Relationship Management (RM) in Public Private Partnership (PPP) in Pakistan

by

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THESIS ACCEPTANCE CERTIFICATE

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Abstract

Public Private Partnership (PPP) has ever expanding prospects in Pakistan, owing to its increasing popularity, particularly viz a viz infrastructure projects. Relationship Management (RM) in PPP is not a linear, rather complex process.With expanding needs, it is important that important factors for RM in PPP are explored. Therefore, this research aims to develop a framework for RM in PPP in Pakistan. Two objectives guide the research, i.e. to identify and analyze the critical success factors (CSFs) for RM and to formulate a framework for RM in PPP to be incorporated into standard practices. For this purpose, ordinal regression analysis was used to identify the importance of ten CSFs which were divided into two groups. These CSF were incorporated in a questionnaire which was filled by individuals from both public and private sectors in Pakistan. Primary research was conducted to build upon first hand experiences of the respondents. The main results of the study show that all CSFs have a positive impact on RM in Pakistan with some of the factors being more significant in the field of construction management.

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List of Abbreviations

RM   Relationship Management

PPP   Public Private partnership

SME   Small and Medium Enterprises

ICT   Information and Communication Technology

CSFs   Critical Success Factors

IS   Information Systems

<div align="right">**<u>Chapter 1</u>**</div>

Introduction

Study background

The construction industry of Pakistan has always been of great economic and social importance. Pakistan being a developing country is in constant flux of developing infrastructure which requires construction management at its best.However, construction industry in Pakistan has not been performing at par with the market demands. The recent economic growth calls for a robust growth in construction industry in order to support the socio-economic expansion in the country. It not only improves growth but also provides employment opportunities to all kinds of labor force.

The construction industry has various forward and backward linkages with other sectors of the economy such as manufacturing, banking, financial markets and others. Hence, it catalyzes simultaneous performance in allied sectors. Today construction is the second largest sector, after agriculture in Pakistan. Approximately, 30- 35% of the total labor force is employed in this sector, directly or indirectly(Farooqui & Ahmed, 2008).

According to Economic Survey of Pakistan 2018-19, Pakistan's economy has shown improvements in the economic growth rate after the decade of 90s. This along with growing population of the country increases the demand for expansion and improvement of infrastructure. The Government of Pakistan has introduced various measures in order to cater to this rising demand. Federal Medium-Term Development Framework (MTDF) envisages planning extensive infrastructure expansion and construction. Public Sector Development Program (PSDP) involves ambitious upgradation of rail, roads, air, irrigation, power and other infrastructure.

With China Pakistan Economic Corridor (CPEC) kicking in its phase 2, there is an ever-growing demand for capacity building and expansion in construction industry. The first phase that included development of power plants and extensive road network makes it evident that construction industry is vital for next phases of CPEC to be initiated and the very growth of the country.CPEC has given a new momentum to Public- Private Partnership (PPP) projects in Pakistan. This has allowed stakeholders to collaborate in projects and contribute to the construction industry. Being a developing country, Pakistan faces shortage of resources.

However, with the concept of PPP gaining popularity, all key players are able to pool in resources and expertise to realize mutual goals and objectives that leads to development and growth in the country at large.

Keeping in view the importance of construction industry and PPP in Pakistan, it is evident that both go hand in hand for development. However, Pakistan has been unable to reap the potential of this industry. One of the major reasons is the lack of relationship management (RM) among all stakeholders involved. There are various factors that play a role in strengthening RM but they have not been given due importance in our industry. A detailed, critical analysis is required to improve RM in construction management in Pakistan particularly for PPP projects.

Therefore, this study aims to analyze the significance of various Critical Success Factors (CSFs) in relationship management (RM) in PPP projects.

Problem statement

With the involvement of multiple stakeholders in PPP projects, it is vital to carry out relationship management (RM) in a sturdy manner. Since these projects involve the interests of both private and public sectors, in terms of resources, finances, risks, etc, stakeholders are generally bound to certain terms and conditions through legal instruments via contractual obligations. This requires effective management of relations between all key players. Since RM is affected by various factors, it is necessary to study their impact. Hence, this study aims to explore the importance of Critical Success Factors (CSFs) for RM in PPP projects.The study examines management concerning the relationships between the primary parties, and to give direction on how to improve such relationship.The relationship among stakeholders in a PPP project is never linear, rather complex, thus it is envisaged that correlation of CSFs can be established to come up with a workable framework. The purpose is to identify the primary stakeholders and critically analyze the present relationship management techniques being used in industryfor better RM in PPP.

Research objectives

Following are the primary objectives of this research:

1. To identify CSFs for Relationship Management(RM) in Public Private Partnership (PPP) in Pakistan.
2. To establish relation among the identified CSFs with RM.
3. To develop a descriptive framework for successful Relationship Management in PPP.

Significance of Research

PPP projects are becoming more and more popular in Pakistan with time. While PPP ensures that risk is transferred from public to private entities, it is widely seen that the PPP projects fail to define clear relationship management criterions among primary stakeholders, which results in discrepancies in cost, schedule and scope of the project. The study focuses on identifying CSFs for RM and to suggest ways to improve them.

This direction has to be explored to not only give better directions to stakeholders to make sure that communication barriers among primary stakeholders are identified and patterns are advised to minimize them. The already existing literature has to be reviewed and applied on the business culture of Pakistan's industry, particularly construction industry, which will be a positive add on for existing literature and will also act as a guide during both contractual and execution stage of PPP projects regarding stakeholders' relationship management. The use of factor analysis will be a helpful tool to give this topic a clear scientific direction, with definite objectives.

