.

The case study data shows that communication channels for all the case organizations typically ran from the site office to the head office and then back to the site, thereby following the organizations hierarchy. Respondents from case organization A attributed this to a culture of respect for the authority of the organizational hierarchy. Moore et al. (1992) have asserted that such a communication network prevents interactions between partners. Furthermore, such a system increases the transmission chain and increases the possibility of messages between project team members becoming distorted.

Case organizations B and C had made it mandatory for the contractor to establish a fully operational office at the project site. This practice had a profound effect on reducing the duration of communication transmission between the two partners. On this point, Jefferies et al. (2014b) have concluded from a case study that co-locating the partners in a building helps to resolve questions and queries in real time, thereby enabling quicker and more efficient dispute resolution. Furthermore, all the organizations used traditional methods of communication such as fax, emails, telephone conversations, and letters. In the case of organizations A and B, communication channels were strictly in accordance with the organization’s hierarchy, although the partners were encouraged to share information at all levels when the partners were working as a team.

The data from reports of meeting reveals that case organizations B and C communicate with partners more frequently than case organizations A and D. The project teams of the former organizations had daily meetings, while the latter organizations had weekly meetings. The co-location of both partners' offices on the project site made it possible for case organizations B and C to communicate more frequently with partners. Advocating frequent communication is essential for building an inter-organizational relationship as it enables the parties to update their intentions and to provide more information (Santoro and Saparito 2003).Case organization A had established a project management information system for establishing seamless communication between partners for projects costing more than INR 5 crore, which enabled parties at all levels to share the information between site offices and head office. Although such seamless communication is reported to help in the development of trust between team members, this could not be observed in the case A.

4.3.4 Risk and Reward

A risk-sharing and gain-sharing mechanism is essential for partnering as it enables contractors to align their business objectives with the client's expectations and goals. This type of contract with carefully drafted contractual clauses specifying shared responsibilities ensures effective risk management (Perera et al. 2009). On this point, two schools of thoughts emerged from the case study data. Organizations C and D used design-bid-build contracts and shared limited risks related to extra work, excess work, price escalation, design, and delay due to unavoidable reasons. One of the respondents from organization C stated:

"*…….it is the responsibility of the contractor to assess the risks properly before bidding and quote the prices accordingly. If a free hand is given to the contractor in sharing risks, then they will try to benefit from it.*"

Similar observations are made by Akintoye and MacLeod (1997), who argue that contractors see risk as an opportunity to make profit. Contrary to this, organizations A and B used design-bid and EPC contracts, respectively, to transfer the maximum risk to the contractor. However, these organizations had a policy of sharing the risk with the contractor to the maximum extent feasible to ensure successful completion of a project. For this purpose, organization B includes a contingencies provision in the budget upto 20% of the project cost. This helped these organizations earn the cooperation and trust of contractors, as well as dramatically reducing the number of minor claims from contractors by ensuring that the client is prepared to help in difficult times. Such a provision prevents delays and promotes the development of a close relationship between stakeholders (Zou and Zhang 2009). Thus, organization B provided a more collaborative environment in terms of sharing risks.

Late payment of contractors bills is a major financial risk in the construction industry which disturbs the cash flow of contractor (Akintoye and MacLeod 1997). The case study data indicates that all the organizations have identified this risk and designed strategies to address it. Organizations A and C included contractual clauses to ensure timely payments. However, archival data revealed that this condition was only followed perfectly when funds were transferred from the government to the respective project leader. The non-availability of timely funds from governments is a common risk in developing countries (Iqbal et al. 2015). The chief engineer of case organization A explained:

"…………contractor will carry out the work speedily and cooperate with a client when he gets timely payment. Whenever there is a delay in payment, the contractor stops cooperating. This then leads to many disputes, as well as time and cost overrun of the project."

However, this does not apply in the case of organization B, which is not dependent on government funds and can generate revenue internally. This organization makes internal budgetary provisions for projects or takes out loans from banks against the guarantee provided by government. This enables them to finalize the billing breakup schedule with the mutual consent of the contractor and arrange payment accordingly. The main purpose of incentives is to facilitate cooperation in problem solving and to reward the contractor based on performance.

It is evident from the contract documents of all case organizations that these organizations so not provide contractual incentives to motivate contractors for timely, cost-efficient, and quality completion of projects. It is the responsibility of top management to design, administer, and monitor effective incentive schemes (Kwawu and Laryea 2013). The case study data supports the literature review finding that preparing a schedule is a critical problem in implementing incentives. It is necessary for the owner to determine accurate target contract duration before inviting bids. The target contract duration is an important benchmark for incentive payments (Bubshait 2003). However, the case study organizations continue to calculate project duration based on past experiences of similar construction projects. Apart from this, change is needed to address other difficulties on the organization's side, including delays in reviewing drawings and change order approvals.

4.3.5 Training

The case study data indicates that training has helped all four organizations to adapt, compete, excel, innovate, work safely, improve service, and reach goals. For this purpose, all the organizations had established their own training centers and sent employees to other educational institutes. However, they only arranged training for their own employees. The nature of the training provided by these organizations can be categorized according to the types identified by Méndez and Sepúlveda (2012), which are regular training, training after the adoption of a new technology, training to begin a new job, and training to obtain a promotion. These categories of training are not sufficient for partnering.

On-the-job training enhances the effectiveness of an organization as it facilitates greater innovation, informal learning, and, consequently, effective performance (Aguinis and Kraiger 2009). Organization D had a policy of providing on-the-job safety training to contractor employees, although this was at the cost of the contractor. This made contractors reluctant to invest in training. Contractors working with organizations A and C regarded on-the-job training as faddish and expensive and did not think that it contributed directly to the organizations. Due to its highly complex technical projects, organization B implemented on-the-job training and made it mandatory for all employees of client & contractors. The project manager from a contractor company working with organization B reported:

"…….the initial sessions of combined training helped to start informal communication among team members in both organizations, which helped a lot during execution to develop a repo".

This confirmed the literature (Truitt 2011), which states that training improves participation in teamwork activities, decision-making and problem solving, thus developing trust in the organization. Therefore, a similar kind of combined training program should be introduced by other organizations to meet the requirement for a skilled workforce. Soft skill training produces marked improvements in employees' communication with their co-workers and in performance, as well as having a positive effect on job involvement, job satisfaction, and organizational commitment (Tharenou et al. 2007). None of the case organizations had a culture of providing soft skill training. One superintending engineer from case organization B emphasized this issue:

"……..*on a majority of projects, conflicts start with ego clashes between the client's people and the contractor's people or ego clashes across the various departments of the* *organization itself. The project manager's time and energy are wasted in resolving personal conflicts*."

4.3.6 Team Work

One of the key elements of relational contracting is team work, and most partnering processes are intended to foster team building. An initial meeting between the top management of the client and contractor organizations to establish common project objectives is the first step towards team building. The basic aim of this meeting is to understand the views of both parties concerning the project and to emphasize relationship development. All the case organizations follow this precisely. Organizations A and D conduct single meetings with the top management of contractor companies, while organizations B and C conduct many such meetings before commencement of the project. In this way, top management are able to establish social relationships that should be replicated by lower-level employees in the collective framework (Joshi et al. 2009). However, this was not observed in the case organizations, except in the case of organization B.

None of these organizations form joint project teams for project execution, held team-building workshops, or prepared joint project charters. Instead, separate teams are formed, although they worked in coordination. The contractor handles the planning and management of the project. The project plans are prepared by the contractor finalized with the mutual consent of the top management of the client organization and the project manager of the contractor company. The day-to-day planning of the project is left to the contractor team, but day-to-day site supervision and controlling and monitoring activities are carried out jointly by both teams. High levels of trust between the teams are associated with low levels of monitoring, and low levels of trust are associated with high levels of monitoring(Langfred 2004). However, the case study data indicates that the level of trust is low and monitoring is high. Regular team-building workshops are necessary to enable teams to prepare a project charter and to plan the project jointly. This will include individuals in decision-making and motivate them to work as cohesive team (Korsgaard et al. 1995).

From a partnering perspective, the early involvement of contractor and subcontractor in design establishes close collaboration between project teams throughout the project life cycle. However, this is dependent on the type of contract adopted by the organization. Organizations C and Duse "Build only" contracts, and the design are prepared by reputable consultants selected through a competitive bidding process. However, organizations A and B use Design-Build Contracts, which means that the client has no control over the selection of consultants. Participants from these organizations identified a need to have control over consultant selection. One of the executive engineers from organization A asserted:

"………*many times, a contractor selects the consultant who charges less. These consultants hardly come out with innovative design and provide repetitive designs. Hence, if consultant selection goes wrong then the scope for bringing innovation into the project also get wasted. Moreover, they do not cooperate during variations on site.*"

4.3.7 Dispute Resolution

The concept of partnering promotes the development of a win-win relationship, which improves attitudes, reduces conflict and provides an avenue for conflict settlement. Traditional approaches to dispute resolution are normally adversarial, whereas a partnering approach entails using a comprehensive set of techniques to avoid and resolve disputes. Steve (1999) has suggested adopting a dispute resolution program that combines proactive and reactive dispute resolution techniques to create a collaborative, cooperative and non-adversarial environment.

Proactive techniques for dispute resolution include total quality management, improvement of people skills, partnering workshops, dispute avoidance, collaborative problem solving, win-win negotiation techniques, and a change management program. Reactive techniques include alternative dispute resolution mechanisms such as establishing dispute review boards, mediation, and arbitration. Yates and Epstein (2006b) have contended that an alternative dispute resolution mechanism is one of the most effective mechanisms for settlement of disputes relating to construction delay claims. The specifications for dispute resolution in the contracts should be properly drafted to ensure that key elements are included.Groton and Wildman (1992) have stated that specifications for dispute resolution should include the following elements: (i) mechanisms to select board members or mediators; (ii) number of board members; (iii) personnel who will represent the various organizations at the different levels of negotiations; (iv) whether decisions are to be binding or whether they are to be used as evidence in subsequent litigation; and (v) time frames.

The case study data reveals that various dispute resolution programs have been adopted by the four case organizations. Case organizations A, B and C have adopted alternative dispute resolution practices and practices advocated for partnering. The key element of alternative dispute resolution such as time frame and assigning personnel to representing the organizations in the different levels of negotiation are specified by case organizations A and B.For instance, in the case of organization A, the contractor is given the option to escalate the matter along the organizational hierarchy. In addition, this organization has opted to ensure that the negotiation process is resolved within a set timeline. If the dispute cannot be resolved by the highest authority within the organization, then the contractor can approach the Committee of Secretaries before embarking on arbitration.

A similar mechanism has been adopted by case organization C, whereby disputes are resolved through direct negotiations between the contractor and the client in a timely manner. If the disputes cannot be resolved through direct negotiations, then the contractor can approach the Grievance Redressal Committee.Yates and Epstein (2006b) have highlighted that time-bound dispute resolution helps to foster relational partnering. Evidence of reduced cases of arbitration and litigation may be partially attributed to the existence of a collaborative culture among stakeholders.

In the case of organization B, the top management from both sides participates in monthly review meetings, in which issues of conflict are discussed and negotiated. This helps them to resolve many issues early. Issues that remain unresolved remain pending until the completion of the project. Separate negotiation meetings are then held to address those unresolved issues. This leads to a better product, because time and energy is focused on the project rather than on maintaining adversarial positions. This process fosters communication and collaborative problem solving. The ability of stakeholders to embrace conflict and turn it into creative conflict through dialogue is a key factor for successful partnering (Ruuska and Teigland 2009a).

In addition to alternative dispute resolution mechanisms, all the case organizations except organization C, specify arbitration as the mode of dispute resolution in their contractual agreements. In the case of organization D, arbitration and litigation are the only means of dispute resolution, and, as a result, many disputes are pending either in arbitration or litigation. Furthermore, the contractor has the option to seek arbitration only if the claim amount is within 20% of the contract value. If it is more than 20% of the contract value, then the contractor must go to court. In the case of organization D, even the top officials of the organization have limited power to sanction claims during negotiations, and the Engineer-in-Charge has restricted discretionary power to independently manage the project.

By contrast, case organization C has stopped the practice of including contractual provisions for arbitration in contract agreements. This organization has many disputes in arbitration and litigation, but the exclusion of such a provision has not resulted in any legal disputes during the past 10 years. Officials from this organization were of the opinion that the exclusion of arbitration helped to eradicate an adversarial relationship between stakeholders, while maintaining the right of a contractor to resolve genuine disputes through the Grievance Redressal Committee, consisting of highly experienced officials in the organizations.

4.3.8 Assessment Process

Assessment helps organizations to better understand their processes and outcomes. It allows for a holistic, integrated analysis of the organization's mission, goals, and objectives, in the context of internal and external conditioning factors(Kravchuk and Schack 1993). All case study organizations assess work monthly, based on conventional criteria such as cost, schedule and quantity of work, which are measured against the initial planned milestones. This only allows the organizations to make resource allocation decisions and cannot be correlated with organizational goals (Heinrich 1999).

The purpose of the performance measure should be to identify organizational problems quickly and accurately in order to develop an effective organizational strategy and, later, to evaluate whether the solution to the problem is working and having the desired effect on organizational outcomes (Crotty et al. 2006). For this purpose, performance reports should be prepared to review successful performance, identify unsuccessful performance, detail any remedial action required, and recommend any necessary changes to performance goals for subsequent fiscal years(Kravchuk and Schack 1993). Accordingly, organizations A and B prepare detailed assessment reports at the end of a project, focusing on the barriers and success factors of the project. While organization A rarely uses these reports for future projects due to poor record keeping, organization B uses final assessment reports during the planning of upcoming projects. The other organizations should adopt a similar strategy for future improvement.

4.4 Summary

This chapter discusses the findings from the case study analysis of relational contracting adoption by the four public sector construction organizations. Multiple research techniques were used for data collection, such as semi-structured interviews, collection of secondary data from organizational documents and field notes from informal discussion with operational level managers. The primary data and secondary data corroborated to facilitate cross case analysis. The data collected from the case organizations was displayed using word tables, which helped in the identification of patterns across the case study organizations. The patterns observed indicated that most of the organizational strategies that promote relational contracting have been adopted by these organizations. However, multi-criteria bid evaluation, incentives related to time, cost and quality, soft skill training, team-building workshops, preparation of a project charter, and publication of final reports are some of the strategies that these organizations have failed to implement.

CHAPTER 5: THE PERSPECTIVE OF FRONT-LINE EMPLOYEES

5.1 Introduction

The objective of this chapter is to measure the relationship between key elements of relational contracting and project success from a front-line employee perspective. Front-line employees refer to Junior Engineers and Assistant Engineers who are responsible for day-to-day project planning, monitoring, quality control, safety, and billing of contractor. The second section of this chapter explains the theoretical framework from front-line employee perspective. A hypothesis is formulated for each construct of the theoretical framework. This framework has been analyzed using SEM. The third section explains the results of the SEM analysis in detail. The fourth section presents a discussion of the main findings, including significant and insignificant constructs.

