FACTORS AFFECTING PRIVATE SECTOR PARTICIPATION IN BUILD- OPERATE-TRANSFER (BOT) CONSTRUCTION PROJECTS IN PAKISTAN

By

Umais Amin

(2009 – NUST – MS – PhD – CE&M – 11)

A thesis submitted in partial fulfillment of

the requirements for the degree of

Master of Science

in

Construction Engineering and Management

Department of Construction Engineering and Management

National Institute of Transportation

School of Civil & Environmental Engineering (SCEE)

National University of Sciences and Technology

Islamabad, Pakistan

(2012)

This is to certify that the

Thesis entitled

FACTORS AFFECTING PRIVATE SECTOR PARTICIPATION IN BUILD-OPERATE-TRANSFER (BOT) CONSTRUCTION PROJECTS IN PAKISTAN

Submitted by

Umais Amin

has been accepted towards the partial fulfillment

of

the requirements

for

Master of Science in Construction Engineering and Management

_____

Dr. Hamza Farooq Gabriel, Ph.D

Associate Professor,

Department of Construction Engineering and Management,

National Institute of Transportation (NIT),

School of Civil & Environmental Engineering (SCEE)

National University of Sciences and Technology, Islamabad, Pakistan.

FACTORS AFFECTING PRIVATE SECTOR PARTICIPATION IN BUILD-OPERATE-TRANSFER (BOT) CONSTRUCTION PROJECTS IN PAKISTAN

By

Umais Amin

A Thesis

of

Master of Science in Construction Engineering and Management

Submitted to the

Department of Construction Engineering and Management,

National Institute of Transportation (NIT),

School of Civil & Environmental Engineering (SCEE)

National University of Sciences and Technology (NUST)

Islamabad, Pakistan

In partial fulfillment of the requirements

For the degree of

Master of Science in Construction Engineering and Management

(2012)

DEDICATED

TO

MY BELOVED PARENTS

ACKNOWLEDGEMENTS

All thanks and praises to ALMIGHTY ALLAH who gave the opportunity and enabled me to complete my Master's Degree. I am extremely grateful to my parents for their sincere prayers support and continuous motivation during the entire length of my course and research work.

I would like to thanks and pay my sincere gratitude to my thesis supervisor, Dr. Hamza Farooq Gabriel for his guidance, continuous persuasion, valuable time and encouragement during my research work. I am extremely grateful to members of my thesis committee specially Dr. Rafiq Muhammad Choudhry for their sincere guidance. Special thanks to Mr. Azeem Tahir (Director NHA BOT- section) and Mr. Amjad Ali Awan, (Infrastructure Specialist- Infrastructure Project Development Facility) for helping me in completing my research work.

(*Umais Amin*)

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

BOT (Build, Operate, Transfer) is a relatively new method of project delivery for the development of infra-structure projects particularly in developing countries. Pakistan is a developing country and the government hardly has the enough budgetary cost to meet development challenges and have financial constraints to carry out the infra-structure development projects. BOT is a substitute way to help the government and to finance development projects without direct consumption of government funds. In the last decade, lots of projects have been launched by the government on BOT modality, but with the exception of few projects, majority of the projects have not commenced yet. The international financers, business enterprises and local construction firms working in Pakistan did not show their expression of interest in most of the BOT projects. Thus, Pakistan is one of those countries, which has never been able to utilize the advantages that could be produced from the BOT construction projects.

Keeping this in view, need was felt to carry out a study to explore the factors which hindered the participation of private sector in BOT projects. Extensive literature review was carried out to find out different factors that might hinder the private sector participation. Based on these factors, a questionnaire was developed which included a list of fifty four (54) factors gathered from the previous studies, which were further grouped into five groups. Data was collected through a survey in different cities of Pakistan.

After obtaining data from the field survey, reliability test of data was conducted in order to check the reliability of the collected data. Relative Importance Index was used to check the importance of each factor and based on the significance of factors, ranking of the factors was done.

Results indicated that the political instability, influence of government at approval stage, political risks, lack of banks capacity to provide long term financing and continuous inflation were the most important barriers for private sector to participate effectively in offered BOT projects. During the research it was found that there is little awareness about BOT project delivery method in private sector and government needs to create a public

private partnership environment and effective advertisement to attract private sector. Insights and discussions are given in the analysis which is valuable to government authorities, financial institutions and private sector. The present study may be helpful for the government to change its policy towards BOT projects and to get the interest and attention of different companies towards BOT construction projects. The initiation of BOT projects in Pakistan will provide opportunity to private sector to take part in country's development which indirectly will increase the serviceability and will reduce the unemployment. Other expected benefits from this study may be technology transfer, projects identification, commercial freedom and foreign exchange.

CHAPTER 1

INTRODUCTION

1.1 GENERAL

The construction industry is a very vital industry for any country. Development of infrastructure such as roads, railways, water supply, energy supply, sanitation etc have always been considered very essential for a civilized standard of life. It is a proven reality that for the economic development of a nation, construction plays the fundamental role. Construction activities customarily require the blend of inputs of materials, machinery, tools, labor and human intelligence. It is also another fact that development of a country is directly proportional to the construction activities.

To carry out construction activities, different legal agreements have to be done between the parties involved in construction. The key players of construction are the Clients, Contractors and Consultants. To distribute the responsibilities to each party, and to deliver the projects in an efficient way, there are different project delivery methods which can be used depending upon the nature and requirements of a project.

Project delivery methods are deliberately designed contractual arrangements for delivering construction projects within time, cost and scope. They illustrate contractual relations between the key project participants and the communication link for the flow of information within the organizational structure. Methods differ from each other and their type decides the roles to be played by the project team members.

There are basically two main types of project delivery methods:

1. Traditional Method of Project Delivery
2. Non- Traditional Methods of Project Delivery.

Traditional method of project delivery includes; client, consultant and the contractor. The clients do separate contracts with contractor and consultant, while communication takes place between all these participants until completion of project.

Non-Traditional methods of project delivery include the following:

- Design and Construct or D&C method.
- Construction Management and Project Management method.
- In-house development method.
- Concessional or Private Funding Initiatives (PFI) methods.

The non-traditional method is different from the traditional method. It deviates from the traditional contractual arrangement involving the client, consultant and the contractor in order to favour more efficient management of each stage of the project lifecycle.

A design and construct method is also known as a turnkey method. It gives the contractor the responsibility and rights for both the design and construction.

Construction Management method follows a team work approach. Basic purpose is to unite three party team of client, design consultant and construction manager into an organized contractual link, with a common objective to meet the project's targets and the client's needs in an optimum way. The construction team members ideally work together from the inception to the completion of the project. Fast-tracking is the essence of construction management method.

The project management method is a distinctive organization formation with the project manager as a head of the team. To deliver the projects successfully, the project manager will apply the theory and tools of project management throughout the project.

For In-house development method, the single organization finances the project, designs it and then constructs it on its own land for either rent or sale upon completion. This method is commonly applied in the housing and industrial sectors of the construction industry.

Private funding initiative (PFI) is a specific way of handing over the responsibility for procurement of goods or services from the public to the private sector. The mostly used forms of PFI are outsourcing or contracting out, and Concessional delivery methods such as Build-Operate-Transfer (BOT).

The focus in this method of project delivery is on Concessional agreements methods. The arrangement is such like, that the project company or a consortium of the contractor firms will contract with the host government to build the project, then to operate it until concession period and at the end of a concession period, say 20 to 30 years, transfer the project to the government.

The key characteristic of non-traditional delivery methods is their reliance on fast-tracking, by overlapping the design and construction phases to trigger the completion of a project.

1.2 PROBLEM STATEMENT

The construction industry of Pakistan is passing through difficult phase. It had a share of 2.3 per cent in total GDP of Pakistan in 2009-10 and grew by 15.3 per cent in 2009-10 against a negative growth of 11.2 per cent in 2008-09 (State Bank of Pakistan 2010). Remedial measures and steps if not taken properly may lead to failure to meet the increasing demand of infrastructure development in Pakistan. The construction industry possesses both, opportunities and challenges. Pakistan's population is over 170 million as at end June 2009, which is world's sixth largest population and with an annual growth rate of 2.05 percent it will become the fourth largest nation on earth in terms of population by 2050 (Federal Bureau of Statistics 2010, State Bank of Pakistan 2010). There is a shortage of an estimated 7.57 million housing units in 2009 alone (World Bank 2010). Whereas, housing represents only a portion of construction industry, there are huge investment opportunities in the fields like infrastructure, dams, irrigation, power, oil and gas, tourism and industry. Traditional methods of project delivery, being generally practiced in Pakistan may slow or even halt the process of meeting growing demands. Therefore the induction of non-traditional methods like BOT is the need of the time.

Government of Pakistan (GOP) has been facing financial limitations, liabilities and constraints in the development of various infrastructure projects. So the GOP has tried to overcome the situation by introducing the BOT concept. To take off its own financial responsibility and to infuse the investment from private sector and foreign countries in the infrastructure development, the Government of Pakistan in last decade launched different BOT projects. The launching of the projects was an energetic step but the execution, and implementation policies were not upto the mark. In last five years, lot of projects has been

offered on BOT modality, but except one or two, most of the projects were not started. The international financing organizations, foreign and local construction firms operating in Pakistan did not show their interest in BOT projects floated by the government. Hence, Pakistan is one of those countries, which has never been able to utilize the benefits that could be gained from Build Operate and Transfer construction projects. Due to various factors, private sector participation was not upto the desired levels.

1.3 RESEARCH OBJECTIVES

The objectives of the research are as follows:

- Understanding the concept of BOT projects and exploring its feasibility in Pakistan.
- To identify factors affecting private sector participation in BOT projects in Pakistan.
- To propose guidelines to these problems for successful implementation of BOT projects.

Research can be used to solve the problems highlighted in the study by taking financial steps, legal reforms and through government's commitment and support to best utilize private sector resources for the development of country.

1.4 SCOPE OF STUDY

The scope of this study is limited to the construction industry of Pakistan and mainly covers key stakeholders i.e. clients, consultants and contractors. An effort has been made to include as many types of projects as possible like highways, buildings, water supply and power. Four main geographical areas of Pakistan, namely Lahore, Rawalpindi, Islamabad and AJK were selected for a questionnaire survey and interviews.

1.5 FORMATION OF THESIS

The thesis is organized in six chapters with chapter 1 covering an introduction to BOT projects and chapter 2 covering detailed literature review. Chapter 3 covers methodology used in the research and chapter 4 covers results and discussion. The final (5th) chapter deals with conclusions and recommendations.

1.6 SUMMARY

This chapter includes a brief review of project delivery methods used in construction industry. It also includes the problem statement for the research which has been done. Objectives of the study have been explained followed by the scope of research work and formation of dissertation.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter includes brief literature review of Build Operate and Transfer (BOT) project delivery system. Contractual structure and history of BOT projects will be discussed in detail. Applicability of BOT projects in Pakistan will be explored along with an insight to the bidding documents of Pakistan Engineering Council for BOT projects and Pakistan's Public Private Partnership Policy.

2.2 BUILD OPERATE AND TRANSFER (BOT)

BOT is a comparatively new method of project delivery which enables direct private sector investment in large-scale infrastructure projects. The BOT refer as follows:

- Build – A private party agrees with a government in a concession agreement to build an infrastructure project.
- Operate – The private party then operates and maintains the infrastructure facility for an agreed concession period as per concession contract and recovers their investment through charges or tolls.
- Transfer – After the concession period the private party transfer the possession and operation of the facility to the government or relevant state authority.

In a BOT scheme the government grants the private sector the rights to finance, develop and operate a revenue producing infrastructure for a defined period called concession period after which the infrastructure is transferred back to the government (Walker and Smith 1995).

According to Maskin and Jean (1999), the contract period for such type of projects is normally 20 to 30 years which may be varying depending upon type and nature of the project and risk involved in the execution and operation of the project.

Al-Mubarak (2003) defines the Build Operate Transfer as a project delivery method in which a private entity, usually a consortium is responsible for financing, construction, operation and

maintenance of the facility for agreed duration called concession period and at the end of period transfer the ownership of facility to the host government.

In a typical BOT infrastructure project, a private sector project company builds a project, operates it long enough to payback project debt and equity investment, than transfer it to the host government (Augenblick and Custor 1990). In the BOT project delivery method, the public administration, assigns to a private sector company to design and construct infrastructure projects and to operate and maintain these projects for a certain period. During this period the private party has to collect the finance for the building the project and once it is operational and ready, it is allowed to collect all revenues generated by the project through tolls charges or rent. Also it is the responsibility of the operator to maintain and manage the facility during the operational period. The project will be then handed over to the government at the end of the concession agreement, at no cost. The concept involves public and private sector working together as a team with mutual interest and openness throughout the project delivery (Dahiru et.al 2010). BOT method of project delivery typically includes the following parties:

- Government Owner (Client)
- Project Company/Concession Company
- Construction Contractor
- Operation and Maintenance Contractor
- Financers
- Other Parties

2.2.1 Government Owner (Client)

A government agency is a key party. It will grant the sponsor/private consortium the right to finance, build and then operate the facility for an agreed period of time may be 15-25 years and at the end of contract period the government/owner take hold of most or all the services provided by the facility. For most of the projects, the government is the initiator of the infrastructure project and decides if the BOT model is appropriate for a particular project or not. The political and economic conditions are main factors involve in decision making. The government provides administrative, legal and legislative support and in taking necessary

approvals. The government's assistance is vital in large projects. It may also be required to provide comfort that the agency acquiring services from the facility will be in a position to honor its financial obligations. The government agency is normally the principal party. It will launch the project, conduct the bidding and tendering process and evaluation of bidders, and will award the project to the most suitable bidder after details evaluation process.

2.2.2 Concession Company

The concession company is the main company which signs concession agreement with the government. The project company is the party, usually a consortium of different companies (including a construction firm, an operator company, a financing body mostly the banks and other various parties). In reply to the request for proposal by the Government Department, it prepares the bid to construct, operate and invest in a particular project. The project company may take the form of a partnership, or a joint venture.

2.2.3 Construction Contractor

The construction contractor may or may not be necessarily involved. The project company may carry out construction itself if it has in-house construction capabilities. In case of third party, it may also be one of the financers and have to put some share in equity investment. It has to take construction and completion risks, completion of the project on time, within budget, scope and according to specifications.

2.2.4 Operation and Maintenance Contractor

The operator will have to sign a long-term agreement with the project company for the operation and maintenance of the facility. The operator may also have to insert equity investment into the project.

2.2.5 Financers

In the large project mostly a group of banks is involved who will provide the debt financing to the project company. The banks will sign loan agreements with the consortium and will require security and guarantees against their investment. They will also provide a stand-by loan facility in some cases, for any cost overruns during construction phase. Commonly BOT projects are financed by corporate debt organizations.

2.2.6 Other Parties in BOT Projects

Other parties include insurers, material/equipment suppliers, design consultants and financial consultants and lawyers. The project company may have inadequate expertise to carry out all operations; mostly it will subcontract portions of its work to a third party via separate contract. Also, it might be required to do separate supply contracts for the supply of raw materials and other resources required for the project.

A typical organizational structure of BOT project is shown below in Figure 2.1 as described by Uther and Davenport (2009).

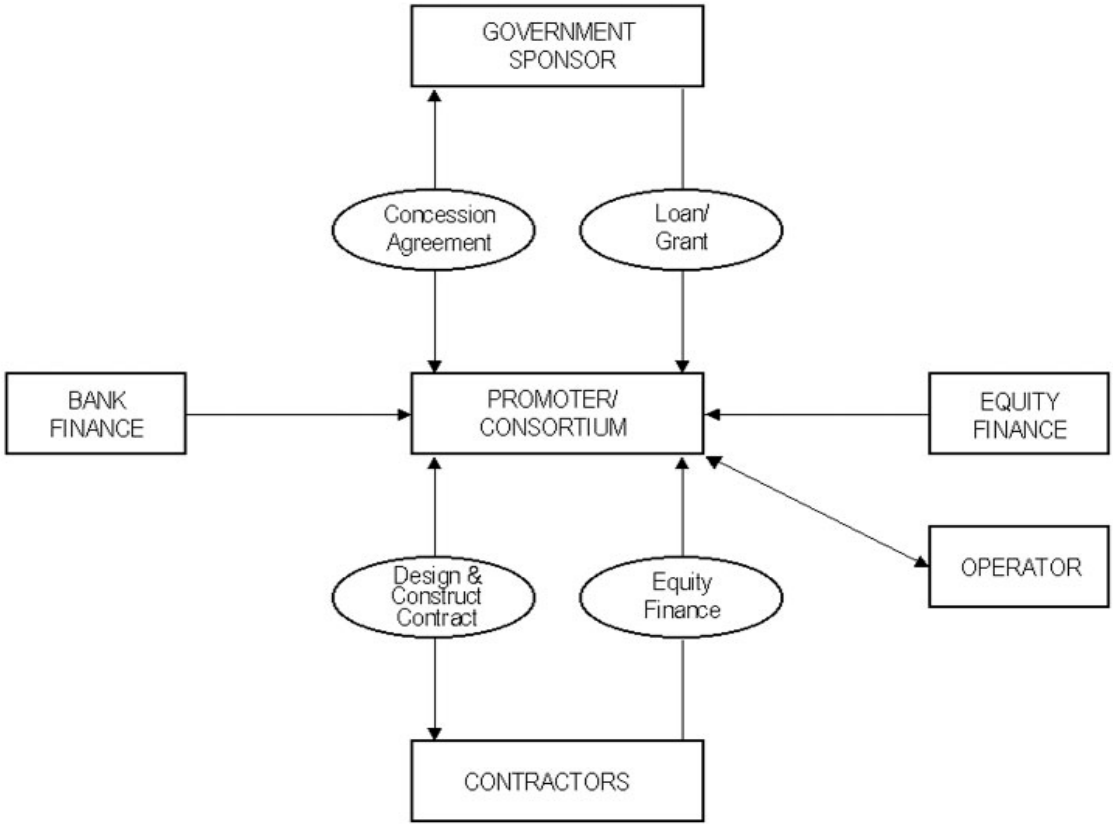

Figure 2.1: Organizational Structure of a BOT Method of Project Delivery

Based on the original BOT concept, different variations have evolved. Few of them are listed below:

- BOO (build-own-operate)
- BLT (build-lease-transfer)
- BOOM (build-own-operate-maintain)
- BOOT (build-own-operate-transfer)
- BOOTT(build-own-operate-train-transfer)
- BTO (build-transfer-operate)
- DBFO (design-build-finance-operate)
- DBO(design-build-operate)
- DBOM(design-build-operate-maintain)
- DOT (design-operate-transfer)
- ROO (rehabilitate-own-operate)
- ROT (rehabilitate-operate-transfer)
- DOT (develop operate transfer)
- DCMF (design construct manage finance)

In general, a project is financially acceptable for the private entity if the revenues produced by the project recover its investment and give sufficient return on investment. For the government, the acceptability of the project depends on its effectiveness and value for money it will offer in contrast with the financing of project with government funds. The private body bears a significant part of the risk. These are some common types of risks involved:

1. **Political risk:** Political risks are involved especially in the developing countries because of the likelihood of sudden political change that can occur any time.
2. **Technical risk:** Technical risks include, construction design and implementation risks, for example flaws in design, unforeseen conditions, weather risks and risk of equipment failure.
3. **Financing risk:** Financing risks include, change in interest rates, inflation, cost escalation, foreign exchange rate risk, tariff adjustment problems and cost overrun risk.