Relevance to National Needs:

PPP projects are the future of construction industry in Pakistan. With reducing government involvement in service delivery structure, the role of PPP is bound to increase many folds in upcoming years. This produces a need of exploration of all possible aspects of PPP projects in Pakistan. If current PPP projects going on in Pakistan are analyzed, it is not difficult to conclude that the hurdles it is facing today are due to the contractual loopholes that results in relationship exploitation among primary parties. Example of Lahore Sialkot motorway can be cited in this regard. It is high time that clear framework is defined for better RM in PPPs. The identification of CSFs will give a clear guideline in this regard.

Advantages:

The study will explore the much-needed area of RM in PPP, that'll help in better conception of contract clauses among stakeholders and will identify better practices to remove ambiguities particularly at contractual stage. The study will apply the scientific approach of RM in PPP using factor analysis, that could give a workable framework.

It'll be of utmost importance for government sector for the reason that the burden of maintaining healthy relations often falls on the client side. Also, it needs to persuade the private sector for why the RM method should be as are proposed. This requires that both sides can analyze the given relationship methods with some available criterion, and this study can be a step in that direction.

Areas of Application:

The study will have broad area of application in both public and private sectors. It'll help the stakeholders to identify RM techniques and models that are close to Pakistan's and subcontinental business culture. It'll also provide the government sector with fresh orientation of engagement techniques viz a viz foreign and local business entities.

It'll have a wider scope of application as it covers the stages of contract management, Relationship management, factor analysis and risk identification that arises from communication barriers. It's area of application in research field is multi-faceted that'll help to add positive literature forever growing field of PPP in Pakistan.

Thesis structure

This research paper comprise five chapters. Brief description of these chapters is given below:

Chapter 1. Introduction

This chapter includes background of the study, problem statement, research objectives, significance of research and layout of research paper.

Chapter 2. Literature Review

This chapter comprises of a review of already present literature on importance of construction management in the industry especially in Pakistan, effectiveness of PPP projects, role played by multiple critical success factors in relationship management, vitality of stakeholders in RM and constraints faced by them.

Chapter 3. Methodology

This chapter covers research framework including research strategy, tools and techniques and preliminary survey.

Chapter 4. Results and discussions

This chapter states findings of the research and a critical analysis

Chapter 5. Conclusions and recommendation

Chapter 2

LITERATURE REVIEW

Exhaustive research exists on the topic of relationship management. Also, quite a number of papers have been published on broad topic of RM in PPP. UK, China, Nigeria and Hong Kong are few areas where this area of 'RM in PPP' has been focused on by few researchers. While the general CSFs for RM may have been identified, this particular direction has not been catered (Yang et al, 2010) viz a viz Pakistan.

A study by Oslulosa et al in the year 2014 revealed a total of 58 factors have been identified and categorized for developing countries (case study of Nigeria) with a significance level of 5%. The research had also defined the stakeholders in a project and determined their percent share mentioned as follows: concessionaires: 21.1%, public sector authorities: 17.7%, consultants: 20.35%, contractors: 20.35% and local lenders: 19.5%. The research had categorized the level of education for each stakeholder, their experience in number of years as well as number of projects undertaken by them. It is examined that relationship management is more important in the context of Public Private Partnership in order to improve its performance in the construction industry (Zu et al, 2014). The paper had identified and ranked defining the objectives, commitment of executives, integration of various divisions and integration of multidisciplinary teams as the four Critical Success Factors which top the list when discussing relationship management and PPP.

The relationship risks include inadequate experience, difference in working method, inadequate distribution of responsibility and authority of parties, organizational risks and lack of commitment. (Bing et al 2004) The relations and contracts mostly rely on the behavior of individuals in a team and relationship management principles are mostly found to be lacking in any team. (Edkins and Smyth, 2006). Despite the high success rate of projects by PPP, many problems have been arising in the pre-contract time and high bid costs (Ahadzi and Bowles, 2014). In addition to many risks discussed above, there are many factors, known as *External Enviroment Factors,* which include political, technological factors, legal, organizational strategies and cultures (Ahadzi and Bowles, 2014). A research by Bing et al (2004) had ranked the risks pertaining to relationship and third-party risks as micro level risks. Such relationships are mostly assessed on base of trust, (Smyth and Edkins, 2006) and confidence (Edkins and Smyth, 2006).

This study will focus on further adding to this useful literature by taking RM viz a viz Pakistan's business culture and it's impacts on PPP.

2.1 <u>What is relationship management?</u>

Relationship Management is one of the most important topics studied these days. With organizations becoming more complex and businesses expanding across borders, a large number of stakeholders are involved in business processes. In a field like construction industry where technical, financial and legal resources play a vital role, it involves a greater degree of relationship management. It involves clients, customers, suppliers, contractors, lawyers, engineers, laborers, partners, marketers, specialized service providers, employees and various other key players. Construction industry being heavily dependent on forward and backward linkages based on the collaboration of all these stakeholders makes relationship management an important driver for achieving goals and objectives. It provides a strategic approach to understanding a broad spectrum of inter- business activities thus expanding the field of its application (Cheung and Rowlinson, 2011; Smythand Pryke, 2008; Zineldin, 2004).

Relationships among the stakeholders is essential to achieve success in long- term. This requires a collaborative environment consisting of systems, processes and communications that not only support but enhance the relationship effectively throughout the life of a project(Maggon & Chaudhry, 2014). Since PPP projects are often an amalgamation of resources and environment of both public and private entities, it necessitates more stronger relationship management so that the best of both sectors can be synchronized to achieve optimum outcomes.

In PPP projects, since entities are bound by contractual relationships, RM has a direct impact on the efficiency of projects which in turn impacts the utilization of both monetary and non-monetary resources(Alokla, et al., 2017). The planning phase of PPP projects is of utmost importance since it sets ground rules for all stakeholders which govern the role and responsibilities of all parties and also formulate the processes through which future milestones are to be achieved.