5.2 Theoretical Framework

The relationship between organizational strategies and relational contracting success factors is developed into a conceptual framework from the literature review. The relational contracting success factors identified in the literature review are presented in Table 2.2. These relational contracting success factors are grouped under the constructs commitment of top management (CM), partner selection (PRS), training (TR), communication (COM), team work (TW), dispute resolution (DR), risk and reward (RR), assessment process(AP), and organizational change (OC). One of key element necessary for relational contracting, namely "trust between contractor and client" was not considered in the theoretical framework. Initial trust between contractors and public servants may result in "cozy insider relationships," and an overreliance on trust may cause favoritism, corruption and performance overlook, which is harmful for cooperative relationships (Girth 2012). All the above constructs collectively determine the success of relational partnerships (PS). This success can be measured in terms of cost saving (PS1), time saving (PS2) and improved quality (PS3) (Jelodar et al. 2016). If the contractor can achieve the success measures PS1, PS2 and PS3 in relation to a set benchmark, this will lead to greater public satisfaction as measures of success related to trust, commitment, teamwork and performance satisfaction are intangible and of less interest to the public(Jelodar et al. 2016).These factors have been studied by many authors, but this study assumes that front-line employees might have different perceptions of these success factors. Table 5.1 presents the constructs and measurements of the variables selected from literature review. A hypothetical diagram of the structural model is shown in Figure 5.1.

Table 5.1 Constructs and measurements of success factors for relational contracting

Variable	Indicating Factor	Reference
Top management commitment (CM)	Policy for teamwork (CM1)	Chen and Chen (2007)
	Policy for cooperative culture (CM2)	Bresnen and Marshall (2002)
	Mutual objectives (CM3)	Kwan and Ofori (2001)
	Policy for continuous improvement (CM4)	Ling et al. (2013 b)
Partner selection (PRS)	Limited bid approach (PRS1)	Eriksson and Pesa¨Maa (2007)
	Extra prequalification criteria (PRS2)	
Training (TR)	Technical training (TR1)	Briscoe et al. (2001)
	Soft skill training (TR2)	Beach et al. (2005)
	On-the-job training (TR3)	Briscoe et al. (2001)
Communication (COM)	Information sharing (COM1)	Black et al. (2000)
	Time-bound meetings (COM2)	Tang et al. (2006)
	Removal of hierarchical communication (COM3)	Bayliss et al. (2004)
Teamwork (TW)	A joint project team (TW1)	Chen and Chen (2007)
	Team-building workshops (TW2)	Rahman and Kumaraswamy (2005)
	Early involvement of specialized subcontractors (TW3)	Eriksson and Pesa¨Maa (2007)
	Joint project planning, controlling and monitoring (TW4)	Rahman and Kumaraswamy (2005)
	Joint risk identification and mitigation (TW5)	Doloi (2009)
Dispute resolution (DR)	Alternative dispute resolution (DR1)	Love et al. (2010)
	Time-bound dispute resolution (DR2)	Glagola and Sheedy (2002)
Risk and rewards (RR)	Financial incentives (RR1)	Eriksson and Pesa¨Maa (2007)
	Joint risk sharing (RR2)	Doloi (2009)
	Timely payment (RR3)	Jefferies et al. (2014a)
Assessment process (AP)	Regular assessment (AP1)	Meng (2010)
	Final assessment report (AP2)	
Organizational change (OC)	Developing a vision for the organization (OC1)	Fernandez and Rainey (2006)
	Ensuring the need for change (OC2)	
	Support from staff (OC3)	
	Political support (OC4)	Al-Haddad and Kotnour (2015)
	Providing resources for change (OC5)	Xerri et al. (2015)

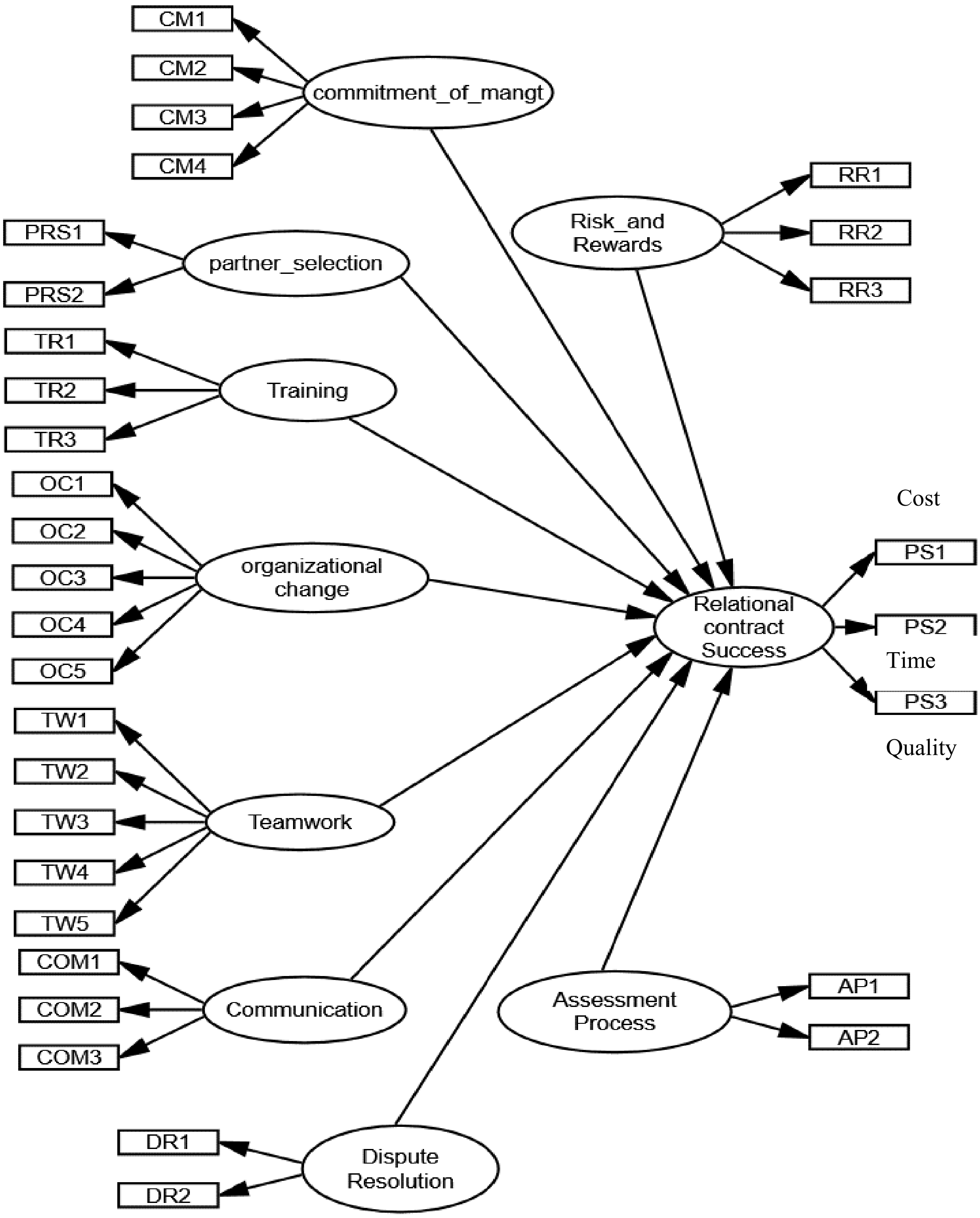

Figure 5.1 Theoretical model of relational contract success

The constructs considered for the study are discussed from the perspective of front-line employees in subsequent sub sections.

5.2.1 Commitment of Top Management (CM)

To implement relational contracting, Bresnen (2007) has recommended that top managers systemically link the changes made concerning relational contracting with organizational goals and specific project objectives. Top management should decide the organizational policy, lower-level teams should conduct their tasks according that policy. Pais and Parente (2015) have also asserted that adopting such a practice will encourage the lower teams to be productive and innovative. Rowlinson and Cheung (2004) have suggested that in order to ensure successful adoption of relational contracting, the relationship needs to operate across three levels of the organization hierarchy, even at the project level, which includes supervisors, engineers and project managers. But successful adoption of relational contracting at project level requires the institutionalization of these changes. All team members must learn and integrate a relational contracting philosophy into their daily routine, and top management must be committed to these changes and be relational contracting facilitators. Top management should instill pride among team members by encouraging them to rethink old ideas and promoting new ways of solving problems. They should spend time teaching and helping employees to develop, and they should devote resources and time to addressing the concerns of subordinate team members (Dionne et al. 2004). Top management should demonstrate discretion in allowing subordinates to generate and experiment with new ideas for successful micro-level innovations (Fernandez and Pitts 2007). This approach will led to significant benefits and will result in improved productivity, speedy execution and quality work (Radnor and Walley 2008). Thus, the hypothesis for this construct is that "top management commitment to partnering encourages front-line employees to perform better, which positively affects the success of the project."

5.2.2 Partner Selection (PRS)

Awarding the contract to the lowest bidder through competitive bidding is regarded as essential in public sector procurement. But lowest price is the least important criterion for contractor selection in the case of relational contracting. Other criteria such as quality of work, project management capability, availability of adequate resources, past safety records and technical capabilities are more important (Eriksson and Westerberg 2011). According to the cooperation model of relational contracting, reputable contractors normally do not compromise on these aspects and tend to extend cooperation based on the idea that the government and the contractor are equal partners. Furthermore, the partners tend to solve problems encountered during project implementation jointly, as it is not possible to account for all the uncertainties in the contract (Amirkhanyan 2008). The policy for selecting contractors, therefore, not only affects the success of the project also the performance of the monitoring officials. In relational contracting, the monitoring officials (front-line employees) need to work together to overcome obstacles while maintaining a harmonious relationship, instead of enforcing rigid standards and bureaucratic procedures (Girth 2012).Thus, the hypothesis for this construct is “the performance of front-line employees improves when a reputable contractor is selected, which positively affects the success of the project.”

5.2.3 Training (TR)

Successful organizations invest more in the training and development of employees, as well-trained and knowledgeable employees improve the productivity and financial performance of the organization (Ubeda-Garcı´a et al. 2013). On this point, Rahman and Kumaraswamy (2004), have emphasized the need to modify the rules regarding employee training in government projects in order for employees to develop the skills required for relational contracting. Relational contracting requires a change in the attitude of employees, which can only be achieved through soft skill training. Soft skill training determines an individual employee’s strength as a leader, listener, negotiator, and conflict mediator. It has been found that soft skills contribute more to success than hard skills (Aguinis and Kraiger 2009). Training in soft skills produces marked improvements in communication and the performance of front-line employees, enabling employees to gather more information on the procedures and technology relevant to their job. This has a significant positive effect on job involvement, job satisfaction and organizational commitment (Truitt 2011). Thus, the hypothesis for this construct is “training front-line employees for relational partnership positively affects a project’s success.”

5.2.4 Communication (COM)

An effective communication system in an organization facilitates the sharing of information and the coordination of activities, which reduces unnecessary managerial burdens and ultimately improves organizational performance. However, in the case of public sector organizations, communication systems are typically hierarchical in nature, which results in excessive bureaucracy, which affects employee motivation, satisfaction and innovation (Rho 2009). Regarding this, Kalla (2005) has reported that internal communication in public sector organizations should be both formal and informal to promote cooperation, participation, satisfaction, and to improve relationships between employees. Similarly, Ingvaldsen et al. (2013) have asserted that genuine two-way communication between front-line employees and top officials provides opportunities for continuous improvement and for developing trust and eradiating a culture of “surveillance and blame.” Thus, the hypothesis for this construct is “effective two-way communication between front-line employees and top management positively affects project success.”

5.2.5 Team Work (TW)

The philosophy of relational contracting demands that the different organizations working on a project unite and perform as a team. However, in the case of public sector organizations getting people to work as a team is a difficult task in an organization culture where submitting to the command and control of the top leadership is expected. In order to facilitate relational contracting in public sector organizations, Fausing et al. (2013) have suggested allowing the team to integrate and exercise their expertise and skills, rather than relying solely on the team leader. This demands a transformation from traditional bureaucracy to a learning bureaucracy, in which front-line employees are encouraged to participate in group-based problem solving (Ingvaldsen et al. 2013). Moreover, in construction projects, the team at operational level has the expertise to resolve issues encountered at the project site. Decentralization of decision-making authority regarding project planning, and assigning controlling and monitoring to lower-level employees improves efficiency. Perry et al. (2013) have asserted that giving autonomy to the employees enables them to form self-managed team that can work collaboratively and play an important role in achieving organizational goals. Thus, the hypothesis for this construct is “granting increased autonomy to front-line employees in relation project planning, controlling and monitoring positively affects a project’s success.”

5.2.6 Dispute Resolution (DR)

Establishing a collaborative environment as per relational contracting philosophy has been recommended to improve cooperation and coordination among the parties. Musonda and Muya (2011) have stated that such a practice helps to improve communication and minimize disagreements, thereby resulting in reduced claims. Although all the possible disputes that can be encountered during the project lifecycle cannot be accounted for in contractual agreements, provision for negotiation to resolve the contractual disputes is normally provided. White and Lee (2004) have suggested that during such negotiations the traditional win-lose philosophy should be avoided in favor of adopting an attitude that all parties are partly wrong and partly right. This attitude can be strengthened when certain predefined procedures are followed in negotiations, so that the claimant party feels confident about the fairness of procedures used by the other party (Lu et al. 2017).Failure to establish a harmonious relationship at the top level of the hierarchy will affect the commitment and the relationships at the level of front-line employees. Thus, the hypothesis for this construct is that "a predefined alternative dispute resolution mechanism helps to maintain harmonious relations between the front-line employee teams of the client and the contractor, thereby positively affecting the success of a project."

5.2.7 Risk and Reward (RR)

The risk and reward framework adopted for the project should be designed such that contractors are provided with enough financial incentives to create opportunities for maximizing their profits through efficient performance. This is to promote a cultural shift away from a traditional adversarial approach towards cooperative contracting (Meng and Gallagher 2012). However, due to unfair risk allocation, traditional contracts are synonymous with claims and disputes, and contingencies have become a standard provision in project budgets to address these. This affects the project's financial situation and ultimately has a profound impact on the parties' contracting behavior (Carson et al. 2006).A fair risk allocation framework helps to allocate risk equitably, thereby encouraging cooperation and trust between the parties. Such an arrangement may help to overcome the limitations of the contract and ensure the commitment to "keep going" despite unexpected complications and conflicts (Poppo and Zenger 2002).

Furthermore, if the client establishes a timely payment procedure, the contractor will be able to better manage cash flow for the project (Halac 2012). If the contractor's cash flow is not sustained, their ability to retain skilled staff is reduced, which ultimately results in a poor quality product and increases the burden on monitoring officials (Girth 2012). Thus, the hypothesis for this construct is "an effective risk and reward plan prevents contractors from taking cost cutting measures, thereby reducing the burden on front-line employees to deliver a quality product."