Sometimes the government guarantees to procure the production of the works, for example a minimum quantity of treated water. Sometimes the principal may provide guaranteed revenue

to the operator in the form of, for example, traffic count. There can be a revenue-sharing agreement, as its common in the case of toll roads.

The BOT project step wise process is shown in Fig 2.2. First phase includes the launching of BOT project, feasibility studies are carried out to check whether the project is feasible or not. Feasibility studies include, technical feasibility, economic feasibility, social and environmental feasibility. Once the project is launched, then comes the selection phase. Prequalification of firms is done and then prequalified firms are asked to submit their proposals. Evaluation of proposals is carried out by the government authority which has initiated the project. After the evaluation process, the most suitable bidder signs concession agreement with the government or relevant authority. During concession period, the concessionaire executes the construction project and then operation and maintenance is being carried out and then at the end of concession period, the project company transfers the project to the government.

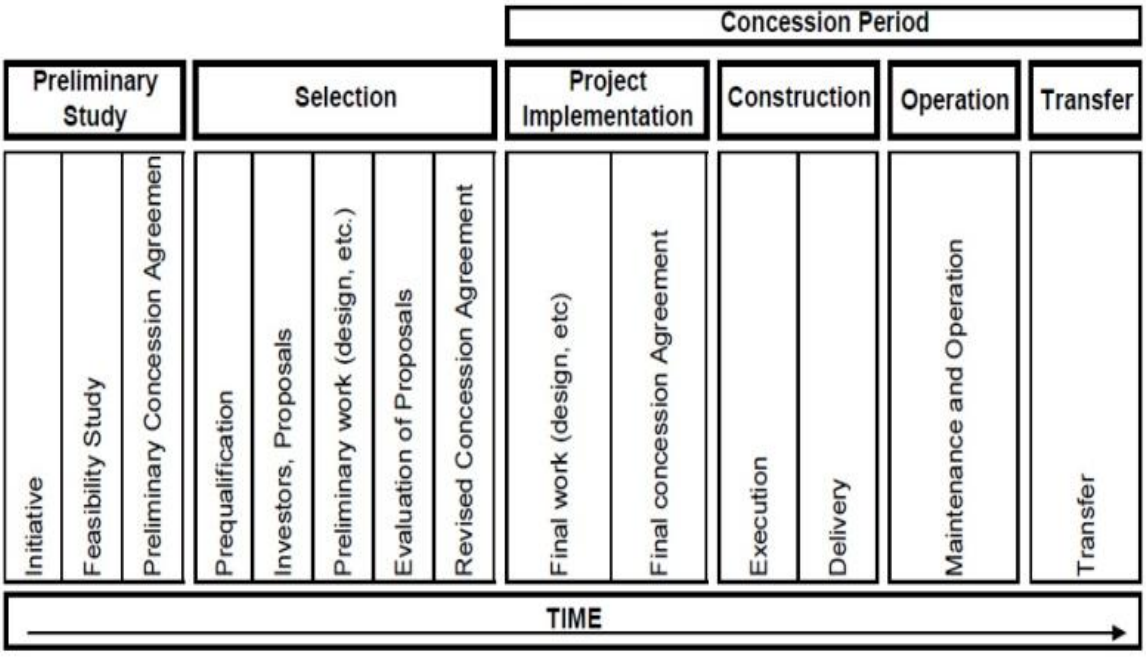

Figure 2.2: BOT Process

2.3 CONTRACTUAL STRUCTURE OF BOT PROJECTS

The below Figure 2.3 (as shown on World Bank Website) shows the contractual structure of a typical Build Operate and Transfer (BOT) Project, including lending agreements, shareholder's agreement between the Project company shareholders and the subcontracts of the operating contract and the construction contract, which will normally be between the Project company and a member of the project company consortium.

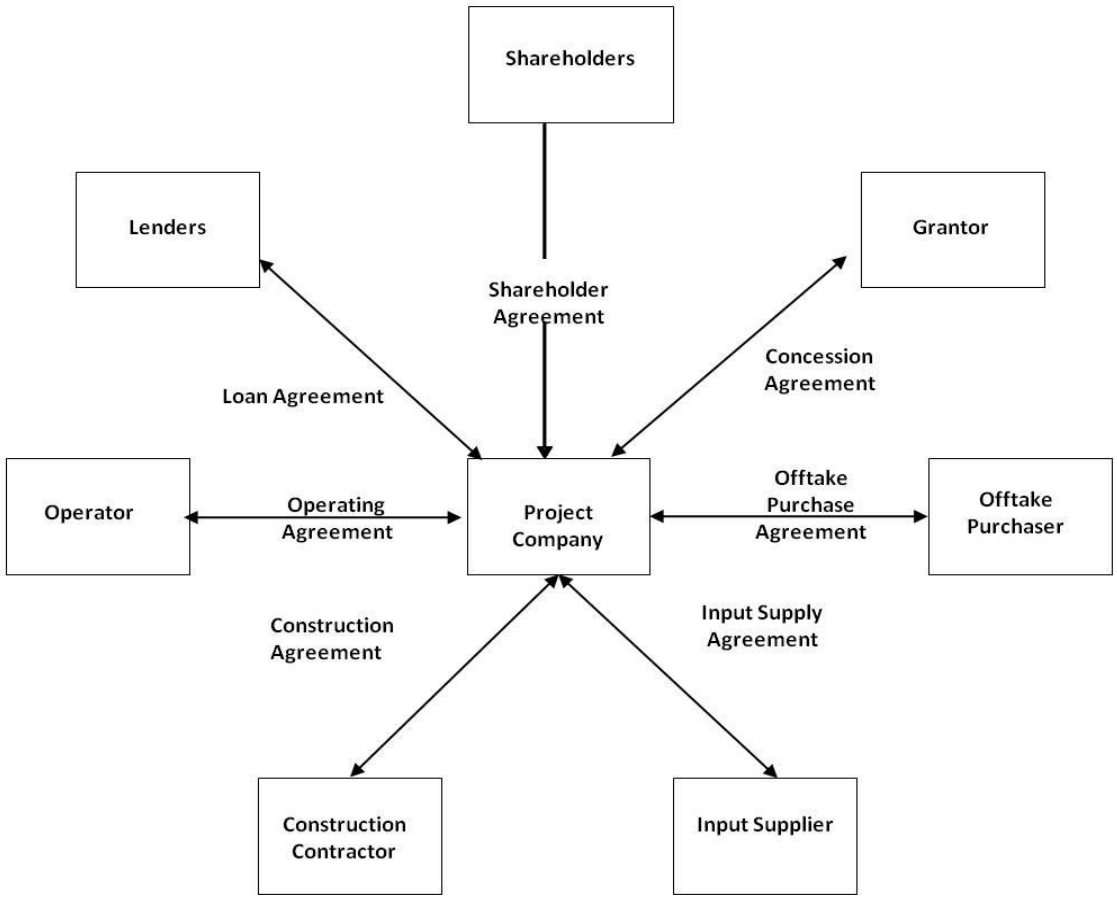

Figure 2.3: Contractual Structure of BOT Projects

(*Source: www.worldbank.org/ppp*)

- In a BOT project, the government sector gives the right to private company to develop and operate a facility or system for a certain period known as "Concession Period".
- Operator finances, owns and constructs the facility or system and operates it commercially uptil concession period, after which the facility is transferred back to the government.
- BOT is the innovative tool for project finance. Lenders are mostly the banks. They are concerned about the risks sharing of the project and they usually transfer the risk to the suitable party. Therefore the operator is mostly a special purpose vehicle.
- Revenues are mostly obtained from "off-take purchaser" for example a utility or government, who buys the project production from the project company (this is different from a pure concession where output is sold out directly to end users).
- Project Company gathers funding for the project carries out the design and construction of the project and operates the facility during the concession time. Project Company is a special purpose vehicle; its shareholders will mostly include companies with construction capabilities and or operational expertise, along with input supply and off-take purchase expertise. It is necessary to include shareholders having experience in managing the suitable type of projects, such as working with different cultural partners and in different conditions. Project Company will do coordination and monitoring during the construction and operation of the project in compliance with the requirements of the concession agreement.
- For the supply of fuel or other materials, Project Company will enter into a supply contract for fuel or other materials or machinery.
- The revenues generated from the operation phase are expected to cover operational costs, maintenance expenditure, repayment of loans or debt funds, financial costs (including interest rates), and an expected rate of return for the shareholders of the special purpose company.
- The project company has to tackle a lot of risks. It is concerned about those risks that stay with the grantor are protected. It is common practice for a project company to take some form of guarantee from the government.

2.4 HISTORY OF BOT PROJECTS

In fast growing world, mega infrastructure projects are the major requirement of the time. Progressed countries had already established their infrastructure and have ample resources to build new infrastructure projects. But in developing countries like Pakistan infrastructure still needs to be developed. According to Mobin and Ghaffar (2008), Asian Development Bank estimates that, over $1 trillion will be required for the next decade to meet Asia's infrastructure needs. Energy and transport will require a combined total of $450 billion, followed by telecommunications, water supply and waste disposal. Countries with major infrastructure requirements are Bangladesh, People's Republic of China, India, Indonesia, Pakistan, Philippines and Thailand. Because of fiscal constraints, governments are not capable to finance the growing number of new infrastructures. Developed infrastructure plays very significant role in country's economy and progress, while the BOT projects have the ability to uplift the economy in the country. Besides elevating economy, they facilitate common public therefore federal government, provincial administration, and city district authorities, around the world are taking into consideration BOT financing options for construction of various infrastructure projects (Chaudhry 2002).

The Sydney Harbour Tunnel and Sydney Harbour Casino were built under BOT project delivery method. Two most common examples of BOT are the Suez Canal and the Panama Canal (Both the Suez Canal and the Panama Canal had a 99-year concession). The Suez Canal financed by European funds with Egyptian monetary support, had a concession agreement to design, build and operate and that was assigned to Egyptian Ruler Muhammad Ali Pasha (Levy 1996). Dulles Toll Road Extension, with estimated amount of US$250 million started in 1988, was the first BOT highway in the United States. The first BOT project of airport terminal in Canada is Terminal 3 of Lester B Pearson International Airport in Toronto, was finished in 1991. In Australia Adelaide–Darwin railway project was executed under Build Operate Own Transfer (BOOT), connecting the cities of Adelaide, South Australia and Darwin, Northern Territory which was completed in 2003. Contract was awarded in 2000 by Australia Rail Corporation to the Asia Pacific Transport Consortium. The Asia Pacific Transport Consortium contracted Freight Link to execute the project and to

operate the railway. Eurotunnel between France and United Kingdom is another remarkable and well known project executed on BOOT contractual arrangement (Kreydieh 1996).

World Bank reports for Asia BOT experience conclude that there is very less implementation in most of the countries. Both the governments and the private sector are not contented with development and growth of such projects (Khan et.al 2008). In Build Operate and Transfer projects private sector invest in the construction of project first, then operates it for certain phase before handing it over to the government at no cost. This is the basic attraction of BOT. It not only provides support to government in tight fiscal situation but also serves the general public in its operational stage. Walker and Smith (1995) listed 111 known projects in 31 countries. In countries like Malaysia and Philippine, BOT projects played very vital role in infrastructure development.

In the developing countries most BOT projects were funded by the World Bank, Asian Development Bank or by developed countries like Japan and United States. Some examples of BOT projects in developing countries are as follows: five major toll automobile tunnels in Hong Kong (Downer and Porter 1992); the superhighway project in Pearl River Delta region in China (Yang and Meng 2000); the Don MuangTollway, an elevated toll expressway, Bangkok, Thailand (Ogunlana 1997); the Kepong toll road in Malaysia (Walker and Smith 1995); and the Mexico City-Guadalajara project, a toll road in Mexico (Huang 1995).

In the 1970s construction companies had been involved mostly in the oil and gas industry in Middle East, and in start of 1980s, they faced a major fall in business. They were looking for innovative ways to support other projects. With continuous focus on finding a different method of financing projects, a lot of governments and global lenders became involved in promoting the development of infrastructure with the privatization in 1980's. Also the European countries changed their way and they started to involve privatization in their infrastructure projects especially in France and Britain. At the same time Asia was facing an economic boom that opened the doors for new forms of project delivery methods based on theory of privatization and involving private sector in development of infrastructure.

The hunt for innovative way and to pursue and finance infrastructure projects in emerging countries twisted to procedures that are in fact not all that new. Similar planning was used in

the 19th and early 20th centuries to expand infrastructure in France and many other countries around the globe. New ways of providing huge project financing for main privately owned projects, in the area of oil and gas exploration and extraction, were started in the 1970s. In the United States and other urbanized countries, same project financing principles have been applied to many private infrastructure projects, involving energy sector, sanitation, and communications. The "BOT" seems to have been invented by Turkey's Prime Minister Turgut Ozal to assign a "build, own and transfer" or a 'build, operate and transfer" project (Augenblick and Custor 1990).

In the BOT methodology, one or more sponsors from the private sector are allowed to form a private "Project Company" to build infrastructure projects. The company mostly involves a major international engineering and construction firm and equipment providers. The project company will also expect to act as builders and suppliers for the project. The project company will raise the massive financing required for the project from commercial banks and from multinational financial institutions. The project company will operate the facility for agreed period of time which is projected to be enough to pay back the debt investment and to provide return on investment to the equity investors. At the end of concession period, the project company will transfer possession of the project to the local government who initiated the project.

Many countries around the world are trying to mitigate the challenges to the construction and maintenance of the infrastructure networks that are essential to the economic strength within their respective countries. Society is quickly altering and public organizations are trying to meet the needs of this fast-paced civilization. Already worn out infrastructures, inflation, limited resources, escalation, environmental issues, energy crisis and growing population are creating concern to the executives and management of infrastructure networks. These are strong incentives to look for a different and innovative means to acquire the services from increased privatization.

2.5 BUILD OPERATE AND TRANSFER (BOT) PROJECT DELIVERY SYSTEM IN PAKISTAN

BOT project delivery system has produced various efficient ways to exploit private sector finances, technology transfer, management expertise and efficiencies for the development of infrastructure. However, many countries lack BOT experience and familiarity. The BOT concept is working well in Hong Kong, with particular reference to the five toll tunnels (Zhang and Kumaraswamy 2001). Host governments mostly offer guarantees in build operate transfer infrastructure projects to catch the attention of private investors (Andreas 2004).

Build Operate and Transfer is a substitute for the government to outsource government projects to the private sector. BOT can be used as a developing technique for infrastructure projects by using private initiative and financial support. Such infrastructure projects include a wide range of public facilities with most important purpose to serve public needs, to provide community and stimulate economic activity in country. The most common examples are roads, bridges, water and sewer systems, ports, airports and public buildings (Vaughan and Pollard 1984).

In Pakistan, development of infrastructure with growing population is need of the hour. Development of infrastructure at national level requires huge financial resources involving use of public funds and foreign investments in parallel to other important social sector works. The government is unable to meet development targets due to its insufficient financial resources. It is therefore mandatory for Pakistan's government, to implement an indirect approach i.e. BOT (Khan et.al 2008). The priorities always remained questionable for the initiation of any government funded infrastructure development project especially in Pakistan. BOT is an option for financing the infrastructure and boost the economical development of the country without direct consumption of government financial assets. In private sector for the owners who have land resources but no finance to make the adequate development on these lands, BOT can be an alternate. The BOT projects have the prospective to serve the government and private sector with equal effectiveness (Khan et.al 2008).

The strategy of BOT implementation requires to be developed more in Pakistan. Any infrastructure project which is not feasible to be financed under the public funds can be

considered to be financed by private investors through built operate and transfer. This methodology can increase the cash flow in the market and can conquer the current resource crisis in the country like power deficiency and transportation issues in mega cities such as Karachi and Lahore (Mubin and Ghaffar 2008). But in Pakistan, the conditions are still yet not so supportive to exploit any possible benefit from it. Pakistan even being the member of World Trade Organization (WTO) unlike China is unable to utilize the available multinational financing opportunities for BOT projects in infrastructure development (Khan et.al 2008).

Pakistan is going though worst economic slump therefore funding for infra structure development program is becoming inadequate, so there is prospect to involve private sector in infra structure development facilities such as road, railways, bridges, power plant, water treatment plant etc. There are also serious problems associated with expansion of the current infra structure in areas such as electricity, housing, healthcare and education. In this situation, increased private sector participation will help in development of large scaled infrastructure projects with minimum load on the government. Moreover in recent years, the population growth rate has necessitated the construction of new facilities as well as maintenance and rehabilitation of existing structures.

Keeping in mind the recent developments in the world, Government of Pakistan is also encouraging private sector in the development of the facilities such as roads, railways, airports power plants, water supply, ports etc. The Government is trying to attract private sector for large scaled investment projects due to its financial limitations. Pakistan is a developing country and the government rarely has the enough finances to meet development challenges and have financial constraints to carry out the infra-structure development projects. BOT is an alternate option to serve the government and to finance such projects without direct utilization of government budget. But unfortunately this concept has not gained much popularity in Pakistan.

Pakistan's privatization and infrastructure development efforts have gained a new height with the formation of Infra Structure Project Development Facility (IPDF). Formation of such highly powered infra structure body was a serious step towards privatization process. The purpose of such body was to increase number of PPP projects in Pakistan. Keeping in mind

the potential benefits of BOT concept, number of BOT projects has been launched time to time by Government of Pakistan, but unfortunately they have not gained the attention of private sector. Table 2.1 contains the list of some BOT projects floated by Government in last 5-10 years.

Table 2.1: List of BOT Projects Offered in Pakistan

Sr.No	Project	Client	Sponsor	Status
1	Faisalabad –Lahore Motorway Project (M-3)	National Highway Authority, Government of Pakistan	Husnain Cortex Pvt. Limited	Commenced, But Later on BOT Contract converted into normal item rate contract
2	Liquid Cargo Terminal at Port Qasim	Port Qasim Authority Government of Singh		Completed
3	Electromagnetic Train Project in Karachi	City District Government		Not commenced
4	Light Rail Transit System in Lahore and Rawalpindi	Government of Punjab		Not commenced
5	Public Swimming Polls/Sports Entertainment Areas	Parks and Horticulture Authority, Government of Punjab		Not commenced
6	Lahore Sheikhupura Faisalabad Dual Carriageway	Communication and Works Department, Government of Punjab	Frontier Works Organization (FWO)	Completed.
7	Naran Saiful Malook Cable Car Project	Communication and Works Department, Government of NWFP.		Not commenced
8	Grain Terminal at Port Qasim	Communication and Works Department, Government of Sindh		Not commenced
9	Construction of Five Star Hotel at Lahore.	Pakistan Railway, Government of Pakistan.		Not commenced
10	Construction of Islamabad International Airport link road, Islamabad	NHA, Government of Pakistan		RFP floated
12	Lakpass Tunnel Project Near Quetta	National Highway Authority, Government of Pakistan	Frontier Works Organization (FWO)	Completed
13	Lahore Bus Terminal at Thokar Niaz Baig	City District government of Punjab		Not commenced
14	Lahore Kasur Dual Carriageway	Communication and Works Department, Government of Punjab		Not commenced

The most of the projects mentioned in table 2.1 seemed to be potentially strong in business development perspective. The employers of the projects are also the federal or provincial governments. But the success or the processing of the projects is very less. Only very few projects has been started and completed or under the completion. It is observed that the main project company in most of mentioned commenced projects is Frontier Works Organization (FWO). FWO is also operating a lot of projects very efficiently.