One of the major factors of effective relationship management is communication. It sets the pace for interaction and collaboration from the very beginning. Communication leads to clarity in

demands and goals of all stakeholders which results in better management and efficacy(Coltman, et al., 2010). It also helps in developing trust among the key players.

PPP style of working provides a commitment by the parties within a PPP contract to cooperate to achieve mutual goals. This entails collaboration among partners and joint problem solving. Greater benefits are realized over the life of a project since the whole team builds upon the lessons learned and strives for collective improvement. Relationship management begins with a collaborative approach rather than an adversarial one. If any of the parties starts with an adversarial tone, it can force others to adopt similar tactics and this consequently compromises the long-term interests and benefits of the entire project.

Types of PPP Projects

There are various types of PPP arrangements and they are mostly related to contract structures. The following table gives the types of these models:

Table: Models of PPP	
BTO	Build-transfer-operate
BROT	Build-rent-operate-transfer
BOOT	Build-own-operate-transfer
BOT	Build-own-transfer
LDO	Lease-develop-operate
BBO	Buy-build-operate
DBFO	Design-build-finance-operate
DBO	Design-build-operate
DCMF	Design-construct-manage-finance
BDO	Build-develop-operate
BOO	Build-Own-Operate
BOM	Build-Own-Maintain

Source: Adapted OECD (2008)

PPP and roles of public and private sector

PPP models are sometimes also referred to as a process of privatization. As earlier mentioned, this entails private sector assuming the role of stakeholder responsible for provision of public services. However, the core of the privatization process is different from PPP arrangements. In privatization, there is a clear transfer of asset ownership; case in point British Airport Authority (BAA). In contrast, the ownership resets with the public partner or in some cases there is a reversal of ownership once the contract ends. For instance, the Argentine and Australian airports were not completely privatized, but the concessionaire was on a fixed-term lease.

When it comes to risk sharing, it is far more complex in PPP arrangements. In public works contract, the risk is solely retained by the public sector (except that related to construction risk). In privatization, the risk is entirely borne by the private sector. When it comes to PPP projects, the risk is normally shared by both parties, although risk is generally shared by the private sector more. This is mainly because this stimulates the private sector to provide more innovative and efficient processes and solutions.

In PPP projects, Relationship management can be defined as a framework of comprehensive strategies and processes for creating partnerships with other stakeholders to achieve mutual goals and objectives through sustainable solutions. RM which was once a more popular term in consumer marketing is now equally important for public and private sector firms and bodies, especially in construction industry.

A PPP model in construction projects generally entails public sector reaching out to private firms for raw materials, expertise, skilled and unskilled labor, technical support and allied implementation of strategies.Governments are now more often getting engaged in PPP projects across the world. On one hand, the private sector is seeking for investment opportunities, predominantly with lower levels of risk, and on the other hand, governments are in need of either developing new infrastructure and/ or maintain the existing ones. need to develop new infrastructure systems and/or refurbish existing ones(Cruz & Marques, 2013).Teicher et al. (2006) have researched into how to create and manage relationships based on trust in PPPs, and highlighted that PPPs canincrease efficiencies at some micro levels, but maynot be able to establish trust. Gimsey and Lewis (2004) establisheda framework which can assess viability of business and capacity of the contractor to fulfill the requirements of the project.

PPP model has become a tool to overcome shortcoming and challenges faced by the public sector which is responsible for provision of public goods. Since this involves welfare of people at large, governments usually face budget constraints. PPP allows for public sector to ensure the provision of public goods by making use of the expertise and at times, financial support of private sector to deliver and manage public services. Although the main driver behind these partnerships should be better synchronization among the two sectors for increased efficiency in service delivery, but it is usually the limitations of budgets faced by the government.

PPP projects are thought to have been developed in the 1990s in the United Kingdom. However, this model is said to have its roots from fifteenth century. As a form of agreement between public and private sector, where the latter takes on the responsibilities normally placed at the government level, it has existed as "concession models". In this model, the King (grantor) used to allow the navigators to navigate through the unknown territories by paying them rents.

The model is now in constant use in both developed and developing world including countries like USA, Canada, Australia, Spain and now in regions like South America, Africa and Asia; including Pakistan and India.

Contracts based on management, concessions or leasing are much more complex than traditional procurement models (Go´mez-Iban˜ez 2003).In management contracts, the private partner gets a management fee, which is usually gauged against performance or a target for providing or running a service on behalf of the public partner. In leasing, the private partner pays a fee or a lease to use the public infrastructure while it takes on the business risk.As far as concession is concerned, in the European Union (EU), they are categorized into two types: concessions of public works and public services. While the former involves construction works, the latter is about the provision of public services(Cruz & Marques, 2013). In this process, the government leaves the process of service provision and just plays a role of regulator(Koch and Buser, 2006).

Importance of Relationship Management in PPP Projects

Selection of the right team is considered essential and critical for PPP projects. This helps in forming the right nature of relations among all stakeholders and increases collaboration. However, the process of developing these relations is evolutionary and iterative in nature. Since the load of work is divided among different parties, for instance among bidding, development,

procurement and delivery teams, it constantly involves effective relationship management among all key players. As the project goes through various stages, the relationships in a PPP project go through changes. Before financial closure, the parties may be motivated to cooperate with each other, but when the project enters the development/ construction phase, the parties may start to encounter differences among themselves based on operational difficulties. Another reason for weaker relationship management could be the need for more finances and at times, as soon the project is injected with more finances, the parties tend to ease out differences and work more harmoniously.