5.2.8 Assessment Process (AP)

Evaluation of a project's performance in the case of public sector projects is normally limited to assessment using the traditional criteria of time, cost and quality, in order to maintain accountability (Ryan and Walsh 2004). However, Mwita (2000) has asserted that performance management should also involve collecting feedback and appraising and rewarding performance. To this end, those conducting the performance assessment should attempt to document experiences, so that managers can analyze performance problems and devise corrective measures to enhance performance by modifying the behavior of employees. Ledimo and Martins (2015), in their study of operational level employees, have observed that these employees are more dissatisfied than top management with respect to dimensions such as human resource management, training, communication, relationships and teamwork during the transformation process. However, , proper management of these issues during the transformation helps employees adopt new behaviors and promotes cooperation and mutual accountability (Mwita 2000). On this point, Fryer et al. (2009) have suggested conducting post-project reviews, which could play an important role in developing strategies for short-term task performance and long-term knowledge accumulation. Thus, the hypothesis for this construct is “proper assessment processes motivate front-line employees to perform better, which positively affects project performance.”

5.2.9 Organizational Change (OC)

The philosophy of partnering is normally adopted by public sector organizations to promote faster production, expansion of the organization at a global level, a reduction in engineering costs, or a reduction in litigation cases (CII 1996). The extent to which these objectives are fulfilled depends to a certain extent on public employees’ understanding of the tasks being executed by them in relation to the organizational objectives and the plausibility of fulfilling these objectives (Wright 2007). Normally, employees working at the project level do not understand the partnering principles agreed between the senior partners. Buelens and Broeck (2007)have argued that employees should be made to feel they are an important part of the change process and should be provided with a supportive working environment in order to enhance their participation in the process. Similarly, Al-Haddad and Kotnour (2015) have asserted that the change has to occur at team level and that the focus should be on changing the norms, roles and values of its members.

Planned organizational change for partnering involves developing a strategy, communicating the need for change, training employees, developing new processes and practices, restructuring the organization, and testing innovations. If sufficient resources are not given to front-line employees to reach the targeted level of performance, this will led to the development of negative attitudes (Xerri et al. 2015). In addition, Fernandez and Rainey (2006) have highlighted the need for political support for organizational change in the public sector, as the government is responsible for imposing statutory change and control of resources. The organization's top-level team could, therefore, protect the lower level employees from political criticism. Thus, the hypothesis for this construct is "planned organizational change for partnering motivates front-line employees to perform better, thereby positively affecting project performance."

5.3 Results of SEM Analysis

The structural equation model for relational partnership success developed in this study aims to explain the interrelationships between the various processes in public sector construction organizations. The structural equation model has also been designed to help identify the critical success factors for improved relationships between contractors and public firms. The evaluation of each of the constructs was carried according to the measures of fit. The data was obtained from 202 front-line- employees through questionnaire survey. The questionnaire is attached as Annexure II. For the SEM, the data was first tested for reliability to ensure its suitability for further analysis by calculating the Cronbach alpha values for each construct (Table 5.2). The Cronbach alpha values were found to be within the cut-off range of between 0.6 to 0.7, which means that the data has an acceptable level of initial consistency.

Table 5.2 Results of the reliability testing of constructs

Variable	Indicating Factor	Cronbach Alpha (α)
Commitment of top management (CM)	Policy for teamwork (CM1) Policy for cooperative culture (CM2) Mutual objectives (CM3) Policy for continuous improvement (CM4)	0.710
Partner selection (PRS)	Limited bid approach (PRS1) Extra prequalification criteria (PRS2)	0.765
Training (TR)	Technical training (TR1) Soft skill training (TR2) On-the-job training (TR3)	0.687
Communication (COM)	Information sharing (COM1) Time-bound meetings (COM2) Removal of hierarchical communication (COM3)	0.732
Teamwork (TW)	A joint project team (TW1) Team-building workshops (TW2) Early involvement of contractor (TW3) Joint project planning, controlling and monitoring (TW4) Joint risk identification and mitigation (TW5)	0.717
Dispute resolution (DR)	Alternative dispute resolution (DR1) Time-bound dispute resolution (DR2)	0.705
Risk and rewards (RR)	Financial incentives (RR1) Joint risk sharing (RR2) Timely payment (RR3)	0.785
Assessment process (AP)	Regular assessment (AP1) Final assessment report (AP2)	0.798
Relational partnership success (PS)	Cost saving (PS1) Timely completion of project (PS2) Quality outcome (PS3)	0.809
Organizational change (OC)	Developing a vision for the organization (OC1) Ensuring the need for change (OC2) Support from staff (OC3) Political support (OC4) Providing resources for change (OC5)	0.756

After checking for consistency, the SEM measurement model (Figure 5.2) was developed for further analysis to check for convergent validity and discriminant validity. Convergent validity is concerned with measuring the degree to which a positive relationship exists between the scale items that measure the constructs. In other words, convergent validity confirms that the measures are theoretically related in reality. In this study, convergent validity was assessed using confirmatory factor analysis (CFA).Table 5.3 presents the results of the test for the convergent validity of the measurement model. The three main criteria for carrying out the CFA were: (i) factor loadings should be greater than 0.5 and ideally 0.7 or higher, (ii) composite reliability should be above 0.7 and ideally 0.8 or higher, and (iii) average variance extracted (AVE) should be above the cut-off value of 0.5 in order to ensure convergent validity (Hair et al. 2010). All the variables except the three variables TW5, OC4, and OC5met the criteria. These three variables have factor loadings of 0.39, 0.37 and 0.45, respectively.

The CFA was extended to measure the discriminant validity. Discriminant validity aims at demonstrating that a measure does not correlate with another measure from which no theoretical relationships are expected. A common way of testing for discriminant validity is by comparing the average variance extracted (AVE) value for any two constructs with the square of the correlation estimates between the same two constructs. According toHair et al. (2010), the variance extracted estimates should be greater than the squared correlation estimates for discriminant validity to be established. Table 5.4 shows the correlation matrix obtained from the CFA of the measurement model. It can be observed that the AVE values of all the factors were greater than the inter-construct correlations, which establishes the discriminant validity of the constructs. The measurement model, comprised of 32 variables, was then subjected to a goodness-of-fit test to see how well the theory fits the data. This was conducted by comparing the obtained goodness-of-fit indices with the standard range of goodness-of-fitindices. The results of the goodness-of-fit test are shown in column 3 of Table 5.5.The goodness-of-fit measures for the measurement model are within the acceptable range.

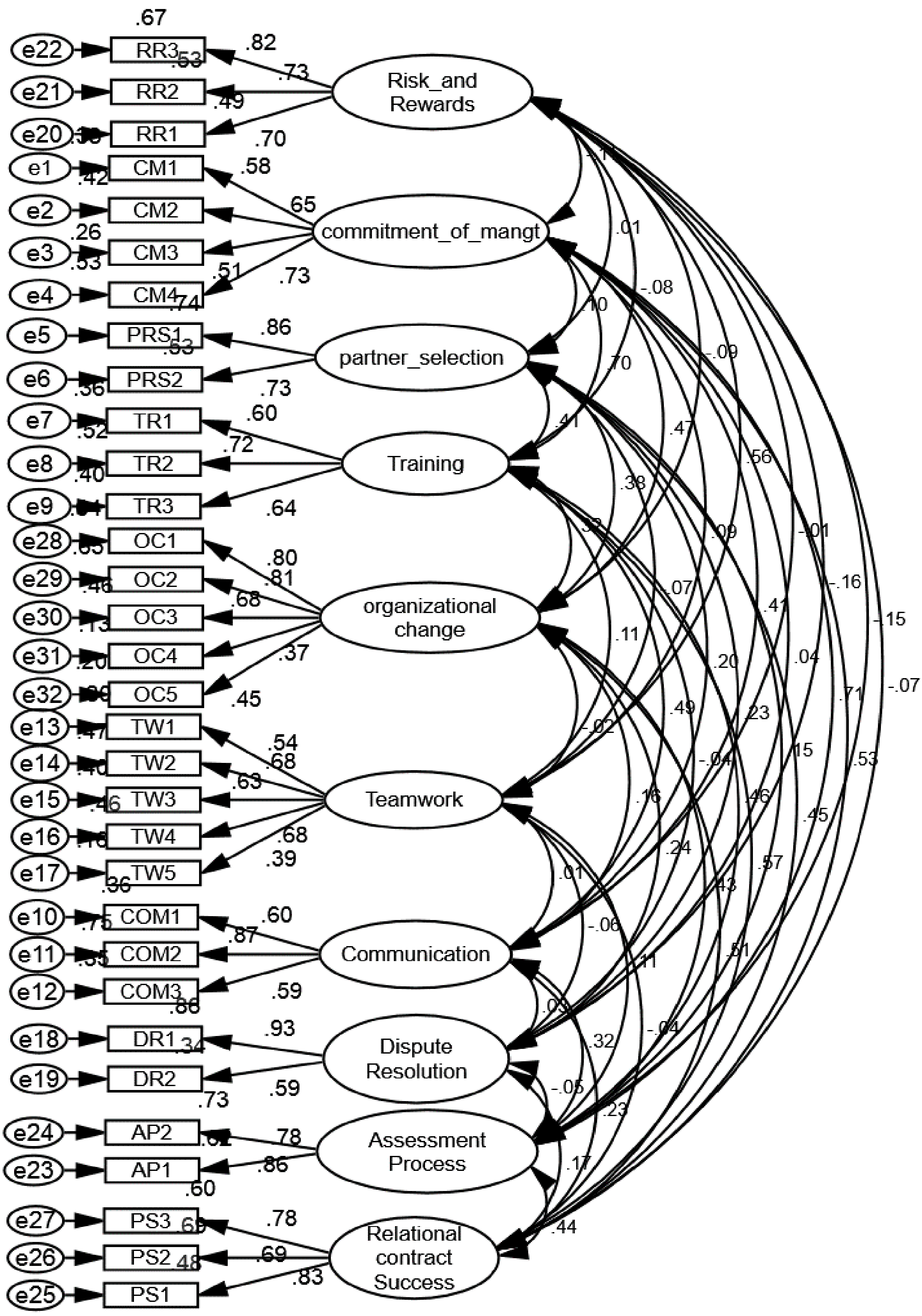

Figure 5.2 Measurement model (CFA)

Table 5.3 Summary of CFA results/ convergent validity

Latent Factor	Observed Variable	CFA Loading	CR	AVE
Commitment of Management	CM1	0.58	0.87	0.62
	CM2	0.65		
	CM3	0.51		
	CM4	0.73		
Partner Selection	PRS1	0.86	0.91	0.79
	PRS2	0.73		
Training	TR1	0.60	0.98	0.65
	TR2	0.72		
	TR3	0.64		
Communication	COM1	0.60	0.97	0.69
	COM2	0.87		
	COM3	0.59		
Team Work	TW1	0.54	0.97	0.59
	TW2	0.68		
	TW3	0.63		
	TW4	0.68		
	TW5	**0.39**		
Dispute Resolution	DR1	0.93	0.90	0.76
	DR2	0.59		
Risk and Reward	RR1	0.82	0.97	0.75
	RR2	0.73		
	RR3	0.70		
Assessment Process	AP1	0.78	0.97	0.82
	AP2	0.86		
Organizational Change	OC1	0.80	0.98	0.62
	OC2	0.81		
	OC3	0.68		
	OC4	**0.37**		
	OC5	**0.45**		
Relational Contract Success	PS1	0.78	0.99	0.77
	PS2	0.69		
	PS3	0.83		

Table 5.4 Correlation matrix (discriminant validity)

	PS	AP	COM	TR	PRS	TW	RR	DR	OC	CM
PS	**0.19**									
AP	0.103	**0.283**								
COM	0.057	0.098	**0.327**							
TR	0.121	0.119	0.136	**0.238**						
PRS	0.18	0.083	0.116	0.201	**1.031**					
TW	-0.01	0.036	0.005	0.033	-0.046	**0.366**				
RR	-0.02	-0.05	-0.003	-0.025	0.003	0.218	**0.422**			
DR	0.032	-0.013	0.007	-0.009	0.102	-0.016	-0.044	**0.189**		
OC	0.138	0.142	0.056	0.098	0.241	-0.007	-0.038	0.065	**0.39**	
CM	0.073	0.119	0.074	0.107	0.032	0.016	-0.023	0.005	0.093	**0.099**

Note: *The diagonal elements in the correlation matrix of constructs are the square root of the AVE values. The AVE should be greater than the squared inter-construct correlations. For discriminant validity to be present, the diagonal elements should be greater than the off-diagonal elements.*

Figure 5.3 shows the conceptual SEM model with standardized path coefficient values. The goodness-of-fit measures for the conceptual model are shown in column 4 of Table 5.5.It can be observed that the χ^2/degree of freedom index and the RMSEA values have increased from 2.111 to 2.622 and 0.074 to 0.090, respectively. The values of the other remaining indices have not increased but are within the limit.

The conceptual model was developed from the measurement model by assigning relationships between constructs based on the initial hypothesized SEM model. The three variables (TW5, OC4, and OC5) with factor loadings of less than 0.5 were removed to develop the modified model. Figure 5.4 shows the modified model which is the final SEM model with standardized solutions.