2.6 ADVANTAGES AND DISADVANTAGES OF BOT PROJECTS

2.6.1 Advantages of Build Operate and Transfer Projects

- By BOT method of project delivery, the infrastructure can be build where governments are unable to finance the project due to financial limitations.
- The governments have very little or no risk usually because project is financed through private sector's capital, international organizations and financial institutions.
- Due to private sector operation, it is more efficient as construction and operation are being done without direct government involvement.
- Decision making in private sector is quick, which allows the infrastructure to be build more quickly.
- BOT methodology creates ways for technology transfer in terms of construction technology, operation and maintenance.
- Private firms are more innovative and competent in the design and operation phases of projects.

2.6.2 Disadvantages of Build Operate and Transfer Projects

- Build Operate and Transfer can cause political troubles if the interests of government, citizens and Project Company are not aligned.
- The government/owner who are the initiator of projects, have little hold over design and construction of project.
- Due to large scale projects, cost overrun may stop the progress of project and the difficult financing arrangement may create hurdles during execution of the projects.

- Because of long term contracts, changes in exchange rates, interest rates, tariff change problems and technology change can badly affect the expected rate of return and interest of both the project company and the owner.
- The incentives and revenue collection allowed to private company by the government during operation may close up being more costly to citizens and users of facility.

2.7 PAKISTAN ENGINEERING COUNCIL (PEC) STANDARD FORM OF BIDDING DOCUMENTS FOR BOT PROJECTS

According to Pakistan Engineering Council, this document is typically designed for inviting proposals from the Private Sector in respect of a Concession for the construction and operation of projects through Build, Operate and Transfer (BOT) arrangement. As explained in the Bidding Documents for procurement of work on BOT Basis, the Client should get ready the estimated construction cost of the project based on the General Design Criteria & Operation/Maintenance Requirements in order to enable him for comparing the Financial Bid Offers by the Bidders.

In BOT bidding documents, condition has been made to bid and award on Two Stage bidding procedure. But, if it is to be bided under Single Stage–Two Envelope or Two Stage – Two Envelope bidding procedure, relevant requirements have to mention in Instructions to Bidders (ITB). Additionally, in case of Single Stage-Two Envelope bidding procedure the documents must include specifications, detailed design and drawings to be completed and final in all respect.

This PEC bidding document explains that this document is drafted out for Employer in the Public Sector and BOT Project Company / Bidder from the Private Sector. However, if the Employer is other then entity in Public Sector and Company / Bidder is other than the Private Sector then necessary amendments to the relevant provisions may be made accordingly.

In BOT Document Concession Contract is provided between the Employer and the Company / Contractor / Successful Bidder. However in case a construction contract is to be made between the Company and his proposed Contractor, PEC Standard Form of construction contract may be used.

2.7.1 Bidding Procedure

According to Pakistan Engineering Council, this Standard Form of BOT Bidding Document, in addition to Expression of Interest, includes the following:

- Instructions to Bidders
- Bidding Data
- General Conditions of Concession Contract
- Particular Conditions of Concession Contract
- Specifications-Special Provisions
- Specifications-Technical Provisions
- Annexure to Instructions to Bidder
- Appendices to Concession Contract
- Form of Bid Security
- Form of Concession Contract Agreement
- Form of Performance Security for Construction Phase
- Form of Performance Security for Operation Phase
- Form of Performance Security for Transfer of the Project
- Design/Drawings

The PEC bidding document describes the bidding of BOT projects as a two-stage bidding procedure.

2.7.2 Two Stage Bidding Process

As per BOT bid document, the detailed evaluation of the Bids will be carried out as a Two-Stage process with scores being assigned to each Bid during each Stage of the evaluation. Those Bids that, in the view of the Employer, fail to satisfy minimum requirements during the Stage-1 of the evaluation will not be taken forward to Stage-2 of the evaluation process.

Stage- 1 - Bidder's Capability and Technical Proposal

The aim of the Stage-1 evaluation will be to determine the ability of the Bidder to finance, construct and manage the Project, and to evaluate the level of competence shown by the

Bidder, in terms of its understanding of the engineering, operational and maintenance aspects of the project.

The assessment will consider the Bidder's previous experience in projects of this complexity and magnitude. Particular credit will be given to those Bidders who have in-house experience in the engineering design, financing, construction and management of public sector infrastructure projects, and particular emphasis will be placed on the robustness of the proposed Works Programme, the Project Appreciation Statement and the appropriateness of the proposed operating and maintenance regimes that will be employed during the Concession Period.

The Technical Proposals are opened at the date and time specified in the Bidding Data. The Technical Proposals shall be evaluated and discussed with the Bidders. Any deficiencies, extraneous provisions and unsatisfactory technical features shall be pointed out to the Bidders whose comments are carefully evaluated during a post bid meeting at the date and time set by the Employer. The Bidders shall be allowed to revise or adjust their Technical Proposals to meet the requirements of the Employer so that all Technical Proposals conform to the same acceptable technical standard and meet the technical solution required by the Employer. Bids of the Bidders who are unable or unwilling to bring their bids to conform to the acceptable technical standard shall be rejected as non conforming bids.

After the evaluation of Technical Proposals as above, the second stage is to invite Bidders to submit Financial Proposals and Revised Technical Proposals in compliance with the acceptable technical standard. The Revised Technical Proposals and Price Proposals are opened in public at date and time informed by the Employer.

Stage- 2 - The Financial Proposal

The Revised Technical Proposals and Financial Proposals are opened at the date and time informed by the Employer. [In setting the date the Employer should allow sufficient time for Bidders to incorporate the changes involved in the Technical Proposals and prepare Financial Proposals.

The Financial Proposals and Revised Technical Proposals are evaluated by the Employer and its advisers in strict confidence. Employer will not provide the assessment results or reasons in support of its assessments to any Bidders or third party.

In the case of Non-Conforming Bids, any additional financial benefit that results from non-conformity will be balanced against any consequent financial, economic, and environmental or other disadvantage to the Employer or the community as a whole. Any technical implications of non-conformity will also be considered in this adjustment process.

2.7.3 Pre-Qualification Requirements for BOT Projects

In Pakistan, the expression of interest (EOI) invited by the government or private agencies normally include the following details:

- Profile of company and associates showing financial capability of firm/consortium, annual turnover, financial management, technical capability, available human resources, organization, present business activities, type of registration (memorandum of association, deeds) and experience of similar type of project, if any.
- Details of credibility/capability to undertake this type of work
- Suggested marketing plans and strategy
- Vision for making the project viable and its planning, construction, commissioning and managing the project.
- Brief methodology for financing proposed funding arrangements to be lined up for undertaking the project, both local and foreign financing.
- Undertaking regarding blacklisting or default litigation of the firms if any.

The submission of above documents usually enables the government or private agency to short list and pre-qualifies the interested enterprises in the project. The evaluation of EOI is normally carried out on weight-age basis rationally. The documentary evidence must be furnished before the final acceptance of the pre-qualification.

2.8 PAKISTAN POLICY ON PUBLIC PRIVATE PARTNERSHIP (PPP)

The Government has recognized the significance of improving and expanding infrastructure services for sustaining economic and social development. Improved quality and service

coverage in power and water supply, sewerage treatment, transport and logistics are vital for Pakistan's economy and the livelihood of its people. Tight fiscal constraints require innovative approaches - away from the traditional role of the Government as the service provider - to ensure that the massive investment needs are financed with the assistance of the private sector. The Government estimated that less than 50% of the infrastructure investment needs can be covered by public funds under the Medium Term Development Framework (MTDF). A combination of policy reforms, institutional support, incentives and financing modalities is required to encourage private-sector participation in financing, constructing and managing infrastructure projects.

According to Pakistan Policy on Public Private Partnership (2007), Pakistan has established a policy and regulatory framework for Public Private Partnership (PPP) in the telecom and energy sectors. Unlike in these regulated sectors, the framework for PPP infrastructure service procurement in transport and logistics, and municipal services in water supply, sanitation, solid waste management, social sector, and real estate does not exist. Experience in the regulated sectors suggests that a policy, tariff standards, technical design and service standards, and model contracts are useful for accelerating the closure of transactions and instilling confidence in all participants.

According to Policy document, closure of PPP investments, especially at the provincial and municipal levels is a very challenging process and often year long efforts do not result in closure of a transaction. Various levels of Government jurisdiction and regulation blur clear assignment of ownership and accountability. The Local Government Ordinance, 2001 (LGO) assigned accountability in the unregulated municipal services to local Government. However, the local governments usually lack the requisite skills and financial resources to fulfill service functions at acceptable scope and service standards.

Many economically and socially worthy projects lack the ability to raise the requisite revenues to ensure adequate returns for the investor risk. Also infrastructure projects require long gestation periods to ensure affordable tariff levels, which expose private investors' investment to undue risk. PPPs with appropriate arrangements in the sharing of risks in financing, operating and maintaining infrastructure services are a solution.

2.8.1 Introduction to Public Private Partnership (PPP)

According to Pakistan Policy on Public Private Partnership, PPPs have been adopted by various governments around the world as a service delivery tool. Instead of the public sector procuring a capital asset and providing a public service, the private sector creates the asset through a dedicated standalone business (usually designed, financed, built, maintained and operated by the private sector) and then delivers a service to a public sector entity / consumer, in return for payment that is linked to performance.

PPPs permit the public sector to reduce their capital expenditure (and redirect to promote urgent social needs) and convert the infrastructure costs into affordable operating expenditure spread over time. PPPs allow each partner to concentrate on activities that best suit their skills. For the public sector that would mean focusing on developing policies and identifying service needs, while for the private sector the key is to deliver those needs efficiently and effectively.

The Government of Pakistan has set up the Infrastructure Project Development Facility (IPDF) under the auspices of the Ministry of Finance (MOF), to generate PPP projects with public sector Institutions (line ministries, provincial Governments, local bodies, state owned enterprises etc.) undertaking PPPs. IPDF provides direct access to a professional PPP Unit that will help Institutions to improve proposals and prepare them for tendering, without becoming a contract signatory to those transactions. Once approved by IPDF's Project Feasibility Committee, the project may be submitted for any necessary complementary financing to a proposed independent financing body – the Infrastructure Project Financing Fund (IPFF) – for any 'residual' financing needs that are not available in the market.

According to the Government of Pakistan Policy on PPP, both IPDF and IPFF are tasked to provide easy and timely access for Institutions, to ensure that viable good quality PPP deals are concluded in a timely manner to meet Pakistan's increasing infrastructure demands. The day to day operations of both institutions will be independent from the Government and reporting to the Government will be made through their respective Board of Directors.

A separate Task Force (TF) of senior officials from Ministries and provinces has been established to advice on overall PPP policy reforms, aided by a Secretariat established in the

IPDF. The Secretariat is supported by Working Groups tasked to focus on specific topics of that policy. It is intended that the deliberations and recommendations of the Task Force will shape the PPP enabling environment in Pakistan, in parallel with the operations of the IPDF and IPFF.

As explained in Policy Document, PPP project evaluations will focus on, but will not be limited to, the following sectors:

- Transport and logistics including provincial and municipal roads, rail, seaports, airports, fishing harbors as well as warehousing, wholesale markets, slaughter houses and cold storage.
- Mass Urban Public Transport including buses, and intra and intercity rail.
- Municipal Services including water supply and sanitation; solid waste management; low cost housing, and health / education facilities.
- Small Scale Energy Projects hydroelectric and captive power generation projects - other than those being facilitated by Private Power Infrastructure Board (PPIB) and the Alternative Energy Development Board (AEDB).

Although, PPPs will become an integral component of the Government's overall strategy for the provision of public services and public infrastructure across all sectors, this does not imply they are the preferred option for improving the efficiency of services delivery but that they enjoy equal status among a range of possible service delivery options available to the Government. Sector specific policies may be developed as necessary to provide more detailed guidance on the approaches and norms to be adopted in particular sectors when seeking PPPs. The federal government will coordinate with provincial governments on the development of policies concerning services for which provincial and local governments are concerned. Regardless of sector or level of government, PPPs should be pursued where they represent priority projects, are affordable to the government and consumers, and represent value-for money, i.e. they provide a better approach than public procurement.

2.8.2 PPP Objectives

The Government's objectives in promoting PPP's according to the Policy are to provide:

- More services, as there is a huge backlog in basic services such as water and sanitation, solid waste management, transport and rural electricity. Not only do Pakistan need to catch up with the backlog, there is urgent need to start building infrastructure for future needs as well.
- Better services, as the quality of existing services is deteriorating due to lack of incentives and funding for infrastructure maintenance and up gradation. The result is polluted water, unhygienic living conditions and inability to provide proper health care and education.
- Affordable services, as certain segments of the population cannot paycost recovery tariffs, whereas the private service provider needs to recover costs in order to sustain operations. In such cases the Government will provide targeted (to low income consumers), explicit (not hidden as budget support) performance based (only provided once the service - such as 24 hour clean drinking water to the consumer's dwelling - is actually delivered).
- Timely services, as the Government does not have the capacity or the fiscal space to meet the immediate service demands of its citizens.

These above stated objectives will be achieved through:

- Faster project implementation (as design and construction risks are usually passed on to the private sector in PPPs) and higher quality / lower cost (as in PPPs private sector compensation is linked to its performance and the overall operations / maintenance risk is also passed on to it). IPDF will play a key role in ensuring that projects are structured in a manner that ensures proper risk allocation.
- Leveraging public funds with private financing from local and international markets. For every Rupee that the Government spends it will strive to leverage the maximum possible from the private sector. The Government would like to limit its contributions to providing targeted subsidies to low income consumers, to allow cost recovery by the private service provider. IPFF will provide 'residual' long term financing that may not be available in the market.
- Enhanced accountability in service delivery - by linking service provision to a firm contractual arrangement. The Institutions (relevant implementing agencies) will

define the service levels very clearly in the contracts in terms of outputs and outcomes required from the private sector. They will be required to put in place strict monitoring mechanisms. Non performance by the private sector will be penalized and may result in termination.

- Public sector management shift from Budget expenditure to whole life cycle cost management. Most of the services in the public sector are of poor quality because the Institutions are not efficient in determining whole life costing of assets, with the result that once they are commissioned they are not maintained and refurbished / upgraded in time. Since the focus in engaging with the private sector is on services it provides, the private sector will ensure that the underlying assets are of good quality and maintained adequately.

2.8.3 Implementation Process

The focal point for implementation of the Government's PPP program is the IPDF, which, according to its mission statement has been established; "Promote and facilitate the closing of transactions involving private investment and management of public infrastructure, especially in the unregulated sectors at the provincial and municipal levels. IPDF is a catalyst to increase the number and volume of public infrastructure transactions that provide value for money for the beneficiaries of the facility, while assuring that private sector providers are able to earn adequate returns for quality services".

Through the transactions and facilitation of policy making IPDF will also support the creation of an enabling policy environment and provide hands on knowledge transfer especially to the local Government level. In order to deliver on its mission statement, IPDF will act as the principal facilitator and coordinator for PPPs in Pakistan, with focus on the following 'pillar' functions:

- Pillar I: Provide transaction support to Institutions to structure viable PPP Projects that provide good value for money. This also entails (i) building public and private stakeholder awareness and skills, and (ii) feedback and assistance to the TF as its secretariat to create a suitable policy, legal and regulatory framework for PPPs.
- Pillar II: Act as an independent evaluator and monitor, ensuring superiority of PPP projects to public funded alternatives in terms of service scope and delivery, effective

to alleviate fiscal constraints, and in compliance with environmental, social and financial safeguards.

- Pillar III: Act as an independent agent in determining the need for supplemental public grant funding to make PPP projects affordable and financially viable, while minimizing public grant funding through intelligent design and a competitive process.
- Pillar IV: Recommend ready transactions for (i) viability gap grant financing for MOF approval, (ii) long term loan financing (gap that cannot be provided by the market) at market terms to IPFF, and (iii) Guarantees for MOF approval.

2.8.4 Viability Gap Funding

The Government will provide viability gap funding (VGF) – or targeted subsidies for PPP projects that are economically and socially justified but fall short of financial viability. This would be an explicit subsidy that is performance driven (based on private party achieving measurable outputs) and targeted to socio economically disadvantaged users or groups of users. For that purpose, the MOF will issue VGF Guidelines setting the criteria for eligibility to receive funding from the viability gap fund, the procedure for applying, approving, disbursing and monitoring the fund, and the arrangement for managing, controlling and governing the Fund.

The MOF will constitute a dedicated VGF Company responsible for, (i) providing for the procedure to be followed for submission, appraisal, approval, disbursement and monitoring of viability gap funding, (ii) approving viability gap funding for eligible PPP projects and (iii) disbursements and monitoring VGF

2.8.5 PPP Project Life Cycle

To improve credibility and transparency of PPP projects, uniform bidding processes and publication of bidding and selections will be established. The life cycle undertaken by Institutions (assisted by qualified and experienced transaction advisors) procuring PPPs shall at a minimum include the following steps:

- 1st step. Needs and Options Analysis. Transaction advisor conducts Needs and Options Analysis to determine the best solution to provide the service / build.

Infrastructure. IPDF assists the Institution in evaluating recommendations of the Transaction Advisor.

- 2nd step. Initial Viability Analysis. Transaction Advisor prepares a Pre-Feasibility Study including estimates of project costs and an initial indication whether the project is viable and affordable. IPDF assists the Institution in evaluating recommendations of the Transaction Advisor.
- 3rd step. Technical, legal, environmental and financial due diligence. Transaction Advisor conducts in-depth Legal, Technical, Site / Environmental, Market and Financial Due Diligence along with extensive stakeholder consultation. IPDF assists the Institution in managing the Transaction Advisor.
- 4th step. Affordability and value for money test. The Transaction Advisor prepares a robust financial model to determine project viability, bankability, affordability and the value for money it offers. This includes estimates of viability gap and the need for subsidies. IPDF assists the Institution in this process.
- 5th step. Market Test. Transaction Advisor continuously conducts market testing to determine under which technical conditions the market is willing to offer the services. IPDF assists the Institution in reviewing the market test and the need for viability gap and other funding support by IPFF and determine the final PPP design parameters. The assigned IPDF project manager submits project to IPDF Project Feasibility Committee. Subsequent to IPDF Project Feasibility Committee endorsement, IPDF submits the proposal to Viability Gap Fund for approval in principle.
- 6th step. Bidding. IPDF assists the Institution to conduct a competitive bidding process (and to determine the lowest viability gap funding need for a PPP project, if required).
- 7th step. Approval of Viability Gap funding (if required). Based on IPDF's evaluation and Project Feasibility Committee endorsement, IPDF submits recommendation for subsidy to the Viability Gap Fund.
- 8th step. Signing of Agreement and Financial Close (and the Institution, the private sponsor, and Viability Gap Fund sign tripartite project implementation agreement, if VGF involved).