Relationship management is not easy in PPP projects because parties belong to two different sectors with completely different goals, objectives, work ethics, organizational culture and values. This requires the synchronization of interests of parties to establish harmonious relations among all key stakeholders. In an infrastructure project based on PPP model, the government enters intro a business relationship with private firm(s), since the government generally has public welfare at hand, the nature of relationship hs to be sustainable in order to reap long-term benefits from the project. Kumaraswamy et al. (2007) formulated a conceptual framework based on team-building and introduced the concept of relational contracts for making relationships in PPP projects more sustainable. Relationships across the supply chain need to be carefully managed to avoid poor performance, cost overruns, time delays and compromise on quality(Meng, 2013).

As suggested by Palmer (2000) suggested that researchers could build upon the knowledge on relationship management based on quality and effectiveness by linking RM with customer (client) satisfaction and retention.

Concepts and ideas of RM are in use and are adopted by parties when getting engaged in PPP projects. Edkins and Smyth (2006) have given anevaluation/assessment on RM for PPP projects. Primarily they concluded that proactive relationship building and management requires stronger tactical and strategic consideration. This will foster an environment that is collaborative in nature and it goes beyond reactive adjustment in behaviors of stakeholders and thus helps in making a shift from relational contracting to proactive RM principles.

Gimseyand Lewis (2004) developed a framework which can assessongoing business viability and capacities of the contractor to meetrequirements for the term of contract. Research has also been doneon how relationships are managed between private sectororganizations within the concession, and between the privateorganizations and public sector clients (Smyth and Edkins, 2007).Smyth and Edkins (2007) researched RM in PPP/PFI projects, examined management of these projects focusing on the relationships between the primary parties: Special Purpose Vehicle (SPV) and constituent members, and the relationship of the SPV with the client. The research established how relationships are managed between private sector organizations within the concession, and between the private organizations and public sector client. However, although some related studies and papers have been documented on this research area (Grimsey and Lewis, 2004; Jeffries and Reed, 2000; Kumaraswamy et al., 2002, 2007a; Marrewijk et al., 2007; Parker and Hartley, 2003; Smyth and Edkins, 2007; Teicher et al., 2006), few, if any, have investigated the current perceptions and experiences of RM in PPP context, and identified essential successful ingredients for implementing RMin PPP. This study aims to bridge these research gaps. To achieve the desired output, the following basic questions must be addressed:

(1) What are the current perceptions and experiences of RM in PPP context?
(2) What are the relevant CSFs for RM in PPP?

This research focuses on studying infrastructure PPP projects. The main reason behind focusing onPPPs in this study is mainly because it was one of themost expanding formod contracting in Pakistan particularly in infrastructure projects. PPPmay involve the constructionof the facility as well as its operation. At the end of the contract/concession period it will be transferred back to the government.It is reasonable for conducting 'pioneer' research in PPPrelationship management starting from a narrowed-down focus.PPP is taken as a generic term here referring to public and privatesectors cooperating on infrastructure project development, withthe aim of providing an important public service.

Research methodology opted for this research will be discussed in this chapter. Research methodology explains how research will be conducted to achieve research objectives (Saunders, 2011). Multiple techniques can be used like literature review, expert opinions, interviews

(structured, semi-structured), qualitative/quantitative surveys, questionnaire and modern software tools for the development of contractual framework.

Identification of Independent Variables:

After the extensive review of the literature present on Relationship Management, out of 100+ research papers, 16 research papers were selected for the identification of Critical Success Factors (CSFs):

Sr. No	Publication Year	Description	Journal
1	2014	Identification of Critical Success Factors (CSFs) in RM in PPP	International Journal of Project Management
2	2017	The critical factors in managing relationships in international engineering, procurement, and construction (IEPC) projects of Chinese organizations	International Journal of Project Management
3	2013	Critical success factors for a customer relationship management strategy	Mediterranean Journal of Social Sciences
4	2009	Exploring critical success factors for stakeholder management in construction projects	Journal of Civil Engineering and Management
5	2016	Identifying CSFs affecting the effectiveness and efficiency of tendering processes in PPP: A comparative analysis of Austrailia and China	International Journal of Project Management
6	2015	Review of studies on the critical success factors for (PPP) projects from 1990-2013	International Journal of Project Management

7	2008	Understanding success and failure in customer relationship management	Industrial Marketing Management
8	2009	A review of studies on PPP projects in construction industry	International Journal of Project Management
9	2007	Relationship management in the management of PFI/PPP projects in the UK	International Journal of Project Management
10	2009	Selection of performance objectives and key performance indicators in public–private partnership projects to achieve value for money	Construction Management and Economics
11	2015	Cross country comparisons of key drivers, CSFs in risk allocation for PPP projects	International Journal of Project Management
12	2014	Are Public Private partnerships a healthy option? A systematic literature review	Social Science & Medicine
13	2012	Analysis of critical success sub-factors for PPP in Nigeria	ALAM CIPTA : International Journal of Sustainable Tropical Design Research and Practice
14	2010	CSFs in customer relationship management implementations	UK Academy for Information Systems Conference Proceedings 2010

15	2008	The Critical Success Factors in Customer Relationship Management (CRM) (ERP) Implementation	Journal of Marketing & Communication
16	2015	Relationship quality and satisfaction: Customer-perceived success factors for on-time projects	International Journal of Project Management

Table 2.1: Short listed studies

Analysis of these published research papers identifies following success factors which may affect the Relationship Management of PPP in Pakistan.