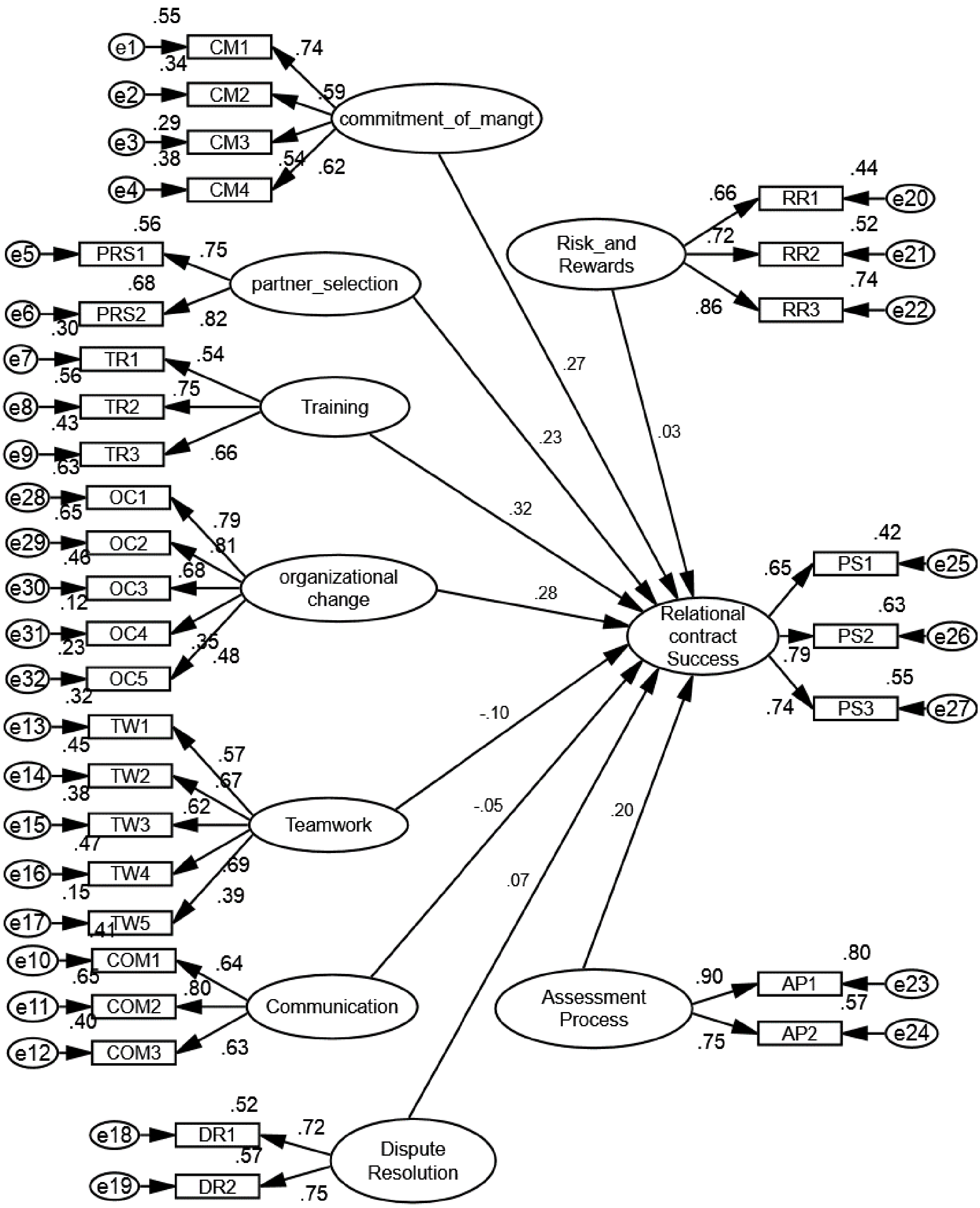

Figure 5.3 Standardized solution of conceptual model

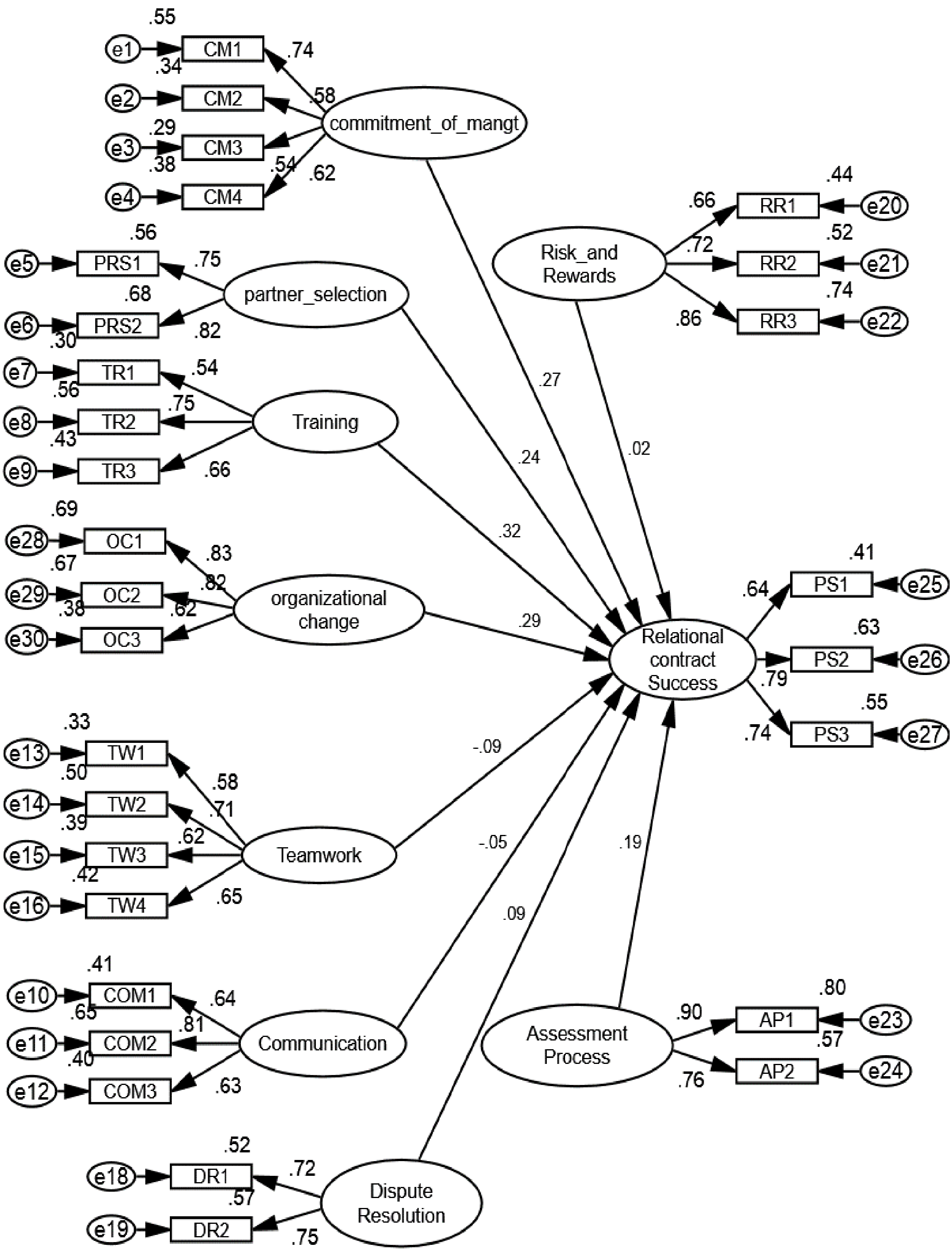

Figure 5.4 Standardized solution of final model

The goodness-of-fit measures for the final SEM model are given in column no 5 of Table 5.5.It can be observed that the values of NFI, TLI, CFI, and IFI have improved with the removal of the three variables. However, there is a marginal reduction in the values of the other indices (χ^2/degree of freedom and RMSEA). It can also be observed that all goodness-of-fit measures are within the acceptable limit. Although the final SEM model did not achieved "best fit," it did achieve a "good fit," which indicates that the final model cannot be rejected at high level of confidence (Schreiber et al. 2006). The standard coefficient estimate for all paths in the final SEM model is shown in Table 5.6.

Table 5.5 Result of goodness-of-fit measures

Fit index	Cut-off values	Measurement Model	Conceptual SEM	Final SEM
(1)	(2)	(3)	(4)	(5)
χ^2/degree of freedom	1 to 3	2.111	2.622	2.563
Normal fit index (NFI)	0 (no fit) – 1 (perfect fit)	0.682	0.569	0.612
Trucker Lewis index (TLI)	0 (no fit) – 1 (perfect fit)	0.759	0.648	0.690
Comparative fit index (CFI)	0 (no fit) – 1 (perfect fit)	0.797	0.675	0.717
Incremental fit index (IFI)	0 (no fit) – 1 (perfect fit)	0.803	0.681	0.722
Root mean square error of approx.. (RMSEA)	<0.05 (very good) – 0.1 (threshold)	0.074	0.090	0.088

Table 5.6 Standardized coefficient estimates for the final SEM model

Path	Standard Coefficient Estimate	p-value
Relational contract success ← **Training**	**0.32**	**0.003**
Relational contract success ← **Organizational Change**	**0.29**	**0.003**
Relational contract success ← **Commitment of top management**	**0.27**	**0.016**
Relational contract success ← **Partner Selection**	**0.24**	**0.012**
Relational contract success ← **Assessment Process**	**0.19**	**0.048**
Relational contract success ← Dispute Resolution	0.09	0.313
Relational contract success ← Risk and Rewards	0.02	0.813
Relational contract success ← Communication	-0.05	0.568
Relational contract success ← Teamwork	-0.09	0.335

It can be observed that five out of the nine relational contract constructs have a significant correlation with relational partnership success. These five relational contract constructs are training (TR), organizational change (OC), commitment of top management (CM), partner selection (PRS) and assessment process (AP). Among these five critical factors, training (TR) has the most direct influence on the success of relational partnership (with standardized coefficient = 0.32), followed by organizational change (with standardized coefficient = 0.29), while assessment process (AP=0.19) has a marginal influence (p-value = 0.048).

It can also be seen that some of the relationships have negative standard coefficient estimate values. The processes communication (COM) and teamwork (TW) have standard coefficient values of -0.05 and -0.09, respectively. Furthermore, the significance levels for communication ($p = 0.568 > 0.05$) and teamwork ($p = 0.335 > 0.05$) are relatively high, so the hypotheses for these constructs are not supported. The hypotheses for dispute resolution ($p = 0.313 > 0.05$) and risk and rewards ($p = 0.813 > 0.05$) are not supported either. In order to understand why these hypotheses are not supported, a review of the responses was carried out. It was found that significant number of responses were outliers. As the respondents were randomly selected, there was no control over the demographic feature “years of experience.” It was observed that 73% of respondents had more than 10 years’ experience. Naturally, all these respondents seem to have developed an affinity for traditional contracting behavior and did not seem to favor the constructs of relational partnership. To understand the above phenomenon, a multivariate outlier detection test using Mahalanobis distance was carried out. The Mahalanobis distance was calculated using the SPSS regression function. The p-value was then calculated using the significant chi-square function for the calculated distance (MD) with the degrees of freedom (28) of the constructs of the latent variables. Out of 202 respondents, 26 were found to be outliers. It was interesting to note that of these respondents, 23 belonged to the “above 20-years’ experience” group, whereas 3 belonged to the “10-20 years’ experience” group. Figure 5.5 shows the outlier effect using a box and whisker plot. It can be observed that all respondents for whom the Mahalanobis distance for the independent variables was more than 40 were outliers.

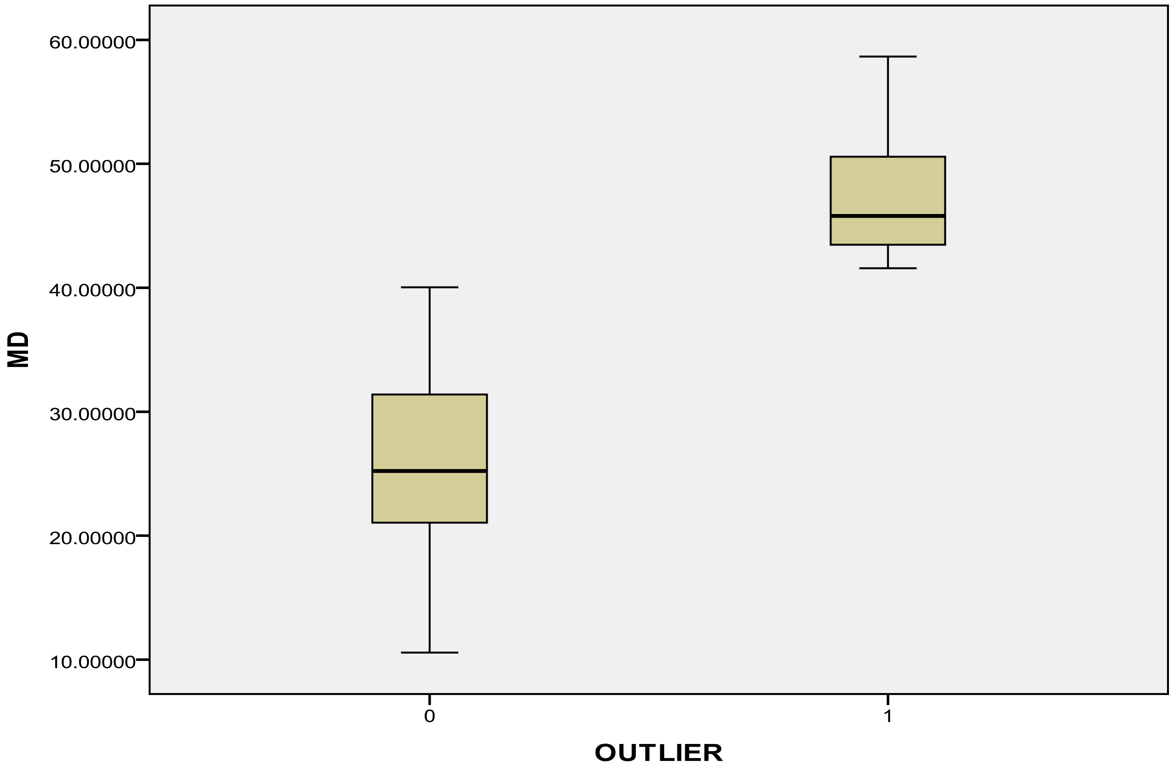

Figure 5.5 Mahalanobis distance (MD) and outlier effect

5.4 Discussion

The key findings from this study that have major implications for relational contracting in public construction organizations concern training, organizational change, commitment of top management, partner selection, and assessment process. These factors, which have p-values less than 0.5, are considered critical factors for successful relational partnership from the perspective of front-line employees. If given enough flexibility in their working environment, front-line employees can play an important role in overall planning, the practical aspects of design and the construction methodology. In collaboration with the contractor team, these employees can also play a role in setting the benchmark for quality of work. As this is a perception based survey implemented on people with very little knowledge of relational contracting, their perception has been discussed by comparing the findings with related literature from field of public sector organizational development and behavior. This is a kind of triangulation to increase the reliability of findings. The critical factors are discussed in this section.

5.4.1 Training (TR)

The variable "soft skill training" has the highest correlation with the "training" factor, with a factor loading of 0.75, compared to the other variables "on-the-job training" (0.66) and "technical training" (0.54). Soft skill training is effective for the development of cordial relationships and teambuilding among project participants, which makes it a critical success factor for relational contracting. This confirms the findings of Briscoe et al. (2001), who have highlighted that soft skill training changes the attitude of people towards each other in the supply chain, resulting in the development of trust, openness and honesty. Although the factor loadings for "on-the-job training" and "technical training" are lower, it is recommended that public sector organizations attempt to fulfill all three criteria to implement successful training.

Wilson et al. (1995) have emphasized that successful organizational change for partnering requires individual employee training through workshops and formal, long-term training programs. Although these findings have special significance with respect to operational level employees, training has often been criticized for being faddish, too expensive, not relevant to the job, and for not improving performance at the lowest level of the organizational hierarchy. Most public sector organizations conduct training programs in order to comply with legal stipulations or in response to training fads but not for improving performance (Tharenou et al. 2007). If training programs for operational level employees have the specific objective of improving behavior, their positive effects will be reflected in organizational performance in terms of productivity and financial returns. In this study, it was observed that all four organizations had in-house training centers but that they were used only for technical training for new employee or to fulfill the requirements for granting promotions.

Operational level employees need frequent training to keep up with changing technology. A lack of technical knowledge among the client team impedes understanding and efficient problem resolution. Therefore, there should be at least one joint technical seminar for both teams to enhance the chances of success in a partnering project (Ng et al. 2002). One of the organizations addressed in this study arranges joint project-specific technical training with employees from contractor organizations. This organization engages in highly complex technical projects involving global contractors. The combined training sessions have facilitated informal communication among team members and have played an important role in the development of teamwork. Such combined technical training programs can facilitate relational partnership at the lower level.

This study demonstrates that soft skill training for front-line employees should be a key component of training programs. These employees interact and work with the contractor team on a daily basis and can have a significant impact on project productivity. However, it was observed that front-line employees are least concerned about changing their behavior. Previous studies by Love et al. (2010), Jefferies et al. (2014a), and Walker and Walker (2016) have recommended team-building workshops as a tool for changing the behavior of individual employees and fostering collaboration. However, this study finds that soft skill training programs are more appropriate for promoting cooperative behavior among employees. For instance, one of the organizations examined in this study provides soft skill training to employees, and employees from this organization were observed to be more cooperative with contractors and internal departments. Although all the organizations arrange soft skill training, including leadership development and personality development programs, for top management, the same should be arranged for front-line employees.