- 9th step. Project Monitoring by Institution (and by Viability Gap Fund for milestone based disbursements if subsidies are involved)

2.8.6 Unsolicited Proposals

Government's policy on unsolicited proposals aims to balance its desire to stimulate innovation and to create new opportunities for the private sector, with the need to ensure that the Government and consumers get value for money in PPP transactions. Genuine effort, reasoned analysis and a demonstrated appreciation of the requirements of the public sector should be the minimum considerations before a public sector entity even entertains an unsolicited proposal, let alone provides any rewards or incentives.

The Government would verify project viability with the assistance of independent transaction advisors. If the project is deemed viable, it would be tendered out on a competitive basis (exceptions may be provided on a case to case basis in social sectors (health and education) projects where needs are urgent and quality service providers are limited).

The original proponent shall be invited to participate in the bidding process and may be reimbursed of its pre-determined costs in project preparation in case it is not awarded the Contract. The reimbursement amount must be provided for, in the bid documentation as a provisional amount, payable by the successful bidder to the proponent. If the public sector entity aborts the project it will be liable to pay the proponent for costs incurred up to the pre-determined/agreed budget amount.

2.9 BOT PROJECT STUDIES IN OTHER COUNTRIES

Internationally a lot of researches have been done related to Build-Operate-Transfer (BOT). A lot of studies have been done globally on BOT implementation, problems involved, critical success factors required for successful implementation, policy making, legal reforms and project financing structures. Unfortunately in Pakistan, there are very limited studies related to BOT concept of project delivery. The Build-Operate-Transfer (BOT) method of project delivery being relatively new to the construction industry of Pakistan lacks in research as a subject, although the same is being practiced in many developing countries. Global studies and execution on BOT project delivery method has directed a range of effective ways to

make use of private sector funds, technology innovation, management skills and operational efficiencies for the development of public infrastructure.

According to Zhang and Kumaraswamy (2001), the BOT concept is functioning well in Hong Kong, with particular reference to the five tunnels on which it has been implemented. The financing for infrastructure development projects has gained significance as the size and complexity of these projects increased in the last 20 years. The instant requirement for such projects along with persistent financial shortages faced by public agencies explores the need of innovative financing. Continuous rapid population growth increased the demands for infrastructure facilities in China, which offer attractive but tough opportunities for overseas investors. Build-Operate-Transfer (BOT) project financing arrangements have been explored, with a number of projects efficiently developed in various industries. Drawing examples from key projects, their study include a summary and analysis of these development projects. It provided keys to improve procurement system and insight to Chinese initiatives, legal structures, foreign investment, project-financing models, bidding systems and particular challenges faced by BOT participants.

Algarni et.al (2007) explained that the infrastructure needs in the United States need immediate investment, because the funds provided by government authorities are not adequate to face the challenges. Build-Operate-Transfer (BOT) is a project delivery system that can be a solution to these problems. Under BOT arrangement, a private supporter finances the design, construction, maintenance, and operation of a public project for specified concession duration, at the end of which it transfers ownership to the government and. A questionnaire study was conducted by them including large municipalities and government departments of transportation to determine the extent to which they were using BOT in their projects. The findings pointed out that very few authorities were using BOT. The reasons behind this were the non availability of financing institutions, the political barriers, and resistance to change both on the part of government authorities and private companies.

Aksar and Gab-Allah (2002) explained the problems faced by parties in different phases of BOT transport projects in Egypt. The objective of this study was to explore the potential for implementing the BOT project delivery system in the Egypt. This was achieved by giving a clear view of BOT and of its problems related to the Egyptian environment, in order to make

best use of the benefits and to reduce the risks as much as possible. The collected data was analyzed based on actual implementation in Egypt. The main conclusion of this study was that three critical success factors are essential for the success of BOT projects in Egypt which includes; picking the right project, competitive financial proposal and special features of bid.

Ahmad Kreydieh (1996) carried out the detailed study related to risk management in BOT financing. The study included the causes of failure, success factors, risks involved in each phase of BOT project and to mitigate those risks, methods have been suggested. Emphasis was given to project financing including capital and debt financing and tools used for project financing. For efficient project financing, some innovative financing techniques have been proposed by him.

Dahiru et. al (2010) carried out a study to asses critical success factors of BOT projects in Nigeria. According to them Nigeria is like other African countries where use of BOT concept have become essential. This methodology includes public and private sector working jointly as a team with trust and fairness throughout the delivery of project. Their study revealed that developers, lenders and private firms were more positive about the initiation of BOT projects than the consultants and clients. They also explained certain requirements to be met for the success of BOT implementation in the country. Their research identified 24 critical success factors for effective implementation of BOT projects in Nigeria.

Selen and Gokalp (2009) carried out a case study on Ankara Airport BOT project. According to them, privatization of airports in Turkey followed the same trend as in rest of the world. The study provided in insight to brief history on privatization in the world and in Turkey and explained the successful case of Ankara Esenboğa International and Domestic Airport BOT Project. In Turkey, due to the rapid increase of air traffic, various attempts were made for a BOT structure for airports. The first priority was for the Istanbul Ataturk Airport which was the major airport in Turkey. In 1997, the successful BOT contract was awarded to TAV Airports Holding with a 3 years 8 months and 20 days Operation period for the specified investment. This project was one of the best examples for the implementation of a BOT airport projects in the region. Ataturk Airport International Terminal was build under the Build-Operate-Transfer concept in just 22 months. The contractual arrangement allowed the time gained from the agreed construction period to be added to the operation period; which

was 8 months more operation period in that case and that situation gave a great deal of incentive to the company for fast-track project delivery. The terminal became operational in January 2000 and expansion was done in 2004 by constructing an additional facility.

In Pakistan, a study was conducted by Khan et. al (2008). They explained that development of cost efficient and robust infrastructure is a mandatory for economic progress of the country. Development at national level warrants accessibility of vast financial expenditures involving use of public funds and foreign investments at the cost of other equally important social sector works. The government often in meeting development targets has drained its meager financial resources. It is therefore necessary, to espouse an indirect approach. According to the research developing country like Pakistan need widespread infrastructure to meet the development challenges of future. BOT can be an option for financing the infrastructure and enhance the economical development of the country without direct consumption of government funds. For the private owners who have land resources but no investment to make the adequate development on these lands, BOT can be a valuable option.

Mubin and Ghaffar (2008) explored the applicability of BOT contracts in Pakistan. According to the study for the countries like Pakistan, BOT projects can play an important role in development of infrastructure. Also study revealed that the concept of BOT is not very famous in Pakistan and implementation of these projects might be difficult due to complicated contractual arrangements and involvement of different parties. Legal, economical and technical framework needs to be developed for implementation of BOT projects in Pakistan. Based on this a model have been proposed for successful execution of BOT projects and to offset the risks involved in BOT projects, risk management model have also been proposed.

The above mentioned studies done in Pakistan explored that government has taken a lot of initiatives to carry out implementation of BOT projects and have launched number of projects on BOT modality in last ten years, but the private sector did not show their interest in most of the projects. Based on this, current study had been selected to find out the factors which are affecting private sector participation in BOT projects in Pakistan.

2.10 SUMMARY

In this chapter, the concept of BOT projects has been explained followed by history of BOT projects. The feasibility of BOT projects in Pakistan has been explored. Advantages and disadvantages of BOT projects have been enlightened. Bidding procedure of BOT projects have been discussed according to Pakistan Engineering Council (PEC) bid documents. Pakistan policy on Public Private Partnership (PPP) has been explained and effort has been made to give an insight to some previous studies done on BOT modality.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

The purpose of this chapter is to discuss the methodology used for this study in order to achieve research objectives that were highlighted in Chapter 1. Based on research questions, survey method is chosen as a research strategy. The whole survey design process is extensively elaborated. The development of a questionnaire, collection of data through field survey and data analysis techniques has been explained.

3.2 RESEARCH METHODOLOGY

Research strategy defines the layout/design showing how the researchers are going to carry out their study to achieve and answer research questions (Saunders et al. 2003). It comprises of sampling and questionnaire development, data collection sources and considering research constraints. The research strategy is selected on the basis of research aim/objectives. Three different approaches are considered acceptable for the research in construction management. These are: quantitative methods, qualitative methods and combination of both quantitative and qualitative commonly known as 'mixed mode approaches'. Quantitative research methods use deductive approach and are associated with collection of data and statistical analysis. On the other hand, using inductive approach, qualitative methods draw the results from interviews or observations rather than using statistical procedures (Amjad 2004-2005). Association of Researchers for Construction Management (ARCOM) proceeding from period 1991-2001 reveals that qualitative and mixed mode approaches have increased slightly. Root et.al (1997) argued that the choice between quantitative or qualitative methods is highly dependent on the research aim/objectives. Based on the above, the aim of this research was to rank the factors affecting private sector participation in BOT construction projects in Pakistan by evaluating the input from client, consultant and contractor. Quantitative approach was used for this research and survey method is selected for data collection.

Figure 3.1 shows the research methodology adopted.

Figure 3.1: Research Process

To carry out the study, a questionnaire was developed based on the literature review which included the factors affecting private sector participation. Pilot study was taken in to consideration and carried out for purpose of the questionnaire rationalization, modification and improvement. Having done a feasibility survey, full scale survey was conducted from owners, consultants and contractors of construction industry to get their feedback on (54) factors grouped in (05) categories. Finally, reliability analysis was done on the collected data and relative importance index was calculated for each factor to find their ranking.

3.3 SURVEY DESIGN PROCESS

Survey is defined as "data collected from number of cases/projects through systematic measurement and then analyzed to yield the results (Marsh 1982). Trochim (1997) and Bryman (2004) argued that in applied social research, surveys are mostly carried out by

questionnaire and interview surveys. Bryman (2004) referred surveys as cross-sectional studies and explained that the data collected from the surveys are generally quantitative in nature and can be used to correlate two or more variables. Trochim (1997) suggests that several issues should be kept in mind when a survey is chosen as a research strategy: a) population, b) sampling and c) question issues. The survey design selected for this research is shown in the Figure 3.2 (adopted from Shuwei 2009).

Figure 3.2: Survey Design Process

3.3.1 Sampling

In this research, survey was conducted from clients, consultants and contractors. Based on valid individual and company registrations maintained by Pakistan Engineering Council (PEC) up to 2011, there are 30500 contractors registered with Pakistan Engineering Council. The total number of consultants architects and Town Planners are 3585. As for the clients, 540 public organizations are listed with Public Procurement Regulatory Authority (PPRA). The total population was 34625 and sample was calculated using the following equation (Arain & Pheng 2005; Kish 1995):

$$n = n' / (1 + n' / N) \quad \ldots\ldots (3.1)$$

Where:

n' = Sample size from infinite population = S^2 / V^2

n = Sample size from finite population

N = Total population

V = Standard error of sample population equal to 0.05 for the confidence interval 95%

S^2 = Standard error variance of population elements, $S^2 = P (1 – P)$; maximum at P = 0.5

$$n' = S^2 / V^2 = (0.5)^2 / (0.05)^2 = 100 \quad \text{.....(3.2)}$$

Sample Size Calculation:

N = 34625

$$n = 100 / (1 + 100 / 34625) = 100$$

Sample size obtained from the formula was 100, but due to limited awareness about BOT concept in the construction industry of Pakistan, convenient sampling was done and 60 valid responses were collected.

3.4 DEVELOPMENT OF QUESTIONNAIRE

Shuwei (2009) suggested that the survey questionnaire should be clear, precise and attractive for the respondents to fill in and return it. In this research, the questionnaire was developed in easy and understandable form and also keeping in view the context of Pakistani construction industry environment. The questionnaire was attached with a covering letter (please see appendices), describing the main purpose of the study and ensuring the respondents that the information provided by them will be kept confidential and used for academic purposes only.

After detailed and extensive literature review, factors that affect private sector participation in BOT projects were identified and then a questionnaire was developed. Questionnaire has an introduction of the respondents covering their name, qualification, experience in construction industry and group (Client, Consultant and Contractor), followed by five dimensions: Government, Financial, Legal, Social, Incentives and Guarantees. In first section, out of 23 factors, 16 factors were identified after extensive literature review, and rests were adopted from input of experts of pilot survey. In second section, 17 different factors were identified, out of which 11 were adopted from literature review, and rests were adopted from input of experts of pilot survey. Third section has 7 factors. In fourth section 3 social factors which are barriers to implementation of BOT projects were identified. In last

fifth section 4 factors were identified from literature review. The questions were applied on a five point Likert scale, allowing different statistical techniques for analysis.

3.4.1 Selection of measurement scale

Measurement scale is generally divided in to four different levels, namely nominal, ordinal, interval and ratio (Reaves 1992 and Trochim 1997). In this research, respondent's perception was to be measured, so it was suitable to select the ordinal scale (also called ranking scale) for its measurement.

3.4.2 Attitude Measurement

Oppenheim (1992) argued that people's perception about some specific issue goes from low, through neutral to a degree of high level. Attitude measurement is suitable for measuring individuals' perception or feelings, called an attitude scale by Bell (2005). De Vaus (2002) and Saunders et.al (2003) have named attitude scale as numeric rating scale and semantic differential rating scale. There are four commonly used methods of attitude scaling in social research: the Bogardus, Thurstone, Likert and Guttmann (cumulative) scales (Oppenheim 1992; Trochim 1997 and De Vaus 2002). Among them, Likert scale is widely used as it provides better reliability and less laborious (Oppenheim 1992 and De Vaus 2002). Therefore, Likert scale was selected to take opinion of key stake holders i.e. client, consultant and contractor in this research.

3.4.3 Ranges of Response Category

Several researchers have recommended 7-point scale (Alwin 1997 and De Vaus 2002); however, the fine distinctions can confuse and requires precision with greater accuracy (Shuwei 2009). Therefore, based on the above, five point scale was adopted for the survey questionnaire to get feedback on each factor and defined scale was 1 for Not Critical (or not sure or never used), 2-Fairly Critical, 3-Critical, 4-Very Critical and 5-Extremely Critical to show their attitude towards each indicator affecting private sector participation in BOT construction projects in Pakistan.

3.5 SELECTION OF GEOGRAPHICAL AREAS

Five main centers of Pakistan (Rawalpindi, Islamabad, Karachi, Lahore and AJK) were selected to conduct survey. Location map is shown in Figure 3.3. Karachi is provincial capital of Sindh province and main financial hub of Pakistan with a maximum population of 13.3 million. Lahore is also provincial capital and a financial hub of Punjab province with second highest population of 7.2 million. Rawalpindi and Islamabad are twin cities with combine population of 2.98 million and form third largest concentration of population in Pakistan, besides Islamabad is a capital city. These four areas together represent approximately 13.53 per cent of Pakistan's total population as of end 2010 (State Bank of Pakistan 2010). In general, districts with population density of more than 600 persons per square km are characterized by industrial development, improved education and health infrastructure and better sanitation facilities, e.g., Karachi, Lahore, Gujranwala, Faisalabad, Sialkot, Islamabad, Multan, Gujarat and Rawalpindi (Khan et.al 2008). Burki et al (2010) ranks Lahore, Karachi, Rawalpindi / Islamabad as most developed districts of Pakistan basing on industrial clusters and development ranking.

Basing upon the geography of these areas, population, industrial clusters and development ranking, it may be assumed that these districts have significant share in construction industry of Pakistan. Respondents were divided in to three main groups' clients, consultants and contractors. All respondents were approached personally by face/ telephone/e-mail. The fieldwork approach was used to distribute and collect the questionnaire followed by an interview. Keeping in view the geographical locations of these areas, their population size, industrial development contribution and extensive experience of the respondents to variety of the projects, the data collected was extensive and is categorized to be representative of the construction industry.

Figure 3.3: Survey Location Map

3.6 DATA ANALYSIS TECHNIQUES

Once the questionnaires were collected back, they were ready to be compiled and analyzed in the data analysis phase. The MS Excel has been used as the main data compilation and analysis tool in this research study. The data was entered into the excel sheet for all the questionnaires and compiled accordingly so as to make it ready for necessary analysis. Statistical Package for Social Sciences version 17 (SPSS v.17) has been used to check the reliability of collected data.

The Relative Importance Index (RII) is normally used in a number of studies to find the significance of any attribute under consideration. The RII is generally used method in to achieve ranking of feature in terms of priority.

Kumaraswamy and Chan (2010) in their study used the following formula to calculate RII:

$$RII = \sum w/A * N \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3.3)$$

Where "RII" is the relative importance index, "w" is the respondent's score, "A" is the maximum score obtainable and "N" is the number of responses. However, in the present study percentage scoring criteria has been used to find the significance of each factor affecting PSP in BOT projects in Pakistan, as it is generally used in our daily life and is easy to understand by everyone. It is found just by multiplying the RII with "100". The one with more percentage score as the more significant and lesser percentage score representing the lower significance. The percentage scoring is calculated using the below mentioned formula.

$$\text{Percentage Score} = \sum \frac{W}{A*N} \times 100 \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (3.4)$$

Where "W" is the score obtained from each respondent, "A" is the maximum score which is "5" in this case and "N" is the total number of respondents for this survey. Using the above mentioned formula, the significance and ranking of all the factors affecting private sector participation in BOT projects have been found and summarized.

After that Rank Agreement Factor (RAF) has been calculated as per the formula and methodology described by Okpala and Aniekwu (1988) to measure the agreement between groups of project key stakeholders on ranking of factors.

3.7 SUMMARY

This chapter includes the details of research methodology adopted. Types of data, types of scales and sampling of data have been discussed. The step wise processes done for the research have been explained. Design of questionnaire and data analysis techniques used for the research has been elaborated in detail.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 INTRODUCTION

This chapter provides the data analysis and results of the questionnaire based survey conducted in Pakistan on factors affecting private sector participation in BOT construction projects. The data collected with the help of questionnaire based survey was compiled and was analyzed using statistical techniques. The chapter describes the complete analysis stage as to how the collected data was analyzed and results presented for necessary conclusions and recommendations.

4.2 RESULTS

The filled questionnaires were collected back from the respondents and the data entered into the excel sheet for further analysis. The respondents included all the three main parties to the construction contracts that are client; contractor and the consultant. The respondents also possessed different experience. Sixty eight (68) percent of the respondents have more than 10 years of experience, and the rest had the experience of between 3 to 10 years. This data is represented in Fig 4.1.

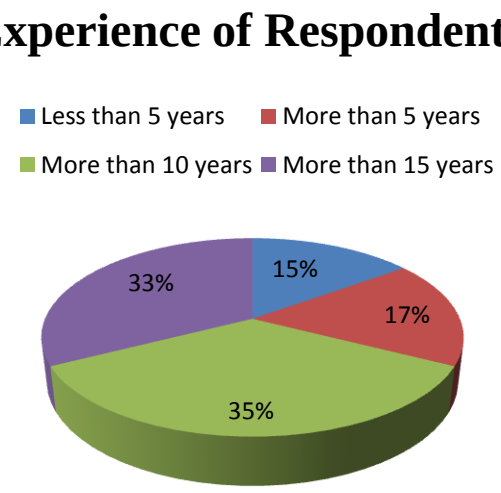

Figure 4.1: Experience of the Respondents

Category of respondents and their distribution is shown in Fig 4.2. It explains the category of respondents for the survey. 68 percent of the respondents were from private construction firms. More focused had been given to contractor firms keeping in mind the objective of the research to find out the factors affecting private sector participation in BOT construction project. 20 percent of the respondents were from the Client/Government Authorities and 12 percent of the respondents were from consulting firms.