Sr. No	Description
1	Commitment and participation of senior executives
2	A multi-disciplinary Team responsible for implementation of the RM
3	Defining the objectives to be achieved by implementing RM strategy/exercises
4	Integration of various divisions of the organization
5	Publishing and/or disseminating the objectives, benefits and implications of the project to all staff
6	Staff's commitment to the RM strategy
7	Integrating Information Systems (IS) for consistency and availability of information related to RM in the organization
8	Effective communication approaches/channels between the main parties
9	Delivery reliability
10	Trust
11	Effective problem solving
12	Willingness of Communication and information sharing
13	Shared responsibility
14	Effective RM skills in leadership
15	Analyzing conflicts and coalitions among stakeholders

Table 2.2:   CSFs identified from literature review

2.a4:   Content Analysis:

Literature score was awarded to these factors based on their severity. Industrial score was awarded as per experts review. Following ten factors have been short listed with new rankings for further research:

1. Integrating Information Systems (IS) for consistency and availability of information related to RM in the organization.
2. Effective communication approaches/channels between the main parties
3. Defining the objectives to be achieved with the implementation of the RM strategy/exercises.
4. Integration of the different divisions of the organization
5. Publishing/disseminating the objectives, benefits and implications of the project to all the staff
6. A multidisciplinary team responsible for implementation of the RM
7. Willingness of Communication and information sharing
8. Effective RM skills in leadership
9. Trust
10. Staff's commitment to the RM strategy.

RESEARCH METHODOLOGY

Research Design

Research design is the general plan adopted for any research (Saunders, 2011). For this research, research was designed so that it incorporates recent literature and best practices from field see below.. In this this kind of Industry-Academia Linkage an optimistic solution can be derived.
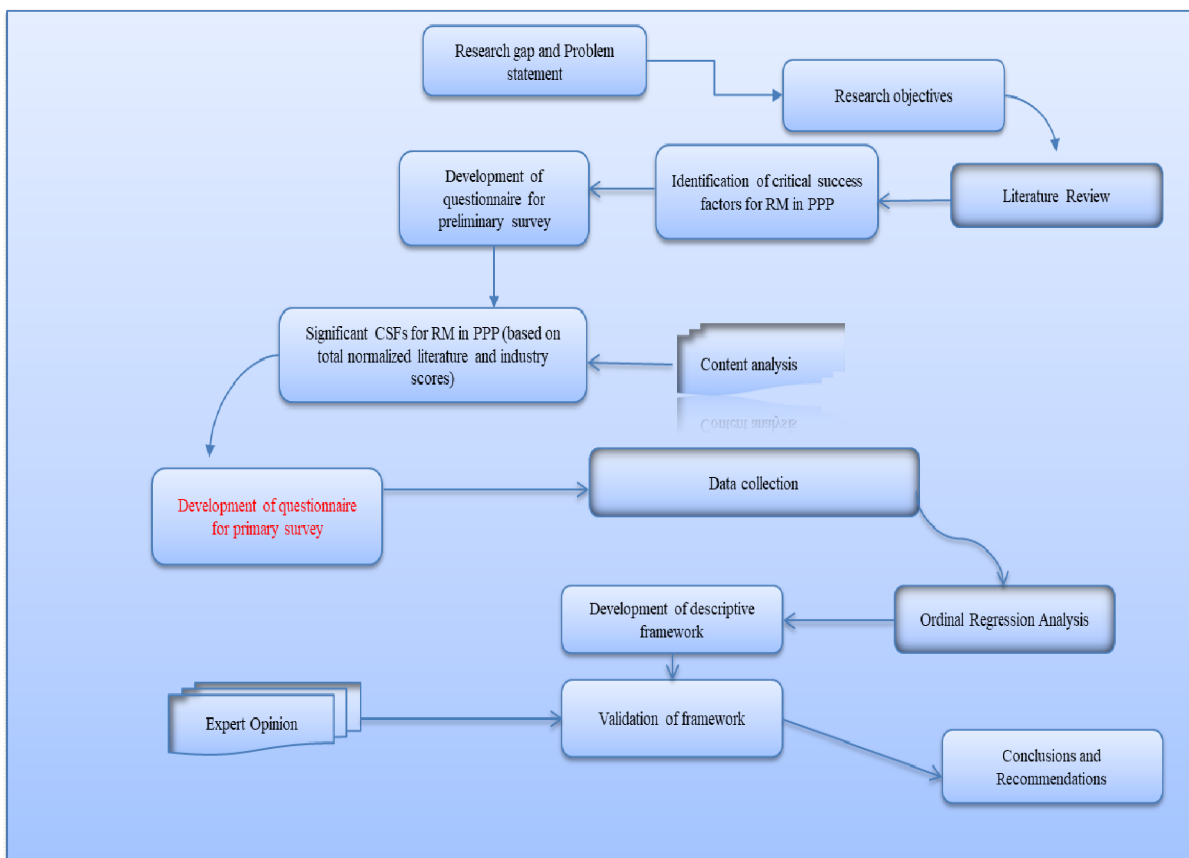
Problem statement was identified from recent literature. That problem statement guided research objectives for this research.

Objective 1: To identify CSFs for Relationship Management(RM) in Public Private Partnership (PPP) in Pakistan.

Tools and Techniques: Literature Review, Questionnaire Survey

Source: Research papers, Reports, Articles, Field Survey

First objective will be achieved in two phases. In phase one a detailed literature view is conducted for finding success factors and in relationship management in PPP in Pakistan. In phase two, questionnaire survey will be conducted for the ranking of these CSFs which will provide a picture of the most significant factors in relationship management.

Objective 2:To make a descriptive framework via establishinga correlation between relationship management and the identified CSFs using Ordinal Regression Technique.

Tools and Techniques:SPSS, Expert Opinion

Source: Software, Field Survey

The data incorporated via step one will be analyzed and put into action to create a framework.