5.4.2 Organizational Change (OC)

The two variables "developing a vision for the organization" and "ensuring the need for change" were found to have the highest correlation with the "organizational change" factor, with factor loading values of 0.83 and 0.82, respectively. This is similar to the findings of previous studies by Crowley and Karim (1995), Bresnen (2007), and Hartmann and Bresnen (2011), which have also emphasized to link partnering objectives with organizational goals. Furthermore, these studies have identified a need to spell out the long-term "vision" and the "mission statement," when setting the short-term and long-term objectives of partnering. In fact, the process of convincing individuals to engage in relational contracting should begin with crafting a compelling vision for it. The vision should present an image of the future that is easy to communicate with organizational members (Fernandez and Rainey 2006). It should provide an overall direction and a foundation for the change process. In the context of relational contracting, the aim of organizational change should be to promote soft components such as trust, commitment, cooperation, and communication through hard processes such as conflict management, risk and reward, and team building. Previous studies, however, have not acknowledged the necessity to obtain the support of front-line employees for the fulfillment of mutual goals.

Buick et al. (2015) have asserted that obtaining the support of front-line employees is crucial as these employees tend to resist changes in their working culture as they do not want to break out of their comfort zone. Initially, all the four public sector organizations faced strong opposition to change from employee unions. In order to introduce change, the top management of two of the organizations engaged with employees through continuous dialogue in order to overcome resistance. The employees were also made aware of problems in an organizing seminar. These measures resulted in the development of cooperative behavior among operational level employees in these organizations.

By contrast, the other two organizations adopted an emergent approach in order to comply with the government regulations. This adheres to the findings of Morales et al. (2012), who argue that most of the time public sector organizations implement changes only to comply with government orders. The front-line employees from these organizations were not happy with the changes and conveyed their unhappiness with being coerced by top management to make the changes. Cole et al. (2006) have highlighted that when a clear vision and a plan for implementing change is lacking, the change negatively affects employees' job satisfaction and commitment. Thus, a planned top-down approach to organizational change should be adopted to implement relational contracting in the public sector. In addition, sincere attempts should be made to gain the trust of front-line employees and make them feel a part of the team.

5.4.3 Commitment of Top Management (CM)

Previous studies by Black et al. (2000), Kwan and Ofori (2001), Cheng and Li (2002a), Chan et al. (2004), Rahman and Kumaraswamy (2005), Beach et al. (2005a), Chen and Chen (2007), Love et al. (2010), and Jefferies et al. (2014a) have identified top management commitment as one of the critical factors for successful relational contracting. Furthermore, Dionne et al. (2004) have highlighted that commitment of leaders positively influences team cohesion by promoting confidence in team members with regard to achieving goals and tasks. This study also identifies top management commitment as a critical factor. It has been observed that top management commitment affects the work processes of organizations and that top managers play an important role in initiating and maintaining he partnering spirit throughout the project.

Furthermore, the significantly the high factor loading values for the "commitment of top management" variables indicate that top management commitment has a strong impact on the commitment of lower level employees. For instance, the factor loading values for the variables "policy for teamwork" and "policy for continuous improvement" are 0.74 and 0.62, respectively. As part of a policy for teamwork, the top management of one of the organizations that took part in this study conducted monthly meetings on a project site and encouraged lower level team leaders to present their work and discuss their progress in seminars. This teamwork policy promulgated by top management built confidence among lower level team members. Similarly, Joshi et al. (2009) have commented that leaders who are committed to developing social relationships with team members are successful in obtaining commitment from the team.

Under this construct, a policy for continuous improvement can play an important role in promoting innovation or adopting new technology. As part of such a policy, one of the organizations established an award for "best engineer" to motivate lower level team members to innovate. Such initiatives have resulted in various innovations at the project level, relating to project design, resource management, safety improvement, and community participation. In fact, awards of this kind give front-line employees a sense of achievement when they observe positive project outcomes. Greasley et al. (2009) have pointed out that a similar policy is a strong motivating factor that encourages employees to become a part of the change and to commit implementing the change. As a part of this policy for continuous improvement, focus should also be placed on training the operational level team (Rousseau et al. 2013). Thus, a committed leadership motivates the lower team to suggest new ways of solving problems, encourages them to engage in non-traditional thinking and promotes innovation.

5.4.4 Partner Selection (PRS)

The variables "extra prequalification criteria" and "limited bid approach" were found to have significant correlation with relational contracting success. These variables have factor loading values of 0.82, and 0.75, respectively. The higher factor loading for the variable "increased prequalification criteria" highlights the fact that the current scheme for prequalification needs to be extended beyond the traditional technical and financial criteria to include criteria that promote contractor selection through a cooperative procurement model, such as early contractor involvement, incentive-based compensation, a limited bid approach and evaluation of task-related attributes such as trust and cooperation that facilitate relational partnership (Eriksson and Pesa¨Maa 2007).

The variable "limited bid approach" also has a significantly high factor loading value. Adopting a limited bid approach will eliminate marginally qualified contractors from bid competitions and ensure the selection of a reputable contractor. Selecting a reputed contractor can be crucial for developing a successful relational partnership between the parties.

Typically, in the case of construction projects, contractors employ temporary engineers, who do not normally develop effective relational partnerships with the permanent public sector employees working with them as they do not have any psychological bond with their organization (Lee and Faller 2005).

By contrast, reputed contractors employ and retain trained staff and do not compromise on quality of work to maintain goodwill. As a result, the front-line employees working on the project do not need to intensively monitor project performance and can focus on other work improvements such as innovative record keeping, developing new performance monitoring tools and using information technology (Amirkhanyan 2008).This highlights the positive impact that working with reputed contractor has on front-line employees. Previous studies have identified similar effects of partner selection on relational contracting but have not discussed the positive effects of working with reputed contractor on front-line employees.

5.4.5 Assessment Process (AP)

Meng (2010) has suggested that along with traditional performance-based metrics such as cost, schedule, and quality, regular performance assessment should also be undertaken to know whether a partnership relationship achieves a better project outcome. To measure partnering performance, Yeung et al. (2007 a) have identified soft performance measures including top management commitment performance, trust and respect performance, effective communication performance, and innovation and improvement performance. It has been observed that front-line employees enjoy going to work when their organizational environment allows them to make positive contributions in project outcomes with respect to these soft performance measures. However, since outcomes are complex in public sector projects and these soft performance measures are intangible and unquantifiable, they are difficult to ascertain (Amirkhanyan 2008). Public officials are also reluctant to adopt soft performance measures, preferring to adopt "hard" traditional performance measures in order to avoid scrutiny from key stakeholders such as the general public and political leaders (Jurisch et al. 2013). In fact, Amirkhanyan (2008) has stated that soft performance measures is a social threat to monitoring officials. This highlights the importance of a "regular assessment process" for relational partnership success as indicated by the high factor loading value of 0.90 for this construct.

The variable "final assessment report" also has a significantly high factor loading value of 0.76 with this construct. A final assessment report generates data on the success of the project, the problems encountered during project execution, and the lessons learned from solving those problems. It was observed that a final assessment report documenting the learning experiences undergone during the projects executed by one of the organizations selected for this study was used as study material for training sessions to motivate front-line employees to be innovative and improve their performance.

5.5 Discussion of Insignificant Constructs

The theoretical constructs teamwork, communication, risk and rewards, and dispute resolution were found to be insignificant in this study. A review of the responses shows a significant number of outliers, which could explain the insignificance of these constructs. The outliers were front-line employees with more than 20 years' experience. These public sector employees, having worked in their respective organization for many years, were accustomed to traditional working procedures and did not want to change to relational partnering. Beal et al. (2013) conducted a study of public sector employees and found that older employees strongly resist organizational change compared to younger employees. They are reluctant to adopt new technologies, processes, or a team working culture. Most of them have a "what's in it for me" mentality and express cynicism about changes.

Moreover, none of the organizations in this study implemented planned organizational change for relational contracting. Rather, they adopted relational contracting strategies as part of an emergent change approach. These participating organizations are reluctant to use incentive mechanisms, flexible risk sharing, joint team formation, and time-bound alternative dispute resolution mechanisms, which are essential elements of relational contracting. Moreover, the communication mechanism is hierarchical in nature in these organizations. Ng and Feldman (2008) have found that older employees normally have more problems related to communication and teamwork and are less technologically savvy and less willing to adapt quickly in volatile environments. By contrast, younger employees are more motivated to voluntarily learn new things related to their job (Warr and Birdi 1998). These organizations should, therefore, pay more attention to older front-line employees and devise appropriate strategies to tap into the knowledge gained by older employees through their experience.

5.6 Summary

This chapter initially discusses the theoretical framework for the critical factors of relational contracting from a front-line employee perspective. Then, it discusses in detail the results of the SEM analysis. The data was analyzed for initial consistency and construct validity. The final SEM model was achieved after the measurement model and the conceptual SEM model. The final SEM results suggest that five out of nine relational contracting factors are significantly correlated with relational contracting success in terms of cost, time and quality. These five factors are training, organizational change, commitment of top management, partner selection, and assessment process. It has been pointed out that front-line employees should be trained in both changing technology and soft skills to change their behavior in order to promote a cooperative culture. The study has also indicated that organizational change is the second most critical success factor. This highlights the need to earn the confidence of front-line employees to ensure their effective involvement in executing the organizational change. The commitment of top management during organizational change for relational contracting is another key factor for successful implementation of relational contracting in public sector construction organizations. It is found that top management commitment promotes confidence in front-line employees and motivates them to achieve project objectives and organizational goals. From the perspective of front-line employees, the selection of reputed contractors can have an important impact on employee performance. The selection of reputed contractors reduces their workload in relation to the day-to-day monitoring of work, as reputed contractors will not engage in practices that can compromise the quality of work. Also, the organizational policy of preparing a final assessment report on the problems encountered and the lessons learned from mitigating those problems should be adopted by the organizations. This can have a significant impact on front-line employees, as it provides comprehensive learning material for management of future projects. Finally, a reason for insignificant relationships relating to teamwork, communication, risk and rewards and dispute resolution is also discussed. It was found that older front-line employees need more motivation to adopt relational contracting.

CHAPTER 6: PROPOSED RELATIONAL CONTRACTING FRAMEWORK

6.1 Introduction

This chapter presents the third phase of the research which aimed to develop a relational contracting framework for public sector construction organizations. The preliminary framework was developed using the findings of the two earlier phases and the findings of the literature review on public sector organizational change. Thus, the proposed framework combines the success factors for public sector organizational change and organizational strategies for relational contracting. The proposed framework was validated through interviews with experts from the four case study organizations.

The chapter is divided into four sections. The second section explains the process of developing of the conceptual framework of relational contracting. The third section presents the validation of the relational contracting framework, which includes the method of data collection and analysis. Finally, the fourth section discusses the proposed relational contracting framework.

6.2 Conceptual Framework of Relational Contracting

The conceptual framework explains how to incorporate relational contracting into Indian public sector organizations. It combines the organizational strategies that need to be improved to promote relational contracting and the success factors for public sector organizational change. In the first phase of this research, qualitative data was collected from top management experts of four case organizations. The data was analyzed using cross-case analysis. It was found that to foster a more relational environment in Indian public sector construction organizations, many organizational strategies are needed. These include multi criteria bid evaluation, an incentive mechanism, a joint risk-sharing process, time-bound payment to the contractor, soft skill training for employees, the removal of hierarchical communication, the formation of a joint project team, team-building workshops, the involvement of a specialized contractor in design, a time-bound dispute resolution mechanism, and the preparation of a final assessment report.

In the second phase of this research, quantitative data was collected from front-line employees of the four case organizations. The data was analyzed using SEM to identify the critical success factors for relational contracting. It was found that the critical success factors from a front-line employee perspective are organizational policies that promote team work, a cooperative culture and continuous improvement, multi criteria bid evaluation, the provision of technical training, on-the-job training and soft skill training to front-line employees, a regular assessment process, the preparation of final assessment report, the development of a vision for the organization, ensuring the need for change and gaining the support of staff. The findings from both phases are summarized in Table 6.1.

Table 6.1 Organizational strategies needed for improvement for relational contracting

Organizational strategies promoting relational contracting	**Strategies that Need Improvement**	
	Findings of Cross-case analysis	**Findings from SEM Analysis**
Policy for team work		√
Policy for cooperative culture		√
Decide objectives of project		√
Policy for continuous improvement		√
Limited bid approach		√
Multi criteria bid evaluation	√	√
Incentives relating totime, cost and quality	√	
Joint risk-sharing	√	
Time-bound payment to contractor	√	
Technical training sessions		√
Soft skill training sessions	√	√
On-the-job training sessions		√
Information sharing		
Time-bound meetings of project team		
Removal of hierarchical communication	√	
Formation of joint project team	√	
Team-building workshops	√	
Specialized subcontractor involvement in design	√	
Joint project planning, controlling and monitoring		
Joint risk identification and mitigation strategy		
First meeting of top management from both sides to decide common objectives of project		
Preparation of project charter	√	
Contractor involvement in design		
Use of ADR techniques	√	
Time-bound dispute resolution mechanism	√	
Regular assessment		√
Publication of a final report	√	√
Developing a vision for organization		√
Ensuring the need for change		√
Support from staff		√

The findings of both phases suggest that few strategies are common to both and that there is a significant difference between the opinions of top management and those of front-line employees. Therefore, for the development of the conceptual framework all the strategies were considered important for relational contracting implementation. These organizational strategies were integrated with the success factors for public sector organizational change (discussed in section 2.7), as adopting relational contracting requires significant changes in working culture of public sector organizations.

Lewin (1951) presented first model of organizational change namely force field analysis model. This is the cornerstone model for understanding organizational change. This is a model in which one side of force field represents the driving forces that push the organization towards the new state and these driving forces may be external environment like technological change, global and local competition or internal environment like competition across division of company and leaders tries to impose his image on the organization. On other side of the force field is the restraining force that tries to maintain the old behavior. The restraining forces are commonly known as "resistance to change" which could be related to employee behavior that blocks the change process. In this model, the stages in which organization undergoes change are depicted by the three stages of unfreezing – moving – refreezing. Later on many researchers presented organizational change model dividing three stages in number of stages such as four stage model by Bullock and Batten (1985); ten stage model by Kanter et al. (1992); eight stage model by Kotter's (1996) and eight step model by Kotter and Cohen (2002). Partnering models are also developed on similar lines. Crane et al. (1997) provided five phases model. The phases of this model are owner's internal alignment, partner selection, alliance alignment, project alignment and work process alignment. Li et al. (2001) developed eight step model that include developing a cooperative team, planning what to be improved, comparing the current performance gap, gaining commitment to need for change, developing action plans, implementing actions and measuring progress, feedback of implemented change and achieving the superior performance. Cheng and Li (2004) developed three phase model having phases like partnering formation, partnering application and partnering reactivation.

Similarly, proposed framework is divided in three phases based on Lewin's force field analysis model. The first of Lewin's model is 'unfreezing'. It involves the activities to reduce those forces that try to maintain the organization's behavior at its present level. In this process people become aware of the need for change. By introducing information that shows the discrepancies between current behavior and desired behavior, organization members can be motivated to engage in the change activities. In proposed framework, the first phase is internal alignment for change. In this phase client first identify the need of relational contracting and decide the objectives of partnering by analyzing the current performance of organization. Client also changes present organizational strategies suitable for partnering such as risk sharing mechanism, incentive mechanism and dispute resolution mechanism.