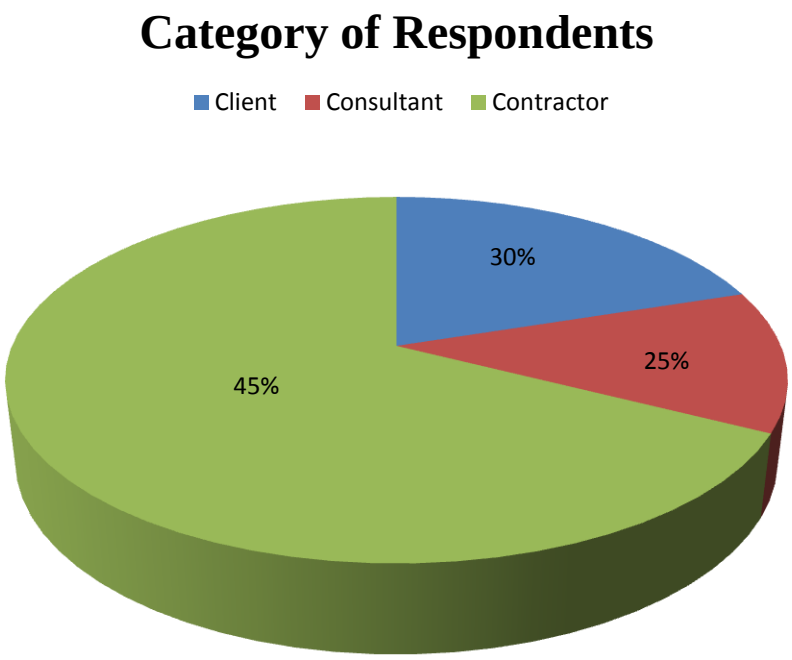

Figure 4.2: Category of Respondents

The distribution of factors incorporated in the research as shown in Figure 4.3. Government related factors included in the questionnaire were 43 percent, factors related to Finance were 31 percent, and factors related to Legal were 13 percent, Social factors were 6 percent and factors related to Incentives/Guarantees were 7 percent out of total 54 factors incorporated in the study.

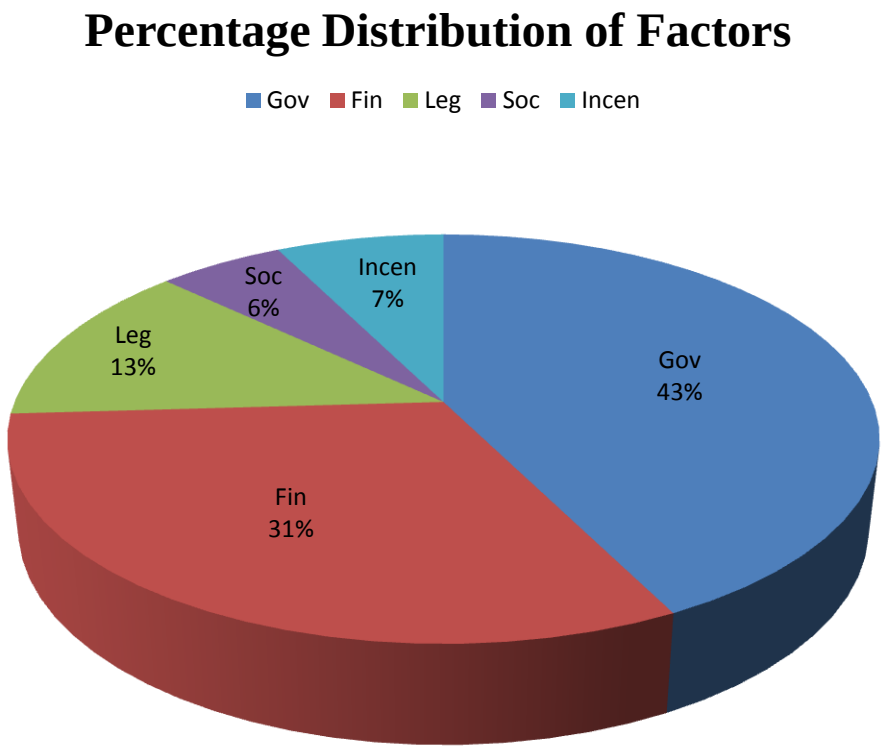

Figure 4.3: Distribution of Factors

Once the data was entered into excel sheet, the percentage scoring criteria was used to find out the significance of each of the factor affecting private sector participation in BOT projects in Pakistan was calculated on the basis of the responses provided in the questionnaires. The questionnaire has five dimensions i-e, Government factors, Financial factors, Legal factors, Social factors and Incentives/Guarantees factors (Appendix-I).

4.3 RELIABILITY ANALYSIS

Hinton et.al (2004) have also defined reliability as a questionnaire tested to study any topic at different times and across different populations, if produces same results, the questionnaire is a 'reliable one'. Cronbach's Alpha for continuous data (Likert-scale type items) is mostly used method (Hinton et.al 2004 and Leech et.al 2005). Hinton et.al (2004) explained that Cronbach's Alpha value range from 0 (un-reliable) to 1 (reliable) with 0.75 being considered

the most sensible value. They have also provided a guide line to assess the reliability of any data as shown in the Table 4.1.

Table 4.1: Guideline for Assessing Reliability Results

a.	0.9 & above	Excellent reliability	**b.**	0.7 to 0.9	High reliability
c.	0.5 to 0.7	Moderate reliability	**d.**	0.5 and below	Low reliability

Reliability test was applied to check the reliability of data. Cronbach's Alpha values for all the major stake holders as mention in Table 4.2 i.e. Client, Contractor, and Consultant were found and all the values achieved were above 0.3, which shows high reliability of data.

Table 4.2: Data Reliability Values

Reliability	**Cronbach's Alpha**
Overall reliability	0.858
Contractor	0.94
Consultant	0.817
Client	0.81

4.4 IMPORTANCE OF FACTORS

Respondents were required to provide responses on the importance of 54 factors affecting the implementation and execution of BOT projects in Pakistan on Likert scale 1-5, where 5 represented "extremely critical" and 1 represented "not critical". The different factors that were already highlighted from literature review and discussion with the industry experts were incorporated in the questionnaire to find their significance. Total 54 factors were incorporated in the questionnaire for which the respondents were required to give scoring on likert scale (1-5). The data collected from the filled questionnaires for this portion was entered and compiled in the excel sheet. Once the data was compiled, percentage score was calculated for each of the factor which identifies its significance.

$$\textbf{Percentage Score} = \sum \frac{\mathbf{W}}{\mathbf{A \times N}} \textbf{ x 100}\ldots\ldots\ldots\ldots\ldots \textbf{(4.1)}$$

Where "W" is the score obtained from each respondent, "A" is the maximum score which is "5" in this case and "N" is the total number of respondents.

Overall ranking of top 10 factors were: *Political instability* ranked first with RII of 0.96, *No insurance against political risk* at rank second with RII 0.94, *Political intervention at approval stage* ranked third RII 0.915, *Corruption* with RII 0.91 ranked fourth, *Banks in Pakistan do not have capacity nor the financial depth to provide long term financing* with RII 0.875 ranked fifth, *Inflation* with RII 0.86 ranked sixth, *High cost of financing* ranked seventh with RII 0.845, *Terrorism* ranked eight with RII 0.84, *Misallocation of Risk in Law* with RII 0.825 ranked ninth and *Lack of Guarantees provided by Government* ranked tenth with RII 0.82 as shown in Table 4.3.

Table 4.3: Ranking of Factors Affecting PSP in BOT Projects

Factor	RII	Percentage Score	Rank
Political Instability	0.96	96	1
No insurance for Political Risks	0.94	94	2
Political Intervention at Approval Stage	0.915	91.5	3
Corruption	0.91	91	4
Banks in Pakistan don't have capacity to provide long term financing	0.875	87.5	5
Inflation	0.86	86	6
High Cost of Financing	0.845	84.5	7
Terrorism	0.84	84	8
Misallocation of Risk	0.825	82.5	9
Lack of Guarantees	0.82	82	10

Percentage score of all government related factors are shown in Figure 4.4. “Political instability” with 96 percent score is most critical factor with RII (0.96). “Political intervention at approval stage” is the second important factor in the group with RII (0.915). “Improper evaluation and selection procedure” by government is the third most important factor with RII (0.815) which is affecting private sector participation in BOT projects.

Financial factors that are barriers to private sector participation in BOT projects are shown in Figure 4.5 with percentage score of all factors. “Banks in Pakistan don’t have capacity to provide long term financing” is the most important factor of the group with RII (0.875) and ranked first in the group. “Inflation” is the second ranked factor in group with RII (0.86). “High cost of financing” required for such type of projects coupled with shortage of financial institutions is the third most important financial barrier to private sector participation with RII (0.845).

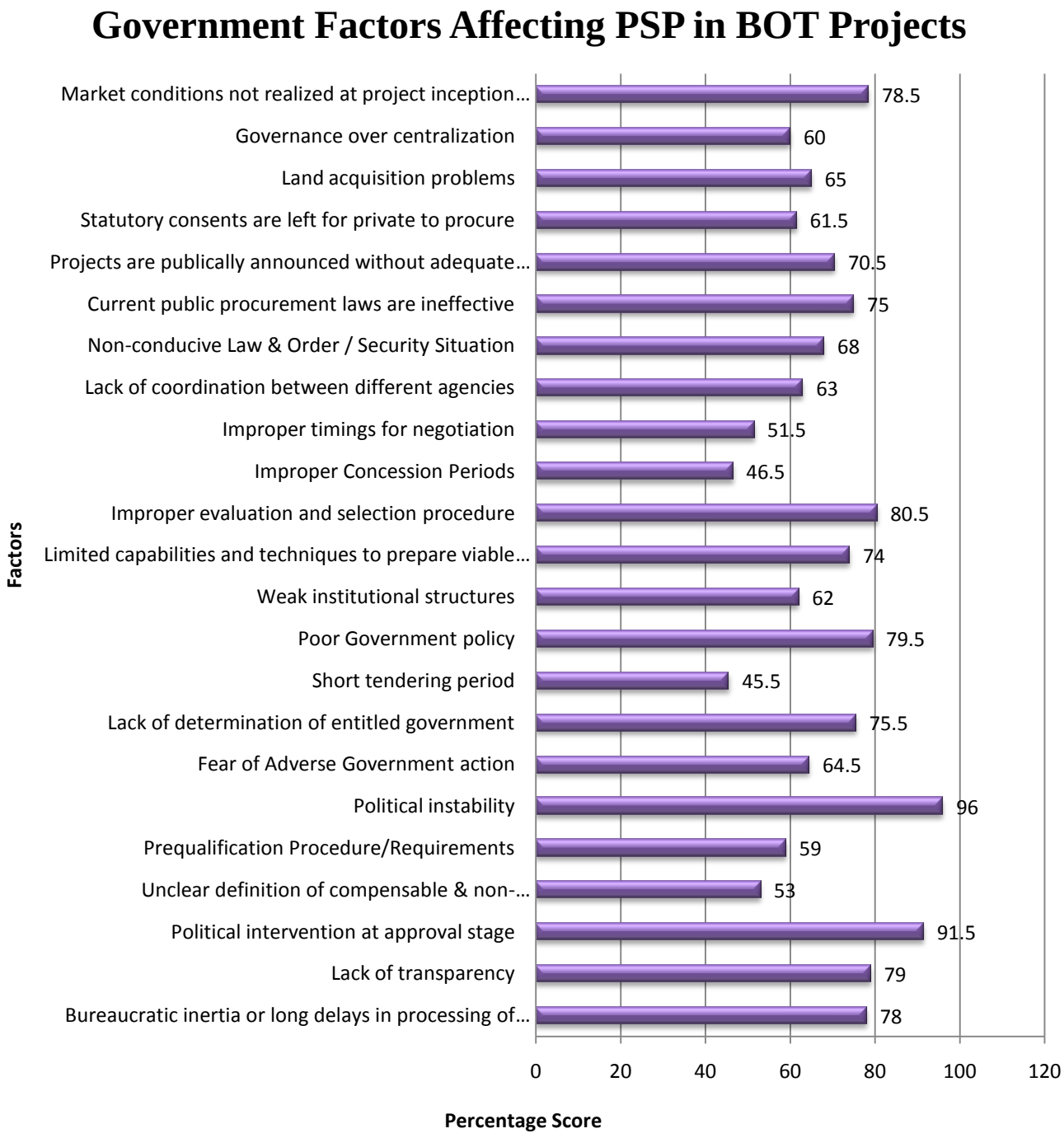

Figure 4.4: Percentage Score of Government Related Factors

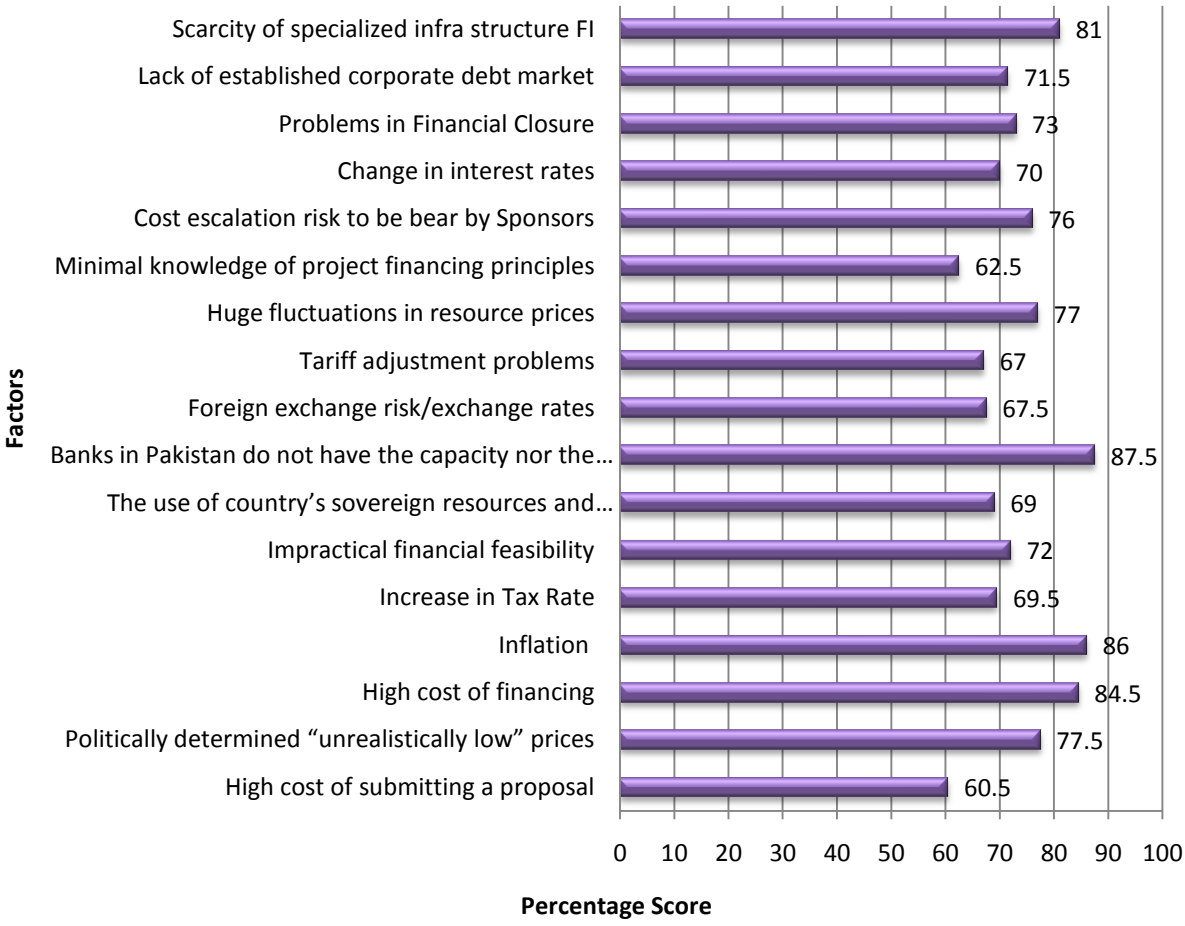

Figure 4.5: Percentage Score of Finance Related Factors

Legal factors which are barriers to PSP in BOT projects are shown in Figure 4.6. "Misallocation of risks in the law" is the most important factor with RII (0.825). "Lack of well establish legal framework" is the second most important factor in the group with RII (0.80). "Sudden changes in law" by the government is the third most important factor with RII (0.745).

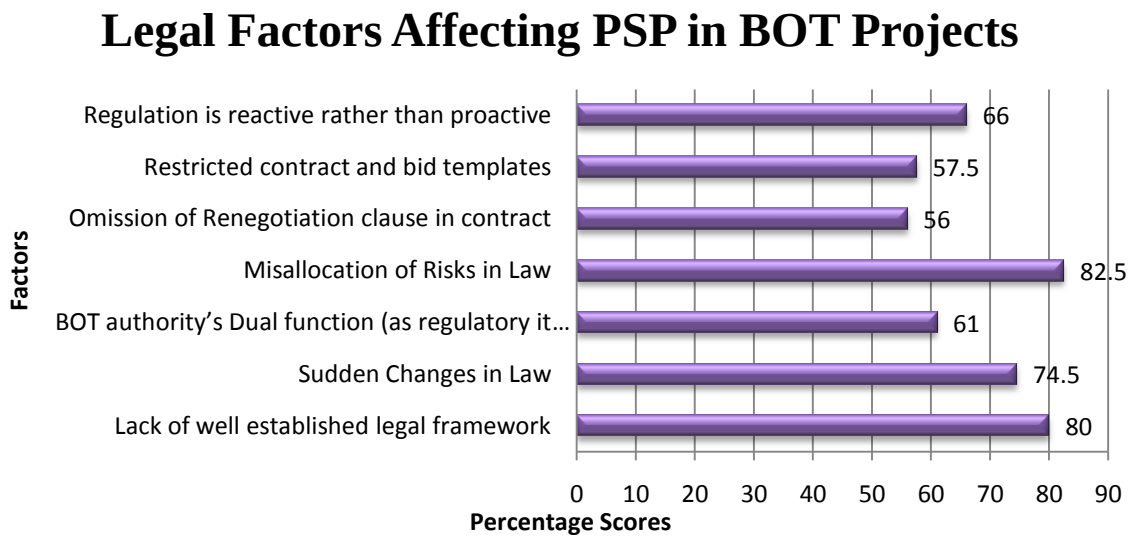

Figure 4.6: Percentage Score of Legal Factors

Social factors which are barriers to effective private sector participation are shown in Figure 4.7. "Corruption" with RII (0.91) is the most important factor in the group. "Terrorism" is the second with RII (0.84) and "Monopoly" is the third factor with RII of (0.765).