- **To identify and analyze the Success factors in Relationship management in PPP.**

OBJECTIVE 1

TOOLS AND TECHNIQUES

- Literature Review,
- Questionnaire
- Survey

SOURCE

- Research papers,
- Reports,
- Articles,

- **To formulate a framework for RM in PPP using regressionanalysis technique.**

OBJECTIVE 2

TOOLS AND TECHNIQUES

- SPSS
- Expert Opinion

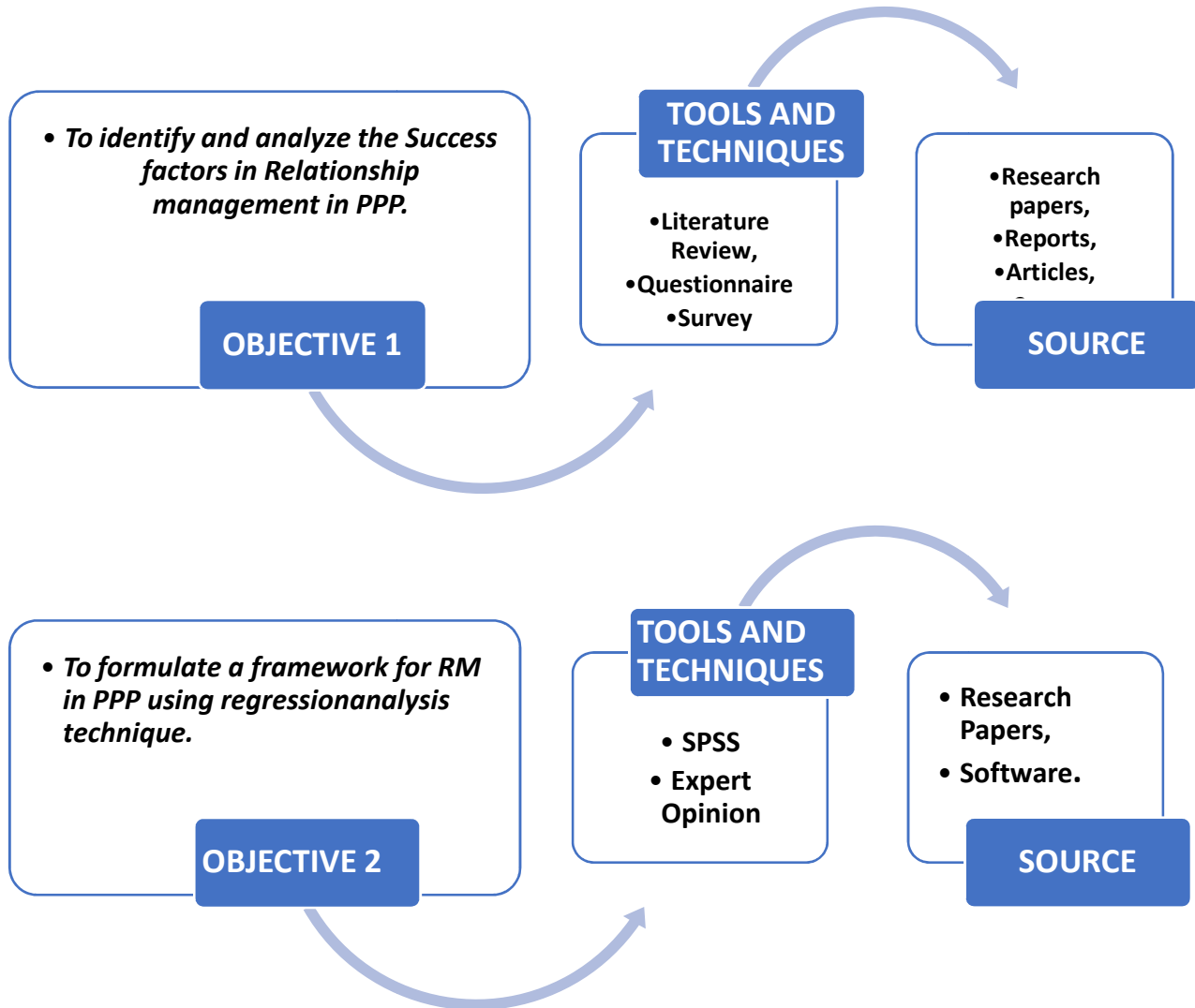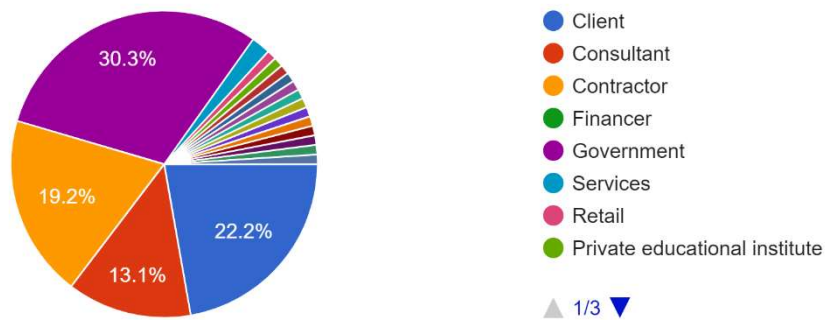**SOURCE**

- Research Papers,
- Software.

Fig 3.2. Research Design

Field data

Distribution of responses

Total 99 survey responses were collected from respondents belonging to both public and private sectors to analyze the impact of CSFs onrelationship management in PPP. The following chart shows the distribution of respondents according to their fields.

Respondents profile

For response collection, diverse range of construction professionals were targeted including construction/project manager, planning engineer, architect/designer, general manager, contract administrator, project engineer/site engineer and many others. The major responses were received from construction managers (30%) project manager (15%) and contract administrator (10%). Cumulatively, 8% respondents had an experience of more than 20 years. 12% had experience of 11-15 years, 30% had an experience of 6-10 years whereas, 47% had an experience of 1-5 years.