The second phase of Lewin's model is 'moving'. This step shifts the behavior of the organization, department or the individual to a new level. It involves intervening in the system to develop a new behaviors, values and attitudes through changes in organization structures and processes. In proposed framework, the second phase is relationship alignment. In this phase it is targeted to change the attitude of organizational member towards relational contracting. For this purpose client prepare the project team members by providing necessary training and conducting team building workshops. The purpose is to change the behavior of team members from working in isolated team to integrated team.

The third phase of Lewin's model is 'refreezing'. This step makes new behavior relatively permanent and resistance to further change and organization acquires a new state of equilibrium. It is frequently accomplished through the use of supporting mechanism that reinforces the new organizational state, such as organizational culture, norms, policies and structures. In proposed framework, third phase is relationship execution. In this phase, planned changes from initial two phases actually implemented. The relationship between partners develops along with construction phase. The progress of execution is measured on periodic basis against the predefined objectives as well as final assessment is carried out for future learning. Figure 6.1 presents the conceptual framework for relational contracting in public sector organizations.

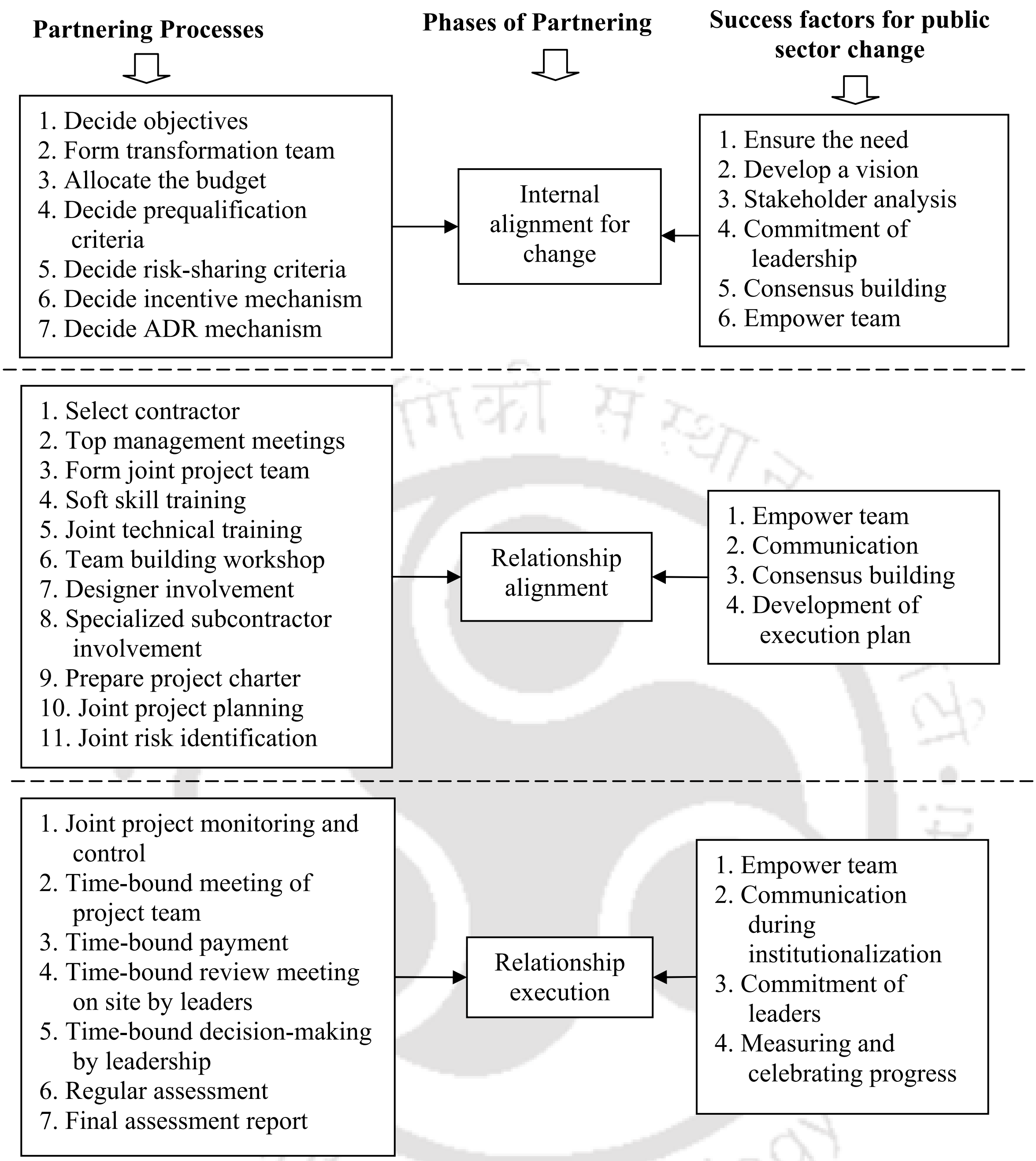

Figure 6.1 Conceptual frameworks for relational contracting in public sector construction organizations

The relational contracting framework is divided into three phases that span the project life cycle. These are internal alignment for change, relationship alignment, and relationship execution. The processes involved in each of phase are discussed in the following sections.

6.2.1 Internal Alignment for Change

Determining the owner's internal ability to engage in partnering is a crucial process, which the owner can start by analyzing its organizational culture, work processes and contracting methods (CII 1996). Top management must ensure the need for relational contracting as a first step in internal alignment. They must analyze whether the current government policy (EN1) is suitable for relational contracting changes or not. They must also analyze the project's commercial or social benefits (EN2) to decide whether implementing relational contracting is a priority for the project. In addition, they must identify the organization's strengths and weakness (EN3), because certain strengths can facilitate relational contracting, while weakness can hinder it. Weaknesses must be addressed by drafting specific organizational policy.

The above analysis is useful for drafting vision for what the organization can achieve by implementing relational contracting. The purpose of relational contracting is to promote a cooperative culture in an organization, enhance team work, and lead the organization towards innovation and continuous improvement. Accordingly, top management must formulate policies for team work and continuous improvement (DV3) and for innovation and continuous improvement (DV2). Furthermore, project-specific objectives (DV1) to be achieved through partnering must be decided.

Rahman and Kumaraswamy (2012) have emphasized a changed approach to contracting is necessary to create a cooperative culture with contractual flexibilities so that uncertainties encountered during the implementation of relational contracting can be addressed proactively. One of the key areas of contracting that requires internal alignment is contractor selection. As lowest price is the least important criterion in relational contracting, other criteria such as quality of work, project management capability, adequate resources, safety issues and technical capabilities should also be granted importance (Osipova and Eriksson 2011). Such a multi criteria bid evaluation will require government support (SA2). In addition, the creation of an equitable risk allocation framework (Ling et al. 2006) and the use of financial incentives promotes relational contracting and helps to initiate a cultural shift from a traditional adversarial approach to cooperative contracting (Tang et al. 2006). A risk and reward mechanism motivates contractors (SA3) to participate actively in relational contracting projects.

Manley et al. (2009) have asserted that organizations should establish planned processes to improve core competencies such as management skills, organizational routines, knowledge base, investment in research and development, maintenance of a formal system to transfer project learning into continuous business processes, and active monitoring of international best practices for pursuing partnering. Top management should form a transformation team to design and monitor the above planned process for partnering (SA1). Thus, strategies SA1, SA2, and SA3 should involve various stakeholders such as the government, contractors, and organizational employees from the initial stages of implementing the concept of relational contracting in an organization.

6.2.2 Relationship Alignment

This phase focuses on providing opportunities for developing trust and initiating team building. Some clients allowed trust to develop naturally while some made specific efforts to increase trust through business and social opportunities (CII 1996). Initial meetings to exchange expectations and goals regarding relationships between the parties (CBR1) provide a deeper understanding of the project's overall goals (Chen and Chen 2007). Also, employees need to be educated about partnering and be made to feel that they are a valuable and necessary part of the process (Crane et al. 1997). This should also extend to contractor organizations, as there is no established tradition of training in such organizations. Soft skill training (CBR2) and team-building workshops (CBR3) can serve the above purpose. Thus, team-building sessions should be held prior to the implementation of the project and should involve key players from different firms, including engineers, foremen, specialists, and other staff.

Eriksson (2010) has found that involving the contractor and subcontractor in the design process (DEP1) is helpful for nurturing close collaboration throughout the project life cycle. Finally, partnering efforts should involve giving project team members increased autonomy by delegating decision-making authority down to lower levels. This can be achieved by forming a joint project team (DEP2). This joint project team should be responsible for joint project planning (DEP3) and risk identification and mitigation (ETR2) in the preconstruction phase. The involvement of lower level team members in this stage can overcome resistance to the changes required for relational contracting.

6.2.3 Relationship Execution

In this phase, the partnering teams translate their shared purpose into specific performance goals and targets. The joint project team carries out project controlling and monitoring (ETR3), while the transformation team ensures the availability of finance as per the budget provisions (ETR1). The joint project team should conduct time-bound meetings (COM3) to review activities as per the plan and inform the transformation team through an established information-sharing mechanism (COM1). In addition, the transformation team must promote informal communication (COM4) with lower level team members and remove the barrierof hierarchical communication (COM2). This is helpful for initiating a paradigm shift in attitudes towards openness and communication between parties the considerably and considerably reduces administration costs (Glagola and Sheedy 2002).

During the execution phase, top management should conduct time-bound review meetings on site (CL1). These meetings should provide a platform for open communication among the contract participants (Chan et al. 2006) and provide opportunities for informal communication with lower tier employees (CL4). Ruuska and Teigland (2009b) have asserted that the success of a partnering project lies in the team members' ability to embrace conflict and turn it into creative conflict through dialogue. Therefore, top management should commit to time-bound decision-making (CL2) and time-bound dispute resolution (CL3). As a result, contracting parties will feel that their partners are sincerely willing to seek a win-win resolution without destroying cooperation (Wong et al. 2005).

The performance review of the joint project team should be carried out through a regular assessment process with tangible parameters (MP1). Lastly, at the end of the project, a final review report is prepared detailing the project's success and failure strategies (MP2). Success stories motivate parties to engage in future partnering projects, while failure stories highlight areas for improvements in upcoming projects.

6.3 Validation of Framework

The conceptual framework had to be validated to assess the possibility of implementing the suggested strategies in public sector organizations. The qualitative data was collected through structured interviews with 36 top management experts who participated in the first round of interviews. The profile of respondents is presented in Table 6.2.

Table 6.2 Respondent's Profile

Designation	No. of Participants	No. of years of Experience (Average)
Chief Engineer	8	33.5
Deputy Chief Engineer	5	32.4
Superintending Engineer	7	32.5
Executive Engineer	8	31.75
Contractor's General Manager	4	34.5
Contractor's Project Manager	4	29.25
Total	36	32.41

Each respondent was asked to agree or disagree on the possibility of implementing each strategy in the framework and to provide a reason for their verdict. The responses from interviewees were coded using two types of coding. Open codes were used for the key success factors for public sector organizational change and axial codes were used for the organizational strategies that promote relational contracting under corresponding open code. The coded data was then analyzed using micro-interlocutor analysis. Micro-interlocutor analysis is not a technique to merely count a frequency of "Yes" or "No" answers but is used to understand the explanations provided by each respondent for each answer. Important statements were highlighted for the purpose of analysis. Accordingly, answers were sorted into four categories:"very strong disagreement,""moderate disagreement," "moderate agreement," and "very strong agreement."After categorization, all the statements in each category were counted for frequency. The four-point scale was used for each category to calculate the mean of frequency. A mean value below 2.5 was considered to indicate strong disagreement regarding the possibility of implementing the strategy, a mean value above 2.5 was considered to indicate support for strategy, a mean value above 3 was considered to indicate strong support, and a mean value above 3.5 was considered to indicate very strong support for the strategy.

At the same time, it was essential to avoid the biases in discussing proposed framework. To avoid the biases two techniques suggested by Miles et al. (2013) were used. First one is a looking for outlier explanations. As per this technique, few respondents are very enthusiastic in nature. They provide very strong supportive explanation or very strong negative explanation to question asked. Such exaggerated strong supportive explanations and strong negative explanations were eliminated while developing validation writing and only focused on moderate explanations supporting to strategies. Second technique is a getting feedback from participants. As per this technique initial drafts of validation discussion were given to one participant who was interested in research since inception. The validation discussion was finalized after incorporating suggestions from him. The calculations of the micro-interlocutor analysis are presented in Table 6.3 and the final results of the analysis are given in Table 6.4. This table also presents the open and axial coding of the success factors for public sector change and relational contracting.

Table 6.3 Frequency of micro-interlocutor analysis

Strategy Code	Scale				Mean
	1	2	3	4	
	Very Strong disagreement	Moderate disagreement	Moderate agreement	Very Strong agreement	
EN1	1	1	18	16	3.36
EN2	0	1	8	27	3.72
EN3	6	5	15	8	2.58
DV1	3	5	12	16	3.14
DV2	5	7	15	9	2.78
DV3	6	8	10	12	2.78
SA1	1	1	12	22	3.53
SA2	8	9	12	7	2.50
SA3	5	6	19	6	2.72
DEP1	2	3	20	11	3.11
DEP2	1	1	17	17	3.39
DEP3	5	3	12	16	3.08
CBR1	0	0	12	24	3.67
CBR2	1	0	13	22	3.56
CBR3	3	5	18	10	2.97
ETR1	2	1	9	24	3.53
ETR2	2	4	19	11	3.08
ETR3	3	3	16	14	3.14
CL1	4	3	13	16	3.14
CL2	2	1	9	24	3.53
CL3	1	1	11	23	3.56
CL4	3	4	17	12	3.06
COM1	2	6	16	12	3.06
COM2	7	5	15	10	2.83
COM3	1	1	13	21	3.50
COM4	5	3	13	15	3.06
MP1	0	0	15	21	3.58
MP2	3	3	14	16	3.19

Table 6.4 Integration of success factors for public sector change and relational contracting

Open code	**Public Sector Organizational Change – Key Focus Areas**	**Organizational strategies to facilitate relational contracting**	**Axial code**	**Result of micro-interlocutor analysis**
EN	Ensure the need	Analyze Government's present policy	EN1	++++
		Analyze project's commercial or social benefits	EN2	+++++
		Identify organization's strength and weakness	EN3	+++
DV	Develop a vision	Decide project specific objectives	DV1	++++
		Formulate policy for innovation and improvement	DV2	+++
		Formulate policy for team work and cooperation	DV3	+++
SA	Stakeholder analysis	Formation of transformation team to plan new strategies	SA1	+++++
		Seek government support for new strategies in bidding process	SA2	+++
		Motivate contractors by offering reward and risk sharing	SA3	+++
DEP	Development of execution plan	Contractor and specialized subcontractor involvement in design	DEP1	++++
		Formation of joint project team	DEP2	++++
		Joint project planning and preparation of project charter	DEP3	++++
CBR	Consensus building to overcome resistance to change	Initial meetings between top management of both sides to decide common objectives of project	CBR1	+++++
		Soft skill training sessions	CBR2	+++++
		Team building workshops	CBR3	+++
ETR	Empower team with resources	Availability of finance as per provisions of budget	ETR1	+++++
		Joint risk identification and mitigation strategy	ETR2	++++
		Joint project controlling and monitoring	ETR3	++++
CL	Commitment of leadership	Time-bound review meeting on site	CL1	++++
		Time-bound decision-making mechanism	CL2	+++++
		Time-bound dispute resolution mechanism	CL3	+++++
		Informal communication with lower tier	CL4	++++
COM	Communication during institutionalization	Established information sharing mechanism	COM1	++++
		Nonhierarchical communication	COM2	+++
		Time-bound meetings of project team	COM3	+++++
		System of informal communication	COM4	++++
MP	Measuring and celebrating progress	Regular assessment process as per tangible parameters	MP1	+++++
		Final review report with project's success and failure strategies	MP2	++++

Legends: +++++ Very strong support; ++++ Strong support; +++ support

6.4 Proposed Relational Contracting Model and Discussion

The results of the micro-interlocutor analysis show that most of the experts expressed significant agreement on suggested organizational strategies. They also provided justifying statements on the possibility of implementing the proposed organizational strategies. The 10 steps of the proposed framework are discussed below.