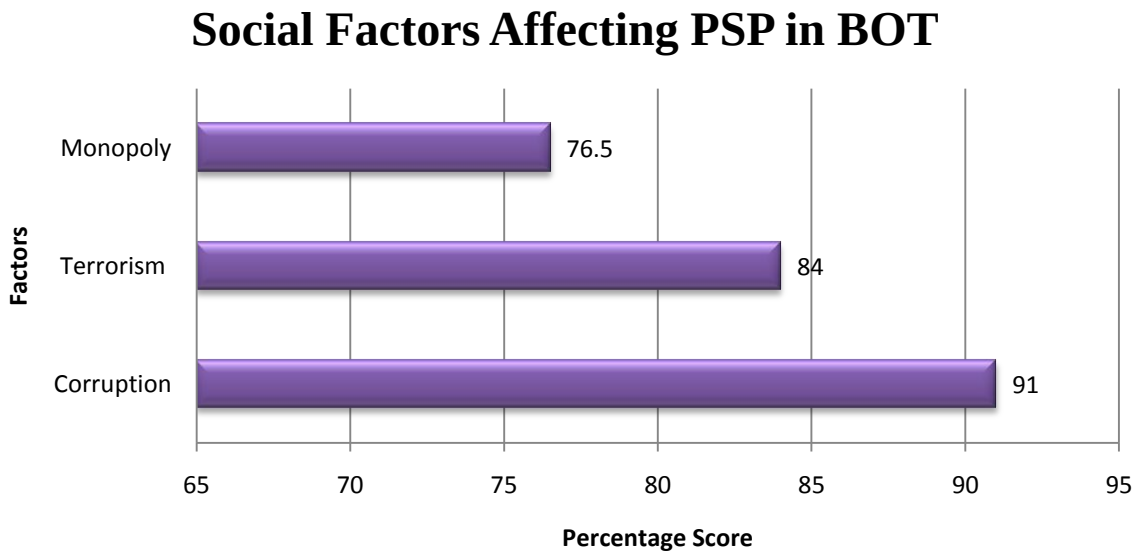

Figure 4.7: Percentage Score of Social Factors

Factors related to incentive/guarantees are shown in Figure 4.8, the most important factor being the "No insurance against political risks" with RII (0.94) and "Lack of guarantees by government" the second most important factor with RII (0.82). "Lack of incentives by government" with RII (0.71) is the third most important factor in the group.

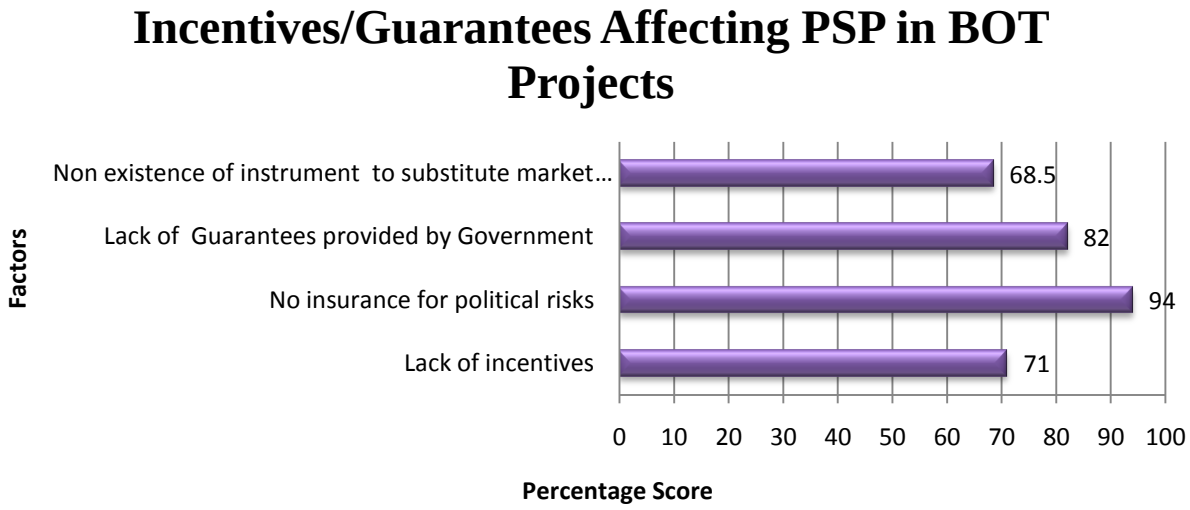

Figure 4.8: Percentage Score of Incentives/ Guarantees Related Factors

4.5 RANK AGREEMENT FACTORS (RAF) & PERCENTAGE AGREEMENT (PA)

Rank Agreement Factors were next computed using formula and methodology described by Okpala and Aniekwu (1988) to measure the agreement in ranking between groups of project key stake holders i.e. client, consultant, and contractor. The RAF can range from 0, indicating perfect agreement, to a higher values indicating increasing disagreement. The percentage disagreement and Percentage Agreement were also calculated through formulae. Formulae related to these calculations are as under:

- Absolute Difference (Di) = | Ri1-Ri2|……..……. (4.2)
    - Where Ri1 = Ranking of First Group; Ri2 = Ranking of Second Group

- Maximum Absolute Difference (Dmax) = | Rj1-Rj2|……...…. (4.3)
    - Where Rj1 = Ranking; Rj2 = Ranking with absolute maximum difference

- Rank Agreement Factor (RAF) = ∑D/N …….. (4.4)
    - Where D = Absolute difference; N = Number of Categories

- Percentage Disagreement (PD) = $\frac{\text{RAF}}{\text{RAFmax}}$ or $\frac{\text{Di/N}}{\text{Dmax/N}}$ ……..(4.5)

- Percentage Agreement (PA) = 100% - PD ……..... (4.6)

These above formulas were used to establish the percentage agreement between all the key stake holders i.e. client, consultant, and contractor regarding ranking of major factors affecting BOT projects outlined using RII and results obtained are shown in Table 4.4.

Table 4.4: Percentage Agreement Between Stakeholders

Stakeholder	Client	Consultant	Contractor
Client	100.00	83.33	83.33
Consultant	83.33	100.00	100.00
Contractor	83.33	100.00	100.00

After obtaining the Percentage Agreement (PA) between all the key stake holders opinion about ranking of factors, it was observed that there was maximum (100%) agreement between Contractor& Consultant. The reason behind this can be that most of contractor firms and consultant thinks that major barriers for implementation of BOT projects are associated with government, its policy and legal framework. The Percentage Agreement (PA) between Client & Contractor, Client & Consultant, was (83.3%) as shown in Figure 4.9. This implies that the results obtained from RII for ranking of all factors which are barriers to private sector participation from each key stake holder holds good percentages of mutual agreement between each other.

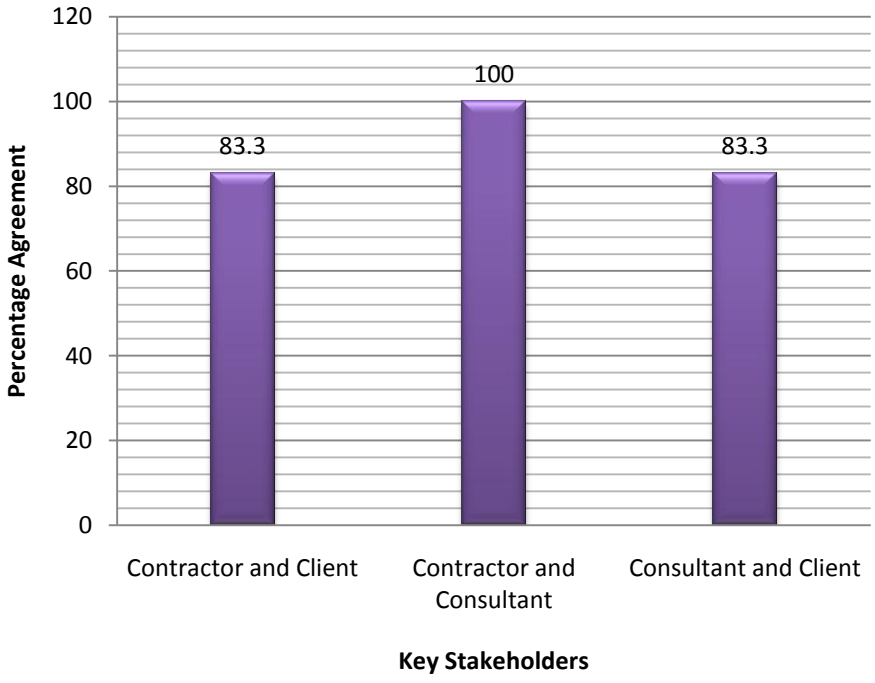

Figure 4.9: Percentage Agreement Between Stakeholders

4.6 DISCUSSION

Political instability was ranked first and interviews revealed that the major concern for private sector to be involved in such long term concession contracts is the political instability in Pakistan. Political stability plays a vital role in keeping society incorporated and in maintaining legality within the country. It is a requirement for the economic growth, social integration, and domination of regulation in a country. The steadiness of political structure has direct effects on the progress of nation and state's structure. Both require stable political systems for their growth and success. The progress of a country without organized system of politics is not possible and government hold becomes the conflict amongst various political parties.

The instability of government, inefficiency of political leadership, and a weak political culture generate the circumstances for a politically instable society. Political instability has become a dilemma particularly for the developing and underdeveloped countries. This issue is linked with a series of problems in various fields. The problem of political instability creates more serious issue for a society like Pakistan which has people of diverse cultural traits. In politically stable country all segments of the public get their due shares and are contented being a part of a multi cultural civilization which eventually leads towards the nation-building. In stable conditions general public is empowered and they put forth their efforts for the development of nation. In case of instability the situation becomes vice versa, people feel discontented and helpless, lose their belief on government institutions and they give priority to their own interest instead of state and this finally leads society to split.

Political stability is crucially important for the achievement of nation building, such as political development and national integration, which has direct influence on formation of political parties. Developing countries of Asia and Africa including Pakistan have been confused as how to sort out the problems of governance centralization. The political stability can be easily understandable by defining the roots of the instability in developing countries.

Policies and interest of the different government parties are different so that leads private sector to a very disastrous situation. Whenever government changes, policies and interest changes along with it. History of Pakistan's politics have revealed that political situation here is unpredictable and to cope with government change is very difficult for private parties

involved in PPP projects. BOT contracts are long term concession contracts and sudden political changes in Pakistan is a basic deterrent to private sector involvement in BOT construction projects.

Non existence of insurance against political risks was overall ranked second. Private sector is well aware of the political situation and abrupt changes in Pakistan and with such risks involved there exists no such type of insurance that can cover the damage to private parties or can guard their investment. Apart of government change there are also some other risks related to government and political situation. For example legal reforms, changes in law, tariff adjustment problems, increase in tax rates, changes in interest rates etc. For such a heavy investment projects these are the major concerns for the private sector.

Political intervention at approval stage was overall ranked third which is related to bidding and project award process for BOT projects. Political intervention at approval stage is another factor affecting private sector participation in BOT projects in Pakistan. Bidding of BOT concession projects is not an easy task and requires too much efforts and time to evaluate and then bid for a project, including financial analysis, feasibility studies, cash flow calculations over the years, agreements with some financing body etc. But after such time taking evaluations and analysis, political intervention at approval stage is discouraging private parties.

Interviews with management of some big construction firms revealed that they have lost the interest even to bid for such type of projects due to rejection of their bids in past because of political intervention.

Corruption was overall ranked fourth and is both internal and external to an organization. Interviews revealed that it is endemic in nature and often leads to wrong selection of contractor / consultant, increased cost, poor quality, time overrun and disputes. The major concern is the procedure to award the contract. Infringement of Public Procurement Rules (2004) for personal gains is very common in the award of the contract. According to World Economic Forum Report (Feb 2011) Pakistan was ranked one hundred and seventeen (117) out of one hundred and thirty nine (139) countries in corruption and described it the major impediment in doing business and increasing cost of production in Pakistan along with

inflation. According to Transparency International Pakistan (2010), the corruption in Pakistan has increased from Rs 195 billion in 2009 to Rs 223 billion in 2010 and ranked Pakistan as 42nd in corruption out of 180 countries in 2009, a five rank depreciation from previous year rank of 47th most corrupt country out of 180 surveyed. India was ranked 95th most corrupt country in 2009 and 96th in 2008.

With overall ranking fifth was the financial factor that "*Banks in Pakistan do not have financial depth to provide long term financing"*. BOT projects require long term financing as these have long concession periods ranging from 10-30 years. The capital supply and cash flows are internal to an organization, interest rates are external factors mostly governed by policies of the State Bank of Pakistan. The policy / discount rate of State Bank of Pakistan is shown in Table 4.5 and reveals that it was as high as 15 percent on Nov 08 and was as low as 9.5 percent on 22 Jul 06, which is presently at 14 percent.

Table 4.5: State Bank of Pakistan Policy Rate (2010)

Period / Date	**SBP Policy / Discount Rate (Percent)**	**Basis Points**
22 Jul 06	9.5	-
1 Aug 07	10	+50
2 Feb 08	10.5	+50
23 May 08	12	+150
30 Jul 08	13	+100
13 Nov 08	15	+200
21 Apr 09	14	-100
17 Aug 09	13	-100
25 Nov 09	12.5	-50
29 Jul 10	13	+50
Sep 10	13.5	+50
Nov 10	14	+50
29 Jan 11	14	-

There is an increase of 150 basis points in 2010 mainly due to high inflation and government borrowings. As per State Bank of Pakistan (2011), Karachi Interbank Offer Rate (KIBOR) which is a bench mark for corporate lending, has been steadily following the rise in the SBP policy / discount rate. Accordingly, the six month KIBOR had increased by 146 basis points to 13.9 percent till 28 Jan 11, ever since the monetary policy was announced on 29 Jul 10. Most of the corporate loan agreements have floating rates; it means automatic adjustment of interest rate with KIBOR, which may affect project cash flows and capital supply. Changes in cash flows and capital supply may affect the project negatively in many ways including but not limited to delays, cost overruns, poor quality and at times abandonment of the project. Contractors relying on corporate lending to bridge financial gaps become more vulnerable. Interviews revealed that contractors are concerned about the fate of such long term PPP projects because of the scarcity of financing institutions in Pakistan. The financial factors assume leading position in the listing of factors for the reason that if not addressed timely, they have the potential to choke the project completely. A financially healthy project is likely to meet its intended objectives more aggressively.

The risk factor which is external in nature is *Inflation* which was ranked sixth, and interviews revealed that inflation and price hike is the major concern followed by rupee exchange rate and taxes. The principle measure of price variation at retail level is Consumer Price Index (CPI) and generally represents inflation rate in the country. Figure 4.10 shows the month wise year-on-year CPI inflation for the years of 2008, 09 and 10.

It may be observed that it is mostly in double digits except for the month of October 09 and is considered on the higher side. According to State Bank of Pakistan (2011), the projected average CPI inflation for current financial year falls in the range of 15-16 percent (revised) and in all probability 2012 is again likely to witness double digit CPI inflation.

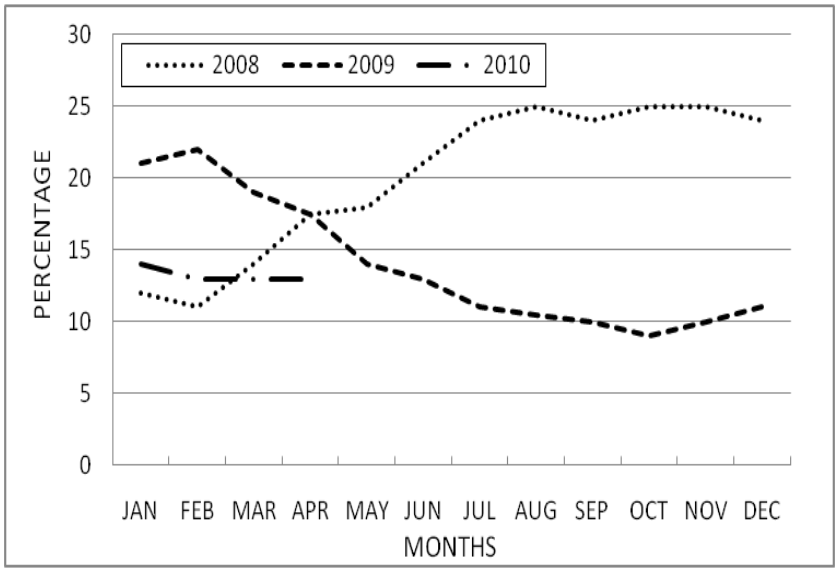

Figure 4.10: Month Wise Year-on-Year CPI Inflation (State Bank of Pakistan 2010)

This rising trend may only be arrested by reduction in both government borrowings and fiscal deficit. Inflation is underlying cause of upward movement of State Bank of Pakistan policy rate and prices of major inputs to construction industry i.e. cement, steel and oil. This amplifies that the fundamental reason of the risks of financial factors is mainly inflation.

Table 4.6 shows prices of major inputs to construction industry from Jan 2009 to Jul 2010. A closer look to price fluctuation reveals that in a span of 12 months from Apr 09 to Apr 10, the price of cement is reduced by 23.07 percent mainly due to locally available raw material and less demand, the price of steel increased by 24.03 percent, the price of petrol increased by 30.17 percent and the price of diesel increased by 34.36 percent.

The cement production stands at 22.8 million tons in 2009-10 against the installed capacity of 44.00 million tons indicating 51.8% capacity utilization (State Bank of Pakistan 2010). According to All Pakistan Cement Manufacturers Association (APCMA), the cement sales dropped by 10.48 percent in first eight months of current financial year (Jul 10 – Feb 11) as compared to sales in previous year during the same period. It is mainly due to reason that the purchasing power of the consumer is eroded by combined effect of low economic activity and inflationary pressures.

Table 4.6: Prices of Construction Input Items (Federal Bureau of Statistics 2010)

Period	Cement Rs per Bag	Steel Rs per Ton	Petrol Rs per Litre	Diesel Rs per Litre
Jan 09	380.00	53000.00	57.76	57.24
Apr 09	357.50	52000.00	57.76	57.24
Jul 09	350.00	55000.00	60.57	61.58
Oct 09	270.00	50000.00	61.74	64.90
Jan 10	255.00	57500.00	71.32	71.97
Apr 10	275.00	64500.00	75.19	76.91
Jul 10	315.00	62000.00	67.86	73.15

The devaluation of rupee as presented in Table 4.7, against major currencies of the world is another area of concern as it increases import bill of construction machinery, chemicals, Oil and raw materials for steel, there by escalating the cost of construction.