From qualification perspective, a total of 53% responses were from M.Sc. holders and PhD holders indicating 53% response rate from highly qualified professionals. Whereas, 47% responses were received from professionals of B.Sc./B.Eng. graduates. The questionnaire was filled by majority of professionals with high academic qualification and industry experience thus

validating the reliability of their opinions. Consequently, the knowledge of Relationship management and impact of critical success factors in applying better relationship management was known to majority of the respondents.

Table 7 provides comprehensive details about respondent's profiles.

Table 1: Demographic characteristics of respondents

Profile	Frequency	Percentage
Total responses = 99		
Job title		
Project Director	14	14.1%
Project Manager	15	15%
Construction Manager	30	30%
Contract administrator	10	10%
Site Manager	1	1%
Project Engineer	6	6%
Architect/Designer	4	4%
Consultant	9	9%
Years of Experience		
1 to 5 years	47	47%
6 to 10 years	30	30%
11 to 15 years	12	12%
16 to 20 years	3	3%
Above 20 years	8	8%
Education		
B.Eng./ B.Sc.	48	47.5%
MS/M.Sc.	40	40.4%
PhD/D. Eng.	2	2%
Others	9	10%

Validity and reliability

Measuring the internal consistency and reliability of data, the value of Cronbach's alpha was 0.900. Values ranging from 0.70-0.95 are acceptable for further analysis (Tavakol and Dennick, 2011). Therefore, the data used for present study is valid and reliable.

Chapter 4

Results and discussions

Ordinal regression analysis

Ordinal regression analysis has been used to check the effect of stakeholder's conflicts on project constraints in the construction industry and its outcomes. Against 7 project constraints, an equal number of regression models have been proposed and then a cumulative regression model has been prepared which contains the effect of all the models to see the combined effect on stakeholder's conflicts. To achieve the authentic results, few assumptions pertinent to ordinal regression should be satisfied, which include (1) measuring the response variable on ordinal level (2) parallel lines assumption meaning parallel lines have been used to check the validity of proportional odds assumption (Spais and Vasileiou, 2006) and (3) adequate cell count. It must be noted that the greater the cell with less count, the less reliable the chi-square test will be (Amstrong and Sloan, 1989).

Before the model building process, the dependent variables have been reduced into three categories to make the interpretation simpler and decrease the number of zero cell counts that could affect the model fitting procedure. For this purpose, goodness of fit tests can be used to measure the adequacy of fitted models. Therefore, the test of parallel lines has been used to check the validity of the proportional odds assumption. The hypothesis under consideration for the test is,

H0: All the regression coefficients are equal for each level of response variable
H1: All the regression coefficients are not equal for each level of response variable

Likelihood ratio deviance and Pearson's chi-square statistics were used to measure the fitness of developed models (Eygu and Gulluce, 2017). The hypothesis under consideration for the test is,

H0: The model fits well to the data
H1: The model does not fit well the data

Model: Effect of CSFs on RM in PPP

Relationship management is the independent factos in the ordinal regression model and 10 CSFs have been kept as independent variables. The 10 independent variables have been factored into two groupsi.e: Fnew and Fnew2. Factor analysis indicated the rotated factor solution generated by Varimax factor rotation. The high loadings were selected according to 0.4 cut off value (Maskey et al., 2018). Factor loadings represent that how much each statement is contributed to the factor under consideration. The results in Table 8 show how the factor loadings of the statements have been clustered into two groups and a clear pattern of factor loadings can be obtained.

Table 2: Varimax rotated factor loadings

Rotated Component Matrix[a]		
	Component	
	1	2
Integrating Information Systems(IS) for consistency and availability of information related to RM in the organization		.903
Effective communication approaches/channels between the main parties		.610
Defining the objectives to be achieved with the implementation of the RM strategy/ exercises	.698	
Integration of the different divisions of the organization		.650
Publishing/		.548

disseminating the objectives, benefits and implications of the project to all the staff		
A multidisciplinary team responsible for implementation of the RM		.761
Willingness of Communication and information sharing	.840	
Effective RM skills in leadership	.765	
Trust	.765	
Staff's commitment to the RM strategy	.829	

The factors clustered into two groups were named Fnew, Fnew2and include:

Fnew = Defining the objectives to be achieved with the implementation of the RM strategy/ exercises, Willingness of Communication and information sharing, Effective RM skills in leadership, Trust, Staff's commitment to the RM strategy.

Fnew2= Integrating Information Systems(IS) for consistency and availability of information related to RM in the organization, Effective com   munication approaches/channels between the main parties, Integration of the different divisions of the organization, Publishing/ disseminating the objectives, benefits and implications of the project to all the staff, A multidisciplinary team responsible for implementation of the RM.

Frequency under each response category includes minor effect=1, neutral effect=3, major effect= Since the distribution of the satisfaction level suggests that the higher categories are more probable in the response category, complementary log-log is used as link function in the ordinal regression model (Yay and Akinci, 2009). The model known as the discrete proportional hazard model is presented in Equation 1, where i=1.

$$\log[-\log(1 - Q_i)] = \alpha_i + \beta Fnew + \beta Fnew_2 \text{ (Equation 1)}$$

Test of parallel lines, to check the validity of proportional odds assumption, indicates chi-square value = 1.902 and p-value = 0.386. The significance value is well over the preferred 5% level. Therefore, there is no statistical evidence to reject the null hypothesis. Hence the test concludes that the model holds the proportional odds assumption. Similarly, for likelihood ratio, deviance and Pearson's chi-square statistics were used to measure the fitness of the model. The results indicate p-values of 0.229 and 0.578 that are greater than 0.05 suggesting that there is no statistical evidence to reject the null hypothesis. Therefore, fitness of the model is adequate.