6.4.1 Ensuring the Need for Partnering and Developing a Vision Statement

Hajnal (2004) has asserted that before initiating reforms in the public sector, it is essential to identify the forces of organizational change, such as changes in the world economy, fiscal pressure, technological innovations, and global business demand, to ensure the need of change. Accordingly, top management should initiate change by drafting an appealing vision statement for the organization. This is generally seen as a crucial first step in the implementation of planned change management strategy. Moreover, top leaders are expected to contribute to the implementation of the change management strategy by providing intellectual stimulation through the formulation of challenging objectives and the promotion of new ways of thinking. Generally, a vision for a public sector organization depends on the agenda set by the Government. However, most of the respondents in the present study agreed that project-specific objectives can be set by top management. These objectives may be to bring technological innovation to the project, to complete the project within cost and on time, to reduce the number of claims and disputes on site, or to introduce overall reforms in the organization's working process. At this stage, top management should also identify the core competencies and weaknesses of the organization, in order to anticipate how the core competencies will align with the developed framework and how the weaknesses can be addressed.

6.4.2 Stakeholder Analysis and Consensus Building

Introducing changes to promote partnering may invite resistance both from within the organization and externally in the form of demands from stakeholders or government policies (Abdulraheem et al. 2013). The organization should introduce multiple bid evaluation criteria and a flexible risk-sharing mechanism for successful relational contracting. However, using multiple bid evaluation criteria may require prior government permission, and poor government responsiveness is a problem in a country such as India (Jha and Devaya 2008). Therefore, it may not be possible to arrive at a consensus at an initial stage. It is advisable to inform political overseers, so that managers can protect their subordinates from their pressures (Fernandez and Pitts 2007). Also, it is necessary to obtain the confidence of contractor associations before opting for relational contracting changes. Contractors can be educated through seminars, during which they can be informed about the benefits of partnering. The best policy for consensus building is to execute a demonstration project. In fact, one of the top-level managers interviewed suggested doing just that:

"*Before initiating a large-scale reform throughout the organization, it is always better to select a pilot project. It is easy to convince people for the pilot project*."

Mahalingam et al. (2015) conducted a pilot project, which proved that building information modeling(BIM) and lean practices improved decision-making, planning and coordination in the construction of metro stations for the Chennai Metro Rail Project (India). In a similar way, planned partnering could be implemented in a demonstration project before the organization fully adopts relational contracting.

6.4.3 Forming and Empowering a Team

The organization should form a transformation team to initiate the necessary organizational changes for relational contracting. The transformation team should be comprised of two or more leaders from the organization or should include an external facilitator to play the role of change agent (Fernandez and Rainey 2006). One of the chief engineers interviewed stated:

"*An internal change agent is likely to know the organization's people, task and political situation better, which helps in interpreting the data and understanding the system better*."

This transformation team should be given adequate financial resources and the authority to make appropriate decisions on time. Crane et al. (1997)have reported that the cost of implementing relational contracting can vary from 0.25% to 2% of the project cost. The provision of financial resources creates opportunities for the transformation team to explore innovative methods for accomplishing organizational change.

6.4.4 Initiating Change to Show the Commitment of Leaders

Policy improvements in relation to prequalification for contractor selection, an incentive mechanism, improvement in risk sharing, and time-bound alternative dispute resolution mechanism should be agreed among the respondents. Expanding the prequalification criteria for contractor selection is an urgent need. On this point, most of the chief engineers interviewed suggested that the prequalification criteria for contractor selection should be expanded by adding quality, safety and environmental aspects, to ensure that only contractor companies who invest in capacity building qualify for the job.

To introduce incentive mechanisms in India, the client's top management should change their attitudes in relation to why extra money should be paid to the contractor (Hasan and Jha 2016). Time-bound decision-making is also essential to ensure accountability in public sector projects in India (Sawhney et al. 2014).On this point, many respondents suggested the inclusion of a time-bound dispute resolution mechanism to improve accountability in decision-making across the bureaucratic hierarchy. The respondents highlighted the need for top management to frame the above policies to demonstrate their commitment to the changes. Including these changes in the contract document before announcing the partnering will show the commitment of top management for organizational changes to achieve effective partnering.

6.4.5 Communicating Change and Consensus Building

The decision to adopt a partnering strategy should be communicated to the operational level employees of both the contractor organization and the public sector organization. Fernandez and Pitts (2007) have asserted the importance of consensus building among operational level employees with respect to organizational change as these employees are the catalysts for real change and innovation. Coram and Burnes (2001) have suggested that a traditional top-down approach is most the suitable for communicating change in public sector. Barnard and Stoll (2010) have identified education, facilitation, negotiation, and coercion as typical techniques for consensus building and communicating change in the public sector. Similar techniques can be used by the transformation team to communicate with operational level employees.

Public sector employees need to be educated to change their attitudes to relational contracting change. For this purpose, many respondents specifically stressed a need for soft skill training to promote a partnering culture. One of the respondents commented:

"*It is necessary to remove the concept of "master and slave" from the minds of public sector employees. This attitude can be changed through soft skill training only.*"

Soft skill training can encourage leadership, problem solving, decision-making and team work among employees. Tripathi and Jha (2018 a) have found that employees in Indian construction organization enjoy having the freedom to express their views and ideas. A positive working culture in the organization improves the dedication of employees, which ultimately enhances the chance of successful relational contracting.

6.4.6 Forming a Joint Project Team

A joint project team that consists of employees working on site from both the contractor and client sides plays a key role in partnering. The transformation team should take the responsibility for team building within this joint project team. The transformation team needs to show respect for people of joint project team and should have a sound understanding of psychology. Joint project team should communicate and coordinate with people internally as well as with those from other departments. One way of team building is to conduct team-building workshops. Arranging a joint technical training program for employees of both the contractor and the client can also promote team building during the initial stage of construction, because joint training programs facilitate informal communication among team members. One of the respondents pointed this out:

"*The public sector organizations should take the responsibility of providing training to the contractor's people using their own organizational training centers, as most of the contractors are reluctant to invest in training. This will serve the dual purpose of training and teambuilding*."

6.4.7 Developing an Execution Plan

An execution plan for involving junior members of the organization should be drawn up by top management, as without involvement of lower level team, it is difficult for the change to succeed. The joint project team should prepare the execution plan, which should focus on project planning, risk identification and mitigation, and a project charter with design input from contractor and specialized subcontractors. This is helpful for developing a team spirit and for receiving constructive input from all the project participants. A similar practice of similar was described by one of the respondents;

"*We conduct many meetings with the contractor in the preconstruction phase to reach a consensus in project scheduling, deciding payment milestones and field quality plan. This has resulted in avoiding any confusion and conflict during project execution".*

6.4.8 Implementing the Change

During the construction phase of the project, the joint project team should put the partnering philosophy into practice. During this phase, the joint project team translates the written plan into action. In cooperative contracts of this kind, monitoring officials work jointly to overcome obstacles and maintain relationships rather than enforcing rigid standards. The transformation team has a vital role to play in this phase. The team must coordinate all the parties, including the joint project team, the consultants, the subcontractors and top management from both the sides by conducting regular meetings with them. The top management from both sides should provide the joint project team with sufficient resources and tools for smooth execution of project according to the plan. If the transformation team observes a lack of communication or participation among the team members, extra training sessions or team-building workshops can be arranged in this phase.

The team must measure deviations from goals during execution and report them to the transformation team. At this stage, the transformation team often needs to balance the rigidity of rules against discretion in decision-making based on the unique requirements of the situation. After receiving suggestions from the transformation team, joint project team should implement the necessary actions to correct deviations.

6.4.9 Activities to Demonstrate the Commitment of Top Management

Voet (2014) has noted that in a highly bureaucratic public sector organization, an organizational change may require motivation of employees through top management intervention. The support of top management is indispensable for overcoming resistance to change, maintaining stakeholder commitment, and managing difficulties during the execution stage. Regular and effective communication between managers and employees is required during this stage. This communication can be facilitated by holding regular meetings. Also, top management should hold informal discussions with the joint execution team to keep them informed them about changing circumstances. This shows the commitment of top management to developing cooperative relationships and improving communication with lower level teams. A similar opinion was shared by one of the respondents.

"*Our project cost is always high, and we work with multinational contractors. Looking at the technical complexity of our project and the cultural issues, anyone can foresee major disputes in our project. But in reality, we have very few unresolved issues in each project as* *most of the issues get resolved in our mandatory monthly review meetings conducted on site by our top management.*"

6.4.10 Evaluating Performance

Public sector organizations should develop systems to measure progress in achieving organizational goals throughout the lifecycle of the project (Buick et al. 2015). For this purpose, all the experts should agree on a strategy for preparing a final assessment report identifying both the successes and the barriers faced in completing the project. Greasley et al. (2009) have suggested that the final assessment report should not only act as a guide for future projects but should also improve the self-motivation of public sector employees by demonstrating that their efforts are reflected in the success of the project. This report can also be used as a case study to teach a younger generation of employees. In this regard, one of the chief engineers interviewed asserted:

"*It is necessary to publish failure studies also as they provide rich learning material. But extra care should be taken while publishing failure stories, as anti-social elements may try to benefit from them. They will try to place the responsibility for failure on specific people, which might adversely affect the morale of public sector employees.*"

6.5 Summary

The framework on how to incorporate relational contracting in a public sector construction organization is investigated in this chapter. The conceptual framework is developed by integrating the findings of the earlier two phases of research and the literature review of public sector organizational change. The process of developing the conceptual framework is explained in detail. This framework is validated for potential implementation through interviews with 36 top management experts from the four case organizations. The micro-interlocutor analysis used for the validation is explained in detail. Finally, the proposed framework for implementing relational contracting in public sector construction organizations is discussed. Wilson et al. (1995) first identified that partnering should be considered as organizational development problem and requires intervention at three levels. The three levels of intervention are individual intervention, project intervention and organizational intervention. Later on many partnering models have been developed by various researchers as discussed in section 2.4. These models mainly focused on development of processes for partnering and mainly targeted at project level changes. The proposed model first time considered all the three levels of interventions suggested by Wilson et al. (1995)

and targeted public sector organizations. Accordingly, processes of organizational change in public sector have been incorporated with processes of relational contracting. As per proposed model, to initiate the partnering at project level, first changes need to be carried out organizational level. The organization has to prepare itself for relational contracting suitable for project partnering. After that organization prepare two important stakeholders i.e. contractors and operation level employees to change their behavior suitable for relational contracting. At last, all the efforts put in project level to execute project partnering successful. Thus, framework proposed ten steps for implementing relational contracting in public sector projects that are ensuring the need for partnering and developing a vision statement; stakeholder analysis and consensus building; forming and empowering a team; initiating change to show the commitment of leaders; communicating change and consensus building; forming a joint project team; developing an execution plan; implementing the change; activities that demonstrate the commitment of top management; and evaluating performance.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

7.1 Summary

This research aimed to develop a relational contracting framework for public sector organization in the form of an organizational change model. The organizational strategies promoting relational contracting and key success factors for public sector organizational change were identified from the literature review as determinants for this framework. A case study research methodology was adopted, and data was collected and analyzed in three phases. In the first phase, the extent to which relational contracting has been adopted by public sector construction organizations was explored by collecting qualitative data from 36 top management experts and analyzing it using cross-case analysis. In the second phase, the relationship between the key elements of relational contracting and project success from the perspective of front-line employees was measured by collecting quantitative data from 202 front-line employees and using SEM for the analysis. In the third phase, the framework was developed using the findings of the earlier two phases of research and strategies identified in the literature review. Thus, proposed framework was developed by integrating the success factors for public sector organizational change and the key elements of relational contracting. This framework was validated using qualitative data from 36 top management experts and micro-interlocutor analysis.

7.2 Conclusions and Recommendations

The conclusions that can be drawn from this research are discussed in four subsections: 1) conclusions related to levels of engagement with relational contracting; 2) conclusions related to the key elements of relational contracting and project success from the perspective of front-line employees; and 3) conclusions related to the development and validation of a relational contracting framework for the public sector.

1) Primary data collected from semi-structured, open-ended interviews with top management and was corroborated using secondary data for cross-case analysis. The following conclusions are drawn from the cross-case analysis.
   i) It was found that none of the public sector case organizations has adopted formal partnering. However, the studied organizations do strive for continuous improvement within the constraints of government regulations. Many of their

organizational strategies for traditional contracting are aligned with relational contracting.

ii) The case organizations have not adopted some of the key processes of relational contracting for effective collaboration of contractor and client teams, such as multiple criteria bid evaluation, an incentive mechanism, soft skill training, and team-building workshops. Multiple criteria for bid evaluations facilitate a limited bid approach for eligible contractors. It is recommended that the above policy be adopted in order to fully implement relational contracting. A well-planned incentive mechanism motivates contractors to align their objectives with the objectives of the client. Soft skill training changes the traditional rigid attitude of public sector employees in order to develop effective relational partnership, and team-building workshops provide opportunities for interactions between the client and contractor teams before the project begins. This helps them to develop a rapport with each other.

iii) It was found that training of public sector employees was not frequent and that contractors are reluctant to invest in training. Public sector organizations should provide training to contractor employees in their training centers, as small and medium-sized contractor companies often cannot afford to train their employees.

iv) It was found that most of the case organizations did not have appropriate dispute resolution mechanisms for relational partnering. Public sector organizations should introduce time-bound alternative dispute resolution mechanisms, which should be clearly spelled defined in a contract clause. This force stop management to remain committed throughout the project.

v) Core public departments are extremely rigid in relation to risk-sharing with contractors. More flexible risk-sharing mechanisms like those used in public sector enterprises should be introduced. The joint risk sharing enhances the relational partnership.

vi) Profit-seeking public sector enterprises were found to have more relational environments. This may be due to government pressure to earn profit and prove efficiency, which forces these organizations to adopt a more professional approach and learn from global exposure.