Table 4.7: Exchange Rate (State Bank of Pakistan 2010)

Financial Year	Average Open Market Exchange Rate (Pak Rs)			
	US Dollar	**Euro**	**Indian Rupee**	**Bangladesh Taka**
2001-02	61.42	54.99	1.27	1.08
2002-03	58.49	61.30	1.22	1.01
2003-04	57.57	68.62	1.26	0.98
2004-05	59.35	75.53	1.32	0.97
2005-06	59.85	72.86	1.33	0.91
2006-07	60.63	79.17	1.37	0.87
2007-08	62.54	92.17	1.54	0.90
2008-09	78.49	107.43	1.64	1.14
2009-10	83.56	119.44	1.78	1.20
8 Mar 2011	85.36	119.5	1.95	1.26

In a span of seven years (2003-10) rupee was devalued by 45.14 percent (83.56 – 57.57 = Rs. 25.99) against US dollar, and by 74.06 percent (119.44 – 68.62 = Rs. 50.82) against Euro, which is unprecedented if compared to other regional currencies. Pakistani currency even depreciated against regional currencies like Indian Rupee and Bangladesh Taka in 2001-10. It has been devalued against Indian Rupee by 40.16 percent (1.78 – 1.27 = Rs. 00.51) and against Bangladesh Taka by 11.11 percent (1.20 – 1.08 = Rs. 00.12) since 2001.As observed by Ministry of Finance (2010), the problem of inflation was compounded by devaluation of rupee which also posed a serious threat to the economy and society at large during 2008-09. The World Bank (2011) has downgraded Pakistan's ranking from 75th position in 2010 to 83rd position in 2011 in ease of doing business in its annual report of "Doing Business 2011".

High cost of financing got the 7th rank , as such projects needs heavy investment and there is scarcity of specialized infrastructure financing institutions in Pakistan, so most of the construction industry players do not want to risk their own investment and they look for some institution or investment firms. BOT projects are public infrastructure projects which employ a particular form of structured financing. The involvement of the private sector in the development of infrastructure in Pakistan by way of BOT projects is proving to be a challenging exercise. The lead time of a project is very long, and associated up-front costs are significant. Such projects are complex by virtue of the number of parties involved and the corresponding number of contracts, which must all interlock. Furthermore, each party is dependent upon the performance of not only its counterpart, but also the performance of all parties to the project. BOT projects are generally structured on a project basis requiring all parties to share the risks of the project.

Terrorism has been overall ranked 8th and interviews revealed that law and order situation especially in the background of war on terror is foremost concern of all groups. There is a general perception among the respondents that the current law and order situation is a reaction to war on terror which has both human and monetary dimensions and is eroding whatever limited fiscal space is available to the country. Almost 82 percent of the contractors and consultants interviewed, were reluctant to work in federal administered tribal areas (FATA) and Baluchistan, which comprises of more than half of Pakistan's geographical area,

mainly due to risks involve to human lives and business. The remaining 18 percent demonstrated their conditional willingness to operate in these remote areas if dedicated security is provided and a risk premium is added in contract by the client. The survey was mainly conducted in the urban centers of the country; but still, this factor was given importance because of its impact on business environment in Pakistan. This may be judged from the fact that according to State Bank of Pakistan (2010) a total of 8,141 terror related incidents have occurred in Pakistan in a span of eight years (2002-10), which resulted in 8,875 deaths and as much as 20,675 injuries to the people. Pakistan has faced huge human losses and an intensification of fatalities in 2008-09. The effects of the war on terror and arising terror activities in reaction have been colossal especially on economic front. As per State Bank of Pakistan (2010) the country has suffered a cumulative (direct and indirect) loss of US$ 43.2 billion (Table 4.8) in the areas of investment, GDP growth, exports, physical infrastructure, budgetary resources, public sector development spending, exchange rates, inflation, rehabilitation of internally displaced people, security and capital flight. Growth and investment have slowed down due to negative effects of the war on terror.

Table 4.8: Direct/Indirect Loss to Economy (State Bank of Pakistan 2010)

Financial Year	**Indirect Cost (Billion Rs)**	**Direct Cost (Billion Rs)**	**Total (Billion Rs)**	**Total (Billion US $)**
2004-05	192	67	259	4.4
2005-06	223	78	301	5.0
2006-07	278	83	361	6.0
2007-08	376	109	485	7.7
2008-09	564	114	678	8.6
2009-10	707	262	969	11.5
Total	2340	713	3053	43.2

Table 4.9 shows changes in Foreign Direct Investment (FDI), Large Scale Manufacturing (LSM), exports and real GDP growth for last nine financial years. The real GDP in 2008-09 was 1.2 percent with large scale manufacturing shrinking to -8.2 percent. It may be observed that average GDP growth was 6.6 percent in 2004-08 and large scale manufacturing grew by average 11.9 percent in that period. The change in FY 2008-09 to five year's average is minus 5.4 percent for GDP, minus 20.1 percent for large scale manufacturing and minus 1.1 percent for exports and the same is supported by surge in human fatalities in 2008-09. The exact impact of this factor on construction industry is difficult to calculate in the absence of reliable data, however, the construction industry is being affected in similar way as any other industry of Pakistan.

Table 4.9: Change in Major Economic Indicators (State Bank of Pakistan 2010)

Year	**FDI (Billion US $)**	**LSM (Percent)**	**Exports (Billion US $)**	**GDP (Percent)**
2001	0.3	10.2	9.2	2.0
2002	0.5	3.8	9.14	3.1
2003	0.8	0.4	11.1	4.7
2004	0.9	18.5	12.3	7.5
2005	1.5	18.8	14.3	9.0
2006	3.5	9.2	16.4	5.8
2007	5.1	8.8	17.0	6.8
2008	5.2	4.2	19.1	4.1
2009	3.7	-8.2	14.8	1.2
5 Years Average (2004-08)	3.3	11.9	15.8	6.6
Change (5 Years average to 2008/09)	0.5	-20	-1.1	-5.4

FDI = Foreign Direct Investment

LSM = Large Scale Manufacturing

GDP = Gross Domestic Product

The factor ranked 9th was *Misallocation of Risk in law* is another very important aspect of PPP projects. A particular risk should be borne by the party most suited to deal with it, in terms of control or influence and costs, but it has never been easy to obtain an optimal allocation of risks. Risk management is a critical success factor of BOT projects.

Lack of Guarantees provided by the government was the 10th factor in ranking affecting the private sector participation in BOT projects, Due to lack of guarantees offered by government; private sector is unable to built trust which is mandatory for such long term concession projects.

4.6.1 Critical Success Factors for BOT Projects

Following are some critical success factors described by most of the authors and researchers that are prerequisite for success of BOT projects.

- Political stability and support (Qiao et al 2001).
- Stable macro-economic environment including low inflation, stable exchange and interest rates (Qiao et al 2001) and (Tiong 1996).
- Available financial market; Qiao et al (2001).
- Transparency and competition in procurement (Jefferies et al 2002).
- Favorable legal framework (Tiong 1996).
- Appropriate risk allocation and risk sharing in doing business (Qiao et al 2001) and (Grant 1996).
- Projects those are socially and environmentally feasible. (Qiao et.al 2001).
- Projects that are technical feasible (Qiao et.al 2001) and (Keong et.al 1997).
- Good governance (Qiao et.al 2001) and (Keong et.al 1997).
- Government involvement by providing supports (Stonehouse et.al 1996).
- Well organized local partners/public agencies (Salzmann and Mohamed 1999).
- Shared authority between public and private sectors (Kanter 1999) and (Stonehouse et. al 1996).
- Commitment/responsibility of public-private sectors (Hardcastle et.al 2006).
- Strong private consortium (Jefferies et.al 2002) and (Hardcastle et.al 2006).

The above mentioned success factors include Political stability and support, which is very important for the success of BOT projects because according to results of current study *Political instability* is the major concern for private sector to participate effectively in BOT projects in Pakistan. Transparency and competition in procurement is also very critical factor for the initiation of BOT projects because *Political intervention at approval stage* and *Corruption* was ranked 3rd and 4th respectively as barriers to effective execution of BOT concept. Stable macroeconomic environment and available financial market are also listed above as critical success factors. Current research revealed that non availability of financial market i-e *Banks in Pakistan don't have capacity to provide long term financing* ranked 5th and *Inflation* ranked 6th are the major financial barriers for private sector to participate efficiently in BOT projects. Misallocation of risk in law is also a barrier to private participation as highlighted in the study. Proper allocation of risks as mentioned above as a success factor is very important aspect for the implementation of BOT concept.

4.7 SUMMARY

In this chapter by using different statistical techniques, data has been analyzed and results of the research have been explained in detail. Ranking of the factors affecting private sector participation in BOT projects have been done based on their percentage score and detailed discussion have been done on the results. Some critical success factors have been highlighted from different studies to get an insight to the factors that can promote BOT projects in Pakistan. Comparison has been done with the hurdles highlighted in the study with the critical factors required for successful implementation of BOT projects.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

In this chapter the conclusion on the basis of this research study are discussed. The initial research objectives are reviewed and on this basis of this study, conclusions are drawn for these objectives and recommendations to ensure success of BOT projects in Pakistan are given.

5.2 REVIEW OF OBJECTIVES

- Understanding the concept of BOT projects and exploring its feasibility in Pakistan.
- To identify factors affecting private sector participation in BOT projects.
- To propose guidelines to these problems for successful implementation of BOT projects.

The objectives are discussed one by one as to how they are achieved. The first objective was to understand the concept of BOT projects and exploring the feasibility in Pakistan was achieved through detailed literature review.

The second objective was to identify the factors affecting private sector participation in BOT projects which were extracted from a number of research studies already carried out on BOT model of project delivery. This list was then compiled and discussions were made with the industry experts to identify only those factors specifically related to the construction projects in Pakistan. The final list was then incorporated in the questionnaire for the purpose of survey.

As the final list of the factors affecting private sector participation in BOT projects in Pakistan was already prepared that was incorporated in the questionnaire to find relative significance of each. The respondents were required to give importance to each on the Likert scale with “1” representing lowest criticality and “5” for extremely critical. The data for the entire questionnaire once analyzed, the relative significance of all the risk was found through

scoring method. The one with maximum score as most significant and the one with lowest score as least significant and based on significance ranking of the factors have been done.

The third objective was to propose guidelines to these problems by identifying the critical success factors of BOT projects in developed countries and based on that developing the best practices for promoting private sectors.

The development and implementation of an effective BOT process in Pakistan is mandatory to meet growing needs of infrastructure. There might be a resistance to change as maintaining previous traditional practices are desirable due to their adoptability and acceptability to the culture and environment of the country. The development of the system is less problematic as compared to its implementation due to different barriers. Keeping in mind that how different countries like China, Philippine, Malaysia, and Hong Kong have developed their infrastructure using BOT methodology, policies can be developed and it needs a strong commitment from the government. The change might not come over night as existing culture and practices are well entrenched and are being practiced over a long period of time. Educating all stakeholders for implementing such project delivery system is essential. It is desirable to be flexible and realistic in approach by simply not expecting very high standards in the initial phases of its implementation and progressively increasing the benchmark.

5.3 CONCLUSIONS

Survey reveals different type of deterrents to successful implementation of BOT projects in Pakistan and providing an insight to government agencies and private parties. It also provides an opportunity to local and foreign investors, construction companies, and other key project member to keep a close eye on future projects in the light of barriers to successful implementation of BOT projects in Pakistan highlighted in the study.

Following are the major conclusions drawn from the study:

- Political instability is the major concern for private sector to get involved in such type of long term contractual arrangements.

- Political intervention at approval stage and other political risks involved during the life of project are the barriers to successful implementation of BOT concept in Pakistan.
- The suicide attacks and war against terrorism in recent years are the major constraints encountered in the decision making of the multinational organization's management to finance or launch its projects in Pakistan.
- Scarcity of specialized infrastructure financing institutions in Pakistan is a basic financial deterrent for local construction firms to involve in such kind of projects.
- The continuous inflation/ devaluation of Pakistani rupee, lack of alternate energy sources, high banking interest rates and high oil prices in Pakistan are the major economical constraints, which provokes thoughts in the private sector policies to participate effectively in the BOT projects.
- The pre-qualification and selection mechanism for BOT projects in Pakistan is not acceptable to most of the local construction firms.
- Study reveals that most of the local construction firms and their management have no idea about the concept of BOT projects.
- The guarantees, bonds, insurance and surety consideration are not in compliance with running international criteria to attract more foreign financers.
- Private sector is also concerned about the procedures and processes followed by the government for concession agreements and problems they have to face during official procedures.

5.4 GUIDELINES FOR SUCCESSFUL IMPLEMENTATION OF BOT PROJECTS

The recommendations for developing best practices and to ensure private sector participation in BOT projects in Pakistan are given below:

- The environment for PSP must be improved. Government must determine sector priorities and identify a channel of BOT projects.
- The procurement, implementation and operational processes must be improved.

- To favor PSP in the country, political leadership and commitment is required along with political stability.
- Transparency and competition in procurement are mandatory to build trust of private sector to participate efficiently in offered projects.
- Local financial market should be made capable of providing long term financing.
- Institutions may need to be restructured, with the objectives of controlling the PSP process, avoiding tendencies for corruption or empire building, and creating a regulatory body.
- Allocation of risks between government and the concession company should be done properly.
- Incentives and Guarantees offered by Government should be in accordance with the international standards to attract private investment.
- Strict monitoring before and during the implementation of projects/contracts should be ensured. Most of projects ran out of funds as early as in the construction phase, this can been avoided by properly monitoring the project. Monitoring, which is the responsibility of the implementing agency, allows problems to be recognized and addressed more readily.
- BOT projects should be properly marketed and packaged so that the local construction management would consider and accept them.
- Sharing of information on BOT projects through websites and other medium should be promoted. Government agencies should also encourage and support officially-sponsored research in PSP through information sharing, for example. As things stood, policy researchers and concerned citizens had limited access to information on BOT contracts when, in fact, discussions on contracts should be conducted and there should be greater transparency, public participation and flexibility in the contracting process.
- For BOT projects to gain public acceptance, government have to do well to clarify that how BOT projects would be governed fairly, efficiently, and for the common good, with bias for the poor and vulnerable.

- Government should convince private investors of the intrinsic and long-term benefits of private sector investment in public infrastructure by providing incentives.

5.5 RECOMMENDATIONS

- Research and case studies of successful BOT projects should be brought to the notice of Employers launching BOT projects to create awareness.
- PPP / BOT projects may be investigated from risk management perspective.
- The workability and applicability of BOT in Pakistan can be checked by mathematical models; however, practical implementation of such model in Pakistan may best be checked by trial and error method due to the involvement of various scheduled and unscheduled uncertainties in the system and of the environment of the system itself.
- Studies on preparing financially viable BOT projects can be carried out keeping in mind the inflation and economic situation in Pakistan.

REFERENCES

Algarni, M.A., Arditi, D., and Polat, G., (2007). "Build-Operate-Transfer in Infrastructure Projects in the United States". *Journal of Construction Engineering and Management*, 133(10), 728-735.

Al-Mubarak, S (2003). Built Operate and Transfer Project Delivery System in Saudi Arabia. A Dissertation submitted for the Degree of Master of Science in Construction Engineering and Management at King Fahd University of Petroleum and Minerals.

Alwin, D. F. (1997). "Feeling Thermometers versus 7-Point scales, which are better?" *Sociological Methods and Research,* 25(3), 318-340.

Amjad, A. A. (2004-2005). "Cost Benefit Analysis for construction projects." *IEP-SAC Journal*, 85-90.

Andreas, W. (2004). "Valuing guarantees in a BOT infrastructure project". *Journal of Engineering Construction and Architectural Management,* 11(6), 395-403.

Ankrah, N. A., and Proverbs, D (1991). "A framework for measuring construction project performance overcoming key challenges of performance measurement". *Proceedings of 21st Annual ARCOM Conference, SOAS, University of London,* 959-969.

Arain, F. M., Pheng, L. S., and Assaf, S. A., (2006), "Contractors' Views of the Potential Causes of Inconsistencies between Design and Construction in Saudi Arabia" *J. Perform. Const. Facil*. 1(74).

Askar, M. M., and Gab-Allah, A. A. (2002). "Problems facing parties involved in build, operate, and transport projects in Egypt". *Journal of Management in Engineering*, 18(4), 173–178.

Augenblick, M., and Custer, B.S. (1990). *The build operate and transfer approach to infrastructure projects in developing countries*, Policy research and external affairs working papers, Urban Development Department, The World Bank.

Bell, J. (2005). *"Doing your research project: a guide for first time researchers in education, health and social science."* Maidenhead Open University Press.

Bryman, A. (2004). "*Social research methods."* Oxford, Oxford University Press, London, UK.

Burki, A.A., (2010). "Industrial policy, its spatial aspects and cluster development in Pakistan" *Analysis report to the industrial policy 2010,* Vol. I, Report: Lahore University of Management Sciences, Lahore, Pakistan.

Chaudhry, M (2002); Weekly Pakistan and Gulf Economist, 11 (1), 35-37.

Dahiru, A., Bala, K., Bastani, A.S., (2010). "Assessing the critical success factors of BOT projects in Nigeria" *Second International Conference on Construction in Developing Countries ICCIDC-II,"Advancing and Integrating Construction Education, Research and Practice* August 3-5 2010 Cairo, Egypt.

De Vaus, D. (2002). "*Surveys in Social Research."* Routledge, London, UK.

Downer, J.W., and Porter, J., (1992). Tate's Cairn Tunnel, Hong Kong: South East Asia's longest road tunnel. In: Proceedings of the 16th Australian Road Research Board Conference, Part 7,153–165.

Federal Bureau of Statistics (FBS). (2010). *Pakistan Statistical Year Book-2010,* Statistics Division, Federal Bureau of Statistics, Government of Pakistan.

Gaur, A. S., and Gaur, S. S. (2009). Statistical methods for practice research: A guide to data analysis using SPSS, Sage Publications, New Delhi, India.

Grant, T. (1996). Keys to successful public private partnership. *Canadian Business Review*. Ottawa 23(3), pp 27-30.

Hinton, P. R., Brownlow, C., McMurray, I., and Cozens, B. (2004). SPSS Explained, Routledge, New York, USA.

Huang, Y.L., (1995). "Projects and Policy Analysis of build-operate-transfer Infrastructure Development", thesis presented to University of California at Berkeley, in partial fulfillment of the requirements for Degree of Philosophy.

Irem, D.O., and Talat M. B. (2000). "A decision support framework for project sponsors in the planning stage of build-operate-transfer (BOT) projects". *Journal of Construction Management and Economics,* 18, 343-353.

Jefferies, M., Gameson, R. and Rowlinson, S. (2002). Critical success factors for BOOT procurement system. Reflection from stadium Australia Case study. *Journal of Engineering Construction and Architectural Management,* 9(4), pp-352-361.

John, E.S., and Isr, W. (2003). "Alternate financing strategies for build operate transfer projects". *Journal of Construction Engineering and Management,* 129(2), 205-213.

Kanter, R.M (1999). From spare change to real change. *Harvard Business Review*. Boston 77(2), pp 122-132.

Keong, C.H, Tiong, R.L.K and Alum, J. (1997). Conditions for privately initiated infrastructure projects. *Proceedings of institute of Civil Engineers, Civil Engineering*, 120, pp 59-65.

Khan, H.A., Jamil.M., Sattar.M., (2008). "The Trend of Build Operate and Transfer (BOT) Projects in Pakistan", *First International Conference on Construction in Developing Countries (ICCIDC–I) Advancing and Integrating Construction Education, Research & Practice*, August 4-5, 2008, Karachi, Pakistan, 88-97.

Kish, L. (1995). *"Survey Sampling."* (65th edition), John Wiley and Sons Inc., New York.

Kreydieh, A (1996). Risk Management in BOT Project Financing. A Dissertation for the Degree of Master in Civil and Environmental Engineering, Massachusetts Institute of Technology, USA.