Table 3: Parameter estimate

Parameter Estimates								
		Estimate	**Std. Error**	**Wald**	**df**	**Sig.**	**95% Confidence Interval**	
							Lower Bound	**Upper Bound**
Threshold	[F11 = 1.00]	-1.071	.647	2.741	1	.098	-2.340	.197
	[F11 = 3.00]	1.173	.571	4.229	1	.040	.055	2.292
Location	Fnew	.062	.190	.106	1	.745	-.311	.435
	Fnew2	.362	.197	3.366	1	.067	-.025	.749

From Table 9, it is evident that factors Fnew andFnew2 are positively related with RM in PPP projects. This implies that if all these factors are not handled carefully, they will directly affect the RM in PPP projects. Coefficient for Fnew is 0.062 and indicates a positive relationship with cost of projects. As complementary log-log link function has been used, the magnitude of the effect of Fnew can be calculated from the odds ratio: $e^\beta = e^{0.062} = 1.063$. This means that if all other factors are kept constant, an increase or decrease of one unit in Fnewwill cause an increase or decrease by a factor magnitude of 1.063 units in RM. Therefore, Defining the objectives to be achieved with the implementation of the RM strategy/ exercises, Willingness of Communication and information sharing, Effective RM skills in leadership, Trust, Staff's commitment to the RM

strategyshould be handled carefully during project execution otherwise these factors can significantly impact RM.

Subsequently, coefficient for Fnew2 is0.362. Their magnitude of effects is calculated as 1.436. From results, it is found that there is a strong relationship between Fnew2 and RM. Integrating Information Systems(IS) for consistency and availability of information related to RM in the organization, Effective communication approaches/channels between the main parties, Integration of the different divisions of the organization, Publishing/ disseminating the objectives, benefits and implications of the project to all the staff, A multidisciplinary team responsible for implementation of the RM; all these factors have a positive relationship with RM. Information systems play a pivotal role in disseminating information among the stakeholders in PPP. Effective communication approaches have a similar role that enhances information delivery. Integration of different divisions of organization to one platform affects RM positively. All in all, these factors have a positive log-log relationship with RM.

Chapter 5

Conclusion and recommendations

Conclusion

Relationship management plays a vital role in the successful execution of the PPP projects. All the issues related to RM should be considered at every stage of project and maintain a robust coordination between them. Proper coordination is required to avoid the negative effects on the project at any later stage. Proper planning and understanding of the RM would be helpful in resolving issues and conflicts before or during the execution of projects. Obligations and liabilities of the stakeholders must be clear and pre-defined and must be followed during execution to avoid or ameliorate conflicts.

Integrating information systems is one of the highest ranked CSF for RM. Introducing automation in Pakistan's construction industry can bring sophistication in RM between stake holders. PPP is complex with multiple stage contracts and even complex implementation of those phases. Use of Information systems is thus rightly a very high ranked CSF for RM in PPP. A similar CSF but generalized is the effective communication channels between parties, it has also been ranked moderately high. It is important in avoiding conflicts and in case of conflicts, it can ensure better dispute resolution. Stakeholders should have a proper and timely communication. Communication between stakeholders is important. Poor communication can lead to project disasters. Communication must be clear and competent stakeholders must be selected. Policy and procedure must be established without dubious statements.Lack of communication is major factor effecting stakeholder's relationship. Project managers shall be part of the project from the planning phase all the way till the execution to avoid hurdles. Communication gap between parties should be filled. Top management bodies should lead the project. To avoid the conflicts, close coordination among stakeholders should be ensured. Grievance redressal committee should be established to minimize the conflicts.

Identifying objectives and clearly disseminating them to the team are two other CSFs that got moderately high positive relationship with RM. RM planned is more important than RM executed. The complexity of PPP projects demand that an RM policy is announced in the

beginning with clear objectives and those must be disseminated to the organization's staff to ensure implementation of that policy.

Integration of different divisions of organization and a multi-disciplinary team for implementation of RM got considerable high ranking among CSFs. A multi-disciplinary team dedicated for RM can ensure implementation of RM policy since the very beginning. A dedicated team for this will ensure that complexities in RM are identified beforehand and conflicts among stakeholders are resolved in time. Integration among different divisions of organization will ensure that whole team is on one page and commitment to RM exists in the organization.

Willingness of information sharing and trust are two intangible factors that have been ranked moderately high. The positive impact of these on RM is indirect but evident. From developing RM policy, to implementation and dispute mitigation, trust and willingness of communication play the bridging role. The are also important for actualization of other higher ranked factors like communication channels between stakeholders etc. Communication channels will be effective only if there is willingness of information sharing and trust among stakeholders.

Lastly, RM skills in leadership and staff's commitment to RM strategy are the factors that positively impact RM; thus, these are highly ranked in the survey. Policy drives top down. If the leadership is committed with RM and implements it with will and has what it takes to implement this policy, organization and stakeholders will follow the footsteps. If vice versa, policy will be on paper and not on ground. Similarly, staff's commitment to RM is ingrained by the leadership's interest. Staff's commitment to the strategy has a considerable high impact on RM for PPP projects.

The 10 CSFs identified by preliminary survey were short listed to 10. A positive relationship has been found with all the 10 CSFs for RM in PPP. Some have high degree of positivity with others have moderate. All in all, implementation of these CSFs can ensure better RM in PPP.

Recommendations

The pseudo R square value of 65% indicates the percentage of variance explained by included independent variables. Therefore, to enhance the results, other factors for RM in PPP should be included in future studies. Additionally, only Pakistan targeted in this study. For future research, the prospect of this topic should be tested in other countries as well. And their difference should be noted.

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