2) Data collected from a questionnaire survey of front-line employees was analyzed using SEM. The following conclusions are drawn from the results of SEM analysis.

i) From a front-line employee perspective, training, organizational changes, the commitment of top management, partner selection and assessment have significant correlation with the success of relational contract in terms of cost, time, and quality.

ii) The first success factor identified in this study is employee training. Front-line employees should receive regular training in changing technology and soft skills. Soft skill training changes the behavior of employees and develops a cooperative culture in an organization.

iii) The second success factor identified is organizational change."Developing vision for organization" and "ensuring need for change" are particularly important for operational level teams. If the confidence of front-line employees is earned before implementing change, the strong support of these employees is more likely during execution of change.

iv) The third success factor identified is the commitment of top management. A committed top management team motivates front-line employees to commit to the organizational changes required for relational contracting. It promotes confidence in front-line employees with regard to achieving project objectives and organizational goals.

v) The fourth success factor is the selection of contractor. Organizational policy for contractor selection has a significant impact on front-line employees. Selecting a reputable contractor to work on site relieves the burden on front-line employees with respect to day-to-day monitoring and provides them with more learning opportunities.

vi) The fifth success factor is the preparation of a final assessment report. A final assessment report generates data for future learning from success and failure stories. Front-line employees enjoy going to work if the organizational environment allows them to make positive contribution to projects.

3) Qualitative data collected through structured interviews with top management was analyzed using micro-interlocutor analysis. Using this method, the proposed relational contracting framework for public sector construction organizations was validated. The following conclusions are drawn from this validation.

i) Top management should adopt planned organizational changes for relational contracting instead of taking an emergent approach to change. They should develop a "vision" for the organization related to the implementation of relational contracting. They should ensure the need for relational contracting for a project and decide project-specific objectives. They should also earn the confidence of stakeholders such as political overseers, contractor unions, and employees before initiating organizational changes for relational contracting.

ii) Top management should demonstrate their commitment to relational contracting by improving the policies related to prequalification for contractor selection, incentive mechanisms, risk sharing, and time-bound alternative dispute resolution mechanisms.

iii) Top management should initiate the formation of a joint project team. Sufficient financial resources should be provided and the joint project team should be given the authority to effectively implement relational contracting.

iv) Top management should maintain formal and informal communication with the joint project team during the execution of relational contracting. This will show the commitment of top management to developing cooperative relationships, as well as improving communication with lower level teams.

v) Top management should ensure the preparation of a final assessment report and regular assessment based on tangible parameters.

vi) Since senior public sector employees often strongly resist organizational change compared to younger employees and are reluctant to adopt new technology, processes and a team working culture, top management should win the confidence of senior front-line employees during the change to relational contracting.

7.3 Practical Contributions of the Research

The research findings have implications for policy-making in the public sector in relation to the successful implementation of relational contracting. These implications are as follows:

1) This study identified 27 organizational strategies through literature review for implementation of relational contracting in public sector construction organizations particularly for developed countries. The identified 27 organizational strategies are synthesis of relational contracting processes scattered in literature of relational contracting thus provide good contribution in literature of relational contracting.
2) This study developed key relational contracting elements such as commitment of top management, partner selection, training, communication, teamwork, dispute resolution mechanism, risk and reward mechanism and assessment process from the perspective of

front-line-employee perspective by use of theory from various fields of organizational development and behaviors related to public sector. This is significant contribution to existing theory of relational contracting.

3) Through an extensive review of the literature on public administration and organizational change theory, this study identifies the key success factors for public sector organizational change. These key success factors will be helpful for carrying out planned organizational changes in the public sector.
4) The study demonstrates that certain key elements of relational contracting, such as multi criteria prequalification, incentive mechanisms, teambuilding and time-bound dispute resolution mechanisms, are lacking in the case study organizations. Top management can incorporate these key elements when developing policies for relational contracting.
5) The proposed relational contracting framework for public sector construction organizations is a ready-made model available to public sectors in developing countries and can be directly implemented in pilot projects. This model differs from other models proposed in the literature, because it combines the success factors for relational contracting and the success factors for organizational change. Furthermore, other models consider trust to be a prerequisite for implementing relational contracting, whereas this model regards trust as an outcome of relational contracting in the public sector.
6) This study demonstrates that training, organizational changes, the commitment of top management, partner selection and assessment are significantly correlated with relational contracting success in terms of cost, time and, quality from a front-line employee perspective. While these findings are limited to an Indian context, they may be useful for public sectors from other developed countries and for future studies.

7.4 Limitations and Scope for Future Work

A case study research methodology was selected for this study to get real insights and examine the dynamics of organizational strategies. However, the research findings are limited to the four case organizations, even though they provide an in-depth perspective of the relational contracting. The issue of whether the findings can be generalized is resolved as the four case organizations operating across various infrastructure sectors and with varied funding source. This generalization is from one case to another case on the basis of matched to theory of relational contracting. However, the findings from four cases cannot be generalized across entire public sectors in India. The findings could be validated further through additional cases or through quantitative survey for more generalization across the country. This study considered the relationship between public clients and contractors by considering the opinions of top management from the four case organizations and the contractor organizations working with them. The similar study can be carried out on relational contracting between private sector construction organizations as no literature is available on this topic in Indian context. This study did not consider the relationship between main contractors and sub contractors. Future studies can be carried out on the relational contracting between contractors and sub-contractors in Indian context.

This study also contributed a new aspect to the theory of relational contracting by identifying the success factors from a front-line employee perspective. However, it does have limitations. The first limitation is that it is based on the opinions of front-line employees from four public sector organizations only. In these organizations, relational contracting has not been implemented as a planned organizational change. Rather, they have adopted an emergent approach to change, which means that many employees do not have a full understanding of relational contracting. To overcome this limitation and to strengthen the arguments, factual data on some of the organizational strategies used by these organizations is considered in the discussion section. The second limitation is due to outliers among the respondents. These outliers are front-line employees with more than 20 years' experience, who are accustomed to traditional working procedures and do not want to change to relational partnering. Therefore, more studies from developed countries are necessary to contribute to the theory of relational contracting from a front-line employee perspective, as relational contracting has been used extensively in developed countries for the past 30 years.

This study provides a relational contracting framework for public sector construction organizations. The framework was validated through interviews 36 top management experts to test its potential for implementation. It is necessary to implement this framework in an actual pilot study in public project and findings from it could be published. The similar framework could be developed for private sector construction industry in Indian context. Also relational contracting framework could be developed for main contractor and sub contractor relationship.

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Annexure I: Questionnaire used for Semi-Structured Interviews

Name: -

Designation: -

Experience (Years): -

Name of the organization: -

1. Explain the procurement process of your organization in detail.
2. Explain the project execution process of your organization in detail.
3. Explain the various roles of officers along the hierarchy in decision-making related to procurement and project execution.
4. Share your experience of the most successful project in your career.
5. What factors do you think are important for a successful project?
6. What are the positive points of your organization for executing successful projects?
7. Share your experience of project failure in your career.
8. What do you think are barriers to the success of projects in your organization?
9. What kind of changes in work procedureshave you observed in your organization throughout your carrier?
10. What kind of changes in work procedureshave you observed in your organization during recent years?
11. What kind of improvements can you suggest for your organization?
12. What new strategies have been implemented in your organizations to improve the working environment?
13. What kinds of government policies havehindering the successful completion of projects?
14. What kinds of government policies havefacilitated the success of projects?
15. Does your organization place emphasis on time-bounddecision-making? Explain.
16. Does your organization place emphasis on alternative dispute resolution? Explain.
17. What kind of risk sharing is offered to contractors?
18. What type of training is provided to employees in your organization?

Annexure II: Questionnaire for Front-Line Employees

Section A: General Information

Name (Optional): Email id:

Name of organization: Designation/ Post:

Office address :

Type of organization: Experience:

Tick one box *Tick one box*

State government ☐ 0-5 years ☐

Central government ☐ 5-10 years ☐

10-20 years ☐

Above 20 years ☐

Section B: Factors affecting the relationship between contractors and public sector construction organizations

There are 32 factors listed here. Please indicate how much you agree with each factor by placing a tick (√) in the relevant column

Sr. No.	Relational factors	Strongly disagree	Disagree	No idea	Agree	Strongly agree
1	Top management should promote a policy for teamwork during execution of project					
2	Top management should promote a policy for a cooperative culture in the organization					
3	Top management should decide the objectives of projects as per the present environment such as timely completion, adoption of new technology, improvements in quality and safety standards, etc.					
4	Top management should promote a policy for continuous improvement and to introduce the latest technology for execution of projects					
5	Contractor selection should be based on a limited bid approach					

Sr. No.	Relational factors	Strongly disagree	Disagree	No idea	Agree	Strongly agree
6	There is a need to increase the criteria for contractor prequalification by adding attributes such as contractor's quality system, environmental management and safety ratings					
7	Public sector staff and contractor staff should be trained regularly to adopt new technology					
8	Public sector staff and contractor staff should be provided with soft skill training to promote teamwork during the execution of projects					
9	Public sector staff and contractor staff should be provided with on-the-job technical training in accordance with the technical needs of projects					
10	Proper information sharing between parties ensures better coordination					
11	Time-bound meetings of project teams and top management provides opportunities for face-to-face interactions and ensures better coordination of organizational activities					
12	Removing hierarchy in communication helps information to flow freely within the organization					
13	The formation of a joint project team involving both the public sector organization and the contractor is key to better relation					
14	Regular team-building workshops help teams to prepare a project charter and to engage in joint planning					
15	Early involvement of contractors in design lead to innovative design and cooperation during variations on site					
16	Joint project planning, control and monitoring promote collective responsibility					
17	Joint risk identification and mitigation leads to cost-effective solutions rather than parties blaming each other					
18	Alternative dispute resolution mechanisms such as time-bound negotiation make solutions faster, less expensive, and satisfactory to parties					
19	Time-bound dispute resolution prevents disputes escalating to claims and helps in effective partnering					
20	Financial incentives for contractors are necessary to complete projects on time, within cost and to ensure higher quality					

Sr. No.	Relational factors	Strongly disagree	Disagree	No idea	Agree	Strongly agree
21	Effective solutions for handling unexpected risks need to be adopted by the public sector rather than having the parties blame each other					
22	Timely payment maintains contractors cash flow, which helps to ensure a quality outcome					
23	Regular assessment helps the organization understand their processes and outcomes and measure them against set milestones					
24	It is necessary to prepare a final assessment report describing the successes and barriers faced in projects as a learning tool for future project					
25	Top management should decide on a vision for the organization appropriate to the present business environment					
26	Top management should decide whether there is a need for change in the organization with respect to the present business environment					
27	To improve organizational changes, support from staff within organization is essential					
28	To improve organizational changes, support from political overseers is essential					
29	To improve organizational changes, top management should provide the necessary finance and staff					
30	If a public organization adopts all the above strategies it will help them to complete projects within budget					
31	If a public organization adopts all the above strategies it will help them to complete projects on time.					
32	If a public organization adopts all the above strategies, it will help to improve the quality of projects					

Write any suggestions for improvement: -

Thanking You

Annexure III: Questionnaire used for Structured Interviews

Name: -

Designation: -

Total Experience in years: -

Name of the organization:-

To improve top management commitment

1. If the decision-making process on issues related to any project is made time-bound at each hierarchical level, how would this impact the overall success of the project? Discuss the practical difficulties in implementing this process, if any.

2. If it is made mandatory for top management to conduct some of the review meetings on site, how would this impact the success of the project? Discuss the practical difficulty in implementing this process, if any.

To improve the partner selection process

3. If prequalification could be based on a scoring system with multiple criteria, e.g., weightings for financial criteria 35%, technical criteria 35%, quality of work 15%, safety at work 7.5%, and adoption of environmental norms at 7.5%, how would this impact the success of the project? Discuss the practical difficulties in implementing this process, if any.

4. Could the above changes in prequalification be made with the authority of the chief engineer, member secretary and the minister of the relevant department, or would they require legislative change?

To improve the risk and reward system

5. If sufficient incentives are provided to contractors, e.g.,5% of the project cost to complete the work on time, within cost, and ensuring quality and safety, would this have an impact on project success? Discuss the practical difficulties in implementing this process, if any.

6. If 85% of a contractor's payment is released within 24 hours of a bill being submitted to maintain his cash flow and the remaining amount paid after a detailed scrutiny of the bill, would this motivate the contractor to progress with the work? Discuss the practical difficulties involved in this process, if any.

To improve team building

7. If a design consultant is appointed after stringent prequalification and a proper bidding process, how would this impact the design of project? Discuss the practical difficulty involved in this process, if any.

8. If specialized subcontractors are involved during the early stage of design, how would this impact upon the design of the project and the overall project execution? Discuss the practical difficulties involved in this process, if any.

9. If regular team-building workshops were arranged, would this help to develop a combined team? Discuss the practical difficulties in implementing this process if any.

To improve the training process

10. If departments took the initiative to provide training to contractor employees as well as their own employees, how would this impact the project and human resource development within the industry? Discuss the practical difficulties in implementing this process, if any.

11. If soft skill training was provided for both client and contractor employees, would this help to develop a more cooperative work culture? Discuss the practical difficulties involved in this process, if any.

To improve the dispute resolution mechanism

12. If a time-bound alternative dispute resolution mechanism, such as a time-bound negotiation process among the various hierarchical levels or the formation of a dispute resolution board, was introduced, would this help to minimize the number of disputes, arbitrations and litigations? Discuss the practical difficulties involved in this process, if any.

To improve assessment process

13. If the preparation of a final assessment report detailing the successes and the barriers faced during a project was made mandatory, would this provide a guide for future projects? Discuss the practical difficulties involved in this process, if any.

To bring organizational change

14. Introducing the changes described above would require the cooperation and commitment of employees from top to bottom. What is your opinion about changing the attitude of employees in public sector organizations such as yours?

15. To introduce changes in any organization, a "change agent" is required to coordinate the activities of top management and bottom level employees during the change process. Give your opinion on whether this change agent should be a single person or a team of 3-4 people, in order to introduce the above changes in your organization for a pilot project. Why?

16. Is it possible to implement the above changes in your organization for a pilot project? Would it require legislative change, or it can be done with the approval of a higher authority?

17 Suggest any improvements to the framework.

Appendix 1: Publications

- Abhay Tawalare and Boeing Laishram, (2015), "Relational Contracting Philosophy for Challenges of Indian Construction Industry." *Proceedings of International Conference on Transportation and Civil Engineering* (ICTCE'15) London, March 21-22, 2015, Pg. 19-26.
- Abhay Tawalare and Boeing Laishram, (2018) "Relational contracting conceptual model for public sector construction organizations: An Indian context" *Construction Economics and Building*, 18 (2), Pg. 70-91.
- Abhay Tawalare and Boeing Laishram, (2019) "Relational contracting in public sector construction organizations: Evidence from India." *International Journal of Public Sector Performance Management*, 5 (2), Pg. 206-221.
- Abhay Tawalare and Boeing Laishram, "Relational partnership in public construction organizations: Front-line employee perspective." *Journal of Construction Engineering and Management ASCE*. (Submitted after second revision)
- Abhay Tawalare and Boeing Laishram, "Factors hindering effective partnering in Indian public sector construction organizations" *Journal of Financial Management in Property and Construction*. (Submitted after first revision)