Kumaraswamy, M.M., and Zhang, Q.X., (2001)."Governmental role in BOT-led infrastructure development", *International Journal of Project Management*, 19(4), 195-205.

Lam, P.T.I. (1999). "A sectoral review of risks associated with major infrastructure projects" *International Journal of Project Management*, 17 (2), 77-87.

Leech, N. L., Barrett, K. C., and Morgan, G. A. (2005). "SPSS for Intermediate Statistics': *Use and Interpretation* " Lawrence Erlbaum Associates Publishers.

Levy, S.M. (1996)."*Build, Operate and Transfer: Paving the Way for Tomorrow's Infrastructure"*, Wiley, Toronto.

Marsh, C. (1982). "*The Survey Method, The contribution of surveys to sociological Explanation*." Allen and Unwin.

Maskin, E. and Jean, T. (1999); *Review of Economic Studies*, 66(1), 83-114.

Ministry of Finance. (2010). *"Fiscal policy statement 2009-10."* Debt Policy Coordination Office, Government of Pakistan.

Mubin, S., and Ghaffar, A. (2008). "BOT contracts applicability in Pakistan for infrastructure development" *Pakistan Journal of Engineering and Applied Sciences*, 3, 33-46.

Ogunlana, S.O., (1997). "*Build Operate Transfer Procurement Traps: Examples from Transportation Projects in Thailand"* International Council for Building Research, Studies and Documentation 203, 585–594.

Okpala, D.C., and Aniekwu, A.N. (1988). "Causes of High Costs of Construction in Nigeria." *J. Const. Eng. Manage*., 114(2).

Oppenheim, A. N. (1992). "*Questionnaire design, interviewing and attitude measurement*." New Edition, Printer Publishers, London and New York.

Pakistan Engineering Council (2010). Standard Form of Bidding Documents for Procurement of Works on BOT Basis, First Edition.

Pakistan Engineering Council (PEC). (2011). <www.pec.org.pk> Accessed on 28th December, 2011.

Pakistan Policy on Public Private Partnership (2009). Government of Pakistan.

Pakistan Procurement Regulatory Authority (PPRA). (2012). <www.ppra.gov.pk> Accessed on 4th January, 2012.

Qiao, L., Wang,S.Q, Tiong, R.L.K and Chan, T.S., (2001). Framework for critical success factors of BOT projects in China. *The Journal of Project Finance*, 7(1), pp-53-61.

Reaves, C. C. (1992). "*Quantitative research for the behavioral sciences."* John Wiley and Sons Inc. Singapore.

Root, D., Fellows, R., and Hancock, M. (1997). "Quantitative versus Qualitative or Positivism and Interactionism- A reflection of ideology in the current methodological debate." *J. Const. Proc.*, 3(2), 33-44.

Salman, A and Mohamed, S. (1999). Risk identification frameworks for international BOOT projects. In : *Profitable Partnering in Construction Procurement* (eds S. Ogunlana), pp 475–485. CIB W92 Proceedings Publication 224.

Saunders, M., Lewis, P., and Thornhill, A. (2003). "*Research methods for business students*." Harlow FT Prentice Hall.

Selen, A and Gokalp, A.F (2009). "Public Private Partnership Model for Airport Investments in Turkey: The Case of Ankara Esenboğa International Airport Build Operate Transfer (BOT) Project". *Fifth International Conference on Construction in the 21st Century (CITC-V) "Collaboration and Integration in Engineering, Management and Technology" May 20-22, Istanbul, Turkey.*

Seymour, D., and Rooke, J. (1995). "The culture of the industry and the culture of research". *Journal of Construction Management and Economics* 13(6), 511-523.

Seymour, D., Crooke, D., and Rooke, J. (1997). "The role of theory in construction management: a call for debate". *Journal of Construction Management and Economics*, 15(1), 117-119.

State Bank of Pakistan. (2010). "*Economic Survey 2009-10*." Islamabad, Pakistan.

State Bank of Pakistan. (2011). "*Monetary policy statement January 2011*." Islamabad, Pakistan.

Stonehouse, J.H., Hudson, A.R. and O'Keefe, M.J. (1996). Public Private Partnerships. The Toronto Hospital experience. *Canadian Business Review*. Ottawa 23(2), pp 17-20.

Shuwei, W. (2009). *"The impact of collaborative working on construction project performance,"* University of Northumbria, Newcastle.

Tan, C, Y (2006) "*A handbook of improving real state project delivery in Malaysia"*. Massachusetts Institute of Technology, Cambridge, Massachusetts, USA.

Tiong, R.L.K. (1990) "Comparative study of BOT projects". *Journal of Management in Engineering*, 6(1), 107-122.

Tiong, R.L.K. (1996). "CSF's in competitive tendering and negotiation model for BOT projects". *Journal of Construction Engineering and Management.* 122(3). pp 205-211.

Transparency International Pakistan. (2010). *"National corruption perception survey 2010."* Transparency International DHA Karachi, Pakistan.

Trochim, W. M. K. (1997). "*The Research methods knowledge base."* Published by Cenage Publishing, Hampshire, UK.

Uher, E.T and Davenport, P (2009). Fundamentals of building contract management 2009. Published by University of South Wales Press Ltd, Sydney, Australia.

Vaughan, Roger J., and Pollard, Robert, (1984). "Planning and managing public works in the 1980's Council of State Planning Agencies*"*. Washington, DC, USA.

Walker, C., and Smith, A.J., (1995). *Privatized Infrastructure: The BOT Approach*. Thomas Telford, London, England.

Wang, Q.S., Tiong, K.R., Ting, K.S., (2000). "Evaluation and management of political risks in China's BOT projects" *Journal of Construction Engineering and Management*, 126(3), 242-251.

World Bank (1993). *Sustaining Rapid Development in East Asia and the Pacific*. Published by World Bank, California, USA.

World Bank (2012). <www.worldbank.org/ppp> Accessed on 20th February 2012.

Yang, H., Meng, Q., (2000). A note on Highway pricing and capacity choice in a road network under a build-operate-transfer scheme. *Transportation Research* 36A, 659–663.

Ye, S. and Tiong, R.L.K. (2003). "The effect of concession period design on completion risk management of BOT projects". *Journal of Construction Management and Economics,* 21, 471-482.

Zhang, X.Q., and Kumaraswamy, M.M. (2001). "Hong Kong experience in managing BOT projects", *Journal of Construction Engineering and Management,* 154-162.

APPENDICES

APPENDIX I: QUESTIONNAIRE COVER LETTER

To: _____

Subject: **BUILD OPERATE AND TRANSFER RESEARCH QUESIONNAIRE**

Respected Sir,

Department of Construction Engineering and Management at School of Civil and Environmental Engineering (NUST) Islamabad is conducting a Research Survey on ***Factors Affecting Private Sector Participation in BOT Construction Projects in Pakistan.***

The development of infrastructure is one of the most important aspects in any nation's advancement and growth. Developed infrastructure is an indicator of a nation's progress and economic prosperity. Development of infrastructure is a matter of national concern. This research is important in the development of infrastructure.

We are interested to find out the barriers which are affecting private sector participation in Build Operate and Transfer projects in Pakistan. We are conducting confidential surveys. To help with task, we would like you to complete the attached questionnaire – confidentiality is assured. The questionnaire is relatively simple to complete and it ask about the importance of various factors.

It is important for you to be completely honest about your feelings. All responses will be treated in strict confidence. This will assist us in analysis and interpretation of results.

Thank you for your assistance and cooperation in advance.

Yours sincerely,

Umais Amin
Post Graduate Student – Construction Engineering & Management

DR. Hamza Farooq Gabriel (PhD)
Associate Professor
Department of Construction Engineering & Management
National Institute of Transportation
School of Civil & Environmental Engineering
Sector H-12, NUST, Islamabad.

APPENDIX II: QUESTIONNAIRE

FIELD SURVEY TO FIND OUT

FACTORS AFFECTING PRIVATE SECTOR PARTICIPATION IN BUILD-OPERATE-TRANSFER (BOT) CONSTRUCTION PROJECTS IN PAKISTAN.

THE STUDENT:

Umais Amin
BSc Civil Engg (UET, Taxila)
Student of MS (CE &M)
School of Civil & Environmental Engineering (SCEE)
National University of Sciences & Technology,
NUST Islamabad Campus Sector H – 12, Islamabad.

THE ADVISOR:

Dr. Hamza Farooq Gabriel
BSc Civil Engg (UET, Lahore) | MSc Civil Engg (B'ham, UK) | PhD (CSturt, Australia)
Associate Professor
NUST Institute of Civil Engineering (NICE)
School of Civil & Environmental Engineering (SCEE)
National University of Sciences & Technology,
NUST Islamabad Campus Sector H – 12, Islamabad.

GENERAL INFORMATION

1. GENERAL INFORMATION ABOUT PERSON FILLING THIS SURVERY FORM
a. Name:
b. Qualifications :
c. Designation:
d. Working experience in Construction Industry:
e. Name of the Employer:
f. Address:
g. Cell No:
h. Email Address:

2. GENERAL INFORMATION ABOUT THE FIRM (IF APPLICABLE)				
a. Name of company:				
b. Type: ☐ Public ☐ Semi Government ☐ Private				
c. Category of Enlistment in PEC:				
d. Working Experience in Construction Industry (years) :				
e. Project Type mostly executed : ☐ Residential ☐ Educational ☐ Commercial ☐ Industrial ☐ Institutional ☐ Highways/Road projects				
f. Major projects executed				
Serial	Name of Project	Client	Consultant	Contractor
j. Projects executed on BOT basis or any other form of PPP. Please mention (if any)				
k. Contact No of your firm:				
l. Address of your firm:				

1.	GOVERNMENT RELATED					
Serial	Factor	Not Critical	Fairly Critical	Critical	Very Critical	Extremely Critical
a.	Bureaucratic inertia or long delays in processing of contracts	1	2	3	4	5
b.	Lack of transparency	1	2	3	4	5
c.	Political intervention at approval stage	1	2	3	4	5
d.	Unclear definition of compensable & non-compensable projects	1	2	3	4	5
e.	Prequalification Procedure/Requirements	1	2	3	4	5
f.	Political instability	1	2	3	4	5
g.	Fear of Adverse Government action	1	2	3	4	5
h.	Lack of determination of entitled government	1	2	3	4	5
i.	Short tendering period	1	2	3	4	5
j.	Poor Government policy	1	2	3	4	5
k.	Weak institutional structures	1	2	3	4	5
l.	Limited capabilities and techniques to prepare viable projects	1	2	3	4	5
m.	Improper evaluation and selection procedure	1	2	3	4	5
n.	Improper Concession Periods	1	2	3	4	5
o.	Improper timings for negotiation	1	2	3	4	5
p.	Lack of coordination between different agencies	1	2	3	4	5
q.	Non-conducive Law & Order / Security Situation	1	2	3	4	5
r.	Current public procurement laws are ineffective	1	2	3	4	5
s.	Projects are publically announced without adequate feasibility studies	1	2	3	4	5
t.	Statutory consents are left for private to procure	1	2	3	4	5
u.	Land acquisition problems	1	2	3	4	5
v.	Governance over centralization	1	2	3	4	5
w.	Market conditions not realized at project inception stage	1	2	3	4	5

2.	FINANCE RELATED					
Serial	Factor	Not Critical	Fairly Critical	Critical	Very Critical	Extremely Critical
a.	High cost of submitting a proposal	1	2	3	4	5
b.	Politically determined "unrealistically low" prices	1	2	3	4	5
c.	High cost of financing	1	2	3	4	5
d.	Inflation	1	2	3	4	5
e.	Increase in Tax Rate	1	2	3	4	5
f.	Impractical financial feasibility	1	2	3	4	5
g.	The use of country's sovereign resources and money as guarantees is not favored by some people in government	1	2	3	4	5
h.	Banks in Pakistan do not have the capacity nor the financial depth to provide long term financing required	1	2	3	4	5
i.	Foreign exchange risk/exchange rates	1	2	3	4	5
j.	Tariff adjustment problems	1	2	3	4	5
k.	Huge fluctuations in resource prices	1	2	3	4	5
l.	Minimal knowledge of project financing principles	1	2	3	4	5
m.	Cost escalation risk to be bear by Sponsors	1	2	3	4	5
n.	Change in interest rates	1	2	3	4	5
o.	Problems in Financial Closure	1	2	3	4	5
p.	Lack of established corporate debt market	1	2	3	4	5
q.	Scarcity of specialized infra structure financing institutions	1	2	3	4	5

3.	Legal and Regulatory Factors					
Serial	Factor	Not Critical	Fairly Critical	Critical	Very Critical	Extremely Critical
a.	Lack of well established legal framework	1	2	3	4	5
b.	Sudden Changes in Law	1	2	3	4	5
c.	BOT authority's Dual function (as regulatory it approves the contract and as monitoring agency it oversee compliance with contract)	1	2	3	4	5
d.	Misallocation of Risks in Law	1	2	3	4	5
e.	Omission of Renegotiation clause in contract	1	2	3	4	5
f.	Restricted contract and bid templates	1	2	3	4	5
g.	Regulation is reactive rather than proactive	1	2	3	4	5

4.	Social Factors					
Serial	Factor	Not Critical	Fairly Critical	Critical	Very Critical	Extremely Critical
a.	Corruption	1	2	3	4	5
b.	Terrorism	1	2	3	4	5
c.	Monopoly	1	2	3	4	5

5.	Incentives / Guarantees /Insurance/Security					
Serial	Factor	Not Critical	Fairly Critical	Critical	Very Critical	Extremely Critical
a.	Lack of incentives	1	2	3	4	5
b.	No insurance for political risks	1	2	3	4	5
c.	Lack of Guarantees provided by Government	1	2	3	4	5
d.	Non existence of instrument to substitute market based Government guarantees	1	2	3	4	5

APPENDIX III: ORGANIZATION LIST FOR THE SURVEY

Organization	Respondents
LAFCO, Lhr	3
Habib Rafique Pvt Ltd, Isb	3
Frontier Works Organization (FWO), Rwp	3
Petrosin, Isb	1
Khalid Rauf and Company,Lhr	1
Sachal Engineering, Isb	2
Bahria Town, Rwp	2
Tollink Pakistan, Isb	3
Matracon, Isb	2
Descon, Khi	2
Habib Construction Services, Rwp.	1
Izhar Construction, Isb.	1
Defence Housing Authority (DHA),Isb.	1
Daewoo Construction, Lhr.	2
National Highway Authority (NHA), Isb	3
Capital Development Authority (CDA), Isb	2
Rawalpindi Development Authority (RDA), Rwp.	3
Infra Structure Project Development Facility (IPDF), Isb.	2
Public Works Department (PWD), Isb.	2
Public Works Department (PWD), AJK.	1
WAPDA, Lhr.	2
Private Power Investment Board (PPIB), Isb	1
Lahore Development Authority (LDA), Lhr.	1
Urban Unit, Punjab, Lhr	1
Nespak, Lhr	2
Nespak,Isb	1
Halcrow, Isb	2
CDM Smith, Isb	1
Timeline Consultant, Isb	1
Zeeshan Ahmad Engineering Services, Isb	1
Mot Mcdonald, Lhr.	1
ACE Consultant, Lhr	2
Zeeruk Int Consultant, Isb.	1
Project Procurement International Consultant, Isb.	1
EMS, Consultant, Isb.	1
ACC Consultant, Isb.	1

APPENDIX IV: RESULTS

- **Cronbach's Alpha value for internal consistency Reliability between Factors.**

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.858	.866	5

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum
Item Means	3.666	3.386	3.917	.531	1.157
Item Variances	.248	.184	.340	.156	1.848
Inter-Item Covariances	.135	.104	.166	.061	1.586
Inter-Item Correlations	.563	.404	.687	.283	1.700

RII AND RANKING OF FACTORS

Serial	Factor	RII	Percentage Score	Ranking
1	Bureaucratic inertia or long delays in processing of contracts	0.78	78	17
2	Lack of transparency	0.79	79	15
3	Political intervention at approval stage	0.915	91.5	3
4	Unclear definition of compensable & non-compensable projects	0.53	53	51
5	Prequalification Procedure/Requirements	0.59	59	48
6	Political instability	0.96	96	1
7	Fear of Adverse Government action	0.645	64.5	40
8	Lack of determination of entitled government	0.755	75.5	22
9	Short tendering period	0.455	45.5	54
10	Poor Government policy	0.795	79.5	14
11	Weak institutional structures	0.62	62	43
12	Limited capabilities and techniques to prepare viable projects	0.74	74	25
13	Improper evaluation and selection procedure	0.805	80.5	12
14	Improper Concession Periods	0.465	46.5	53
15	Improper timings for negotiation	0.515	51.5	52
16	Lack of coordination between different agencies	0.63	63	41

Serial	Factor	RII	Percentage Score	Ranking
17	Non-conducive Law & Order / Security Situation	0.68	68	35
18	Current public procurement laws are ineffective	0.75	75	23
19	Projects are publically announced without adequate feasibility studies	0.705	70.5	30
20	Statutory consents are left for private to procure	0.615	61.5	44
21	Land acquisition problems	0.65	65	39
22	Governance over centralization	0.6	60	47
23	Market conditions not realized at project inception stage	0.785	78.5	16
24	High cost of submitting a proposal	0.605	60.5	46
25	Politically determined “unrealistically low” prices	0.775	77.5	18
26	High cost of financing	0.845	84.5	7
27	Inflation	0.86	86	6
28	Increase in Tax Rate	0.695	69.5	32
29	Impractical financial feasibility	0.72	72	27
30	The use of country’s sovereign resources and money as guarantees is not favored by some people in government	0.69	69	33
31	Banks in Pakistan do not have the capacity nor the financial depth to provide long term financing required	0.875	87.5	5

Serial	Factor	RII	Percentage Score	Ranking
32	Foreign exchange risk/exchange rates	0.675	67.5	36
33	Tariff adjustment problems	0.67	67	37
34	Huge fluctuations in resource prices	0.77	77	19
35	Minimal knowledge of project financing principles	0.625	62.5	42
36	Cost escalation risk to be bear by Sponsors	0.76	76	21
37	Change in interest rates	0.7	70	31
38	Problems in Financial Closure	0.73	73	26
39	Lack of established corporate debt market	0.715	71.5	28
40	Scarcity of specialized infra structure financing institutions	0.81	81	11
41	Lack of well established legal framework	0.8	80	13
42	Sudden Changes in Law	0.745	74.5	24
43	BOT authority's Dual function (as regulatory it approves the contract and as monitoring agency it oversee compliance with contract)	0.61	61	45
44	Misallocation of Risks in Law	0.825	82.5	9
45	Omission of Renegotiation clause in contract	0.56	56	50
46	Restricted contract and bid templates	0.575	57.5	49

Serial	Factor	RII	Percentage Score	Ranking
47	Regulation is reactive rather than proactive	0.66	66	38
48	Corruption	0.91	91	4
49	Terrorism	0.84	84	8
50	Monopoly	0.765	76.5	20
51	Lack of incentives	0.71	71	29
52	No insurance for political risks	0.94	94	2
53	Lack of Guarantees provided by Government	0.82	82	10
54	Non existence of instrument to substitute market based Government guarantees	0.685	68.5	34