Investigating Project Management Practices in Public Sector Organisations of a Less Developed Country

A thesis submitted in fulfillment of the requirements for the degree of Doctor of Philosophy

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June 2010
DECLARATION

I, Atif Ali, hereby declare that this research work is my original work and has not been submitted in whole or in part, to qualify for any other academic degree in any university.

Signed:

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June, 2010
ACKNOWLEDGEMENTS

Before thanking the creation I will like to thank the creator Allah Almighty (i.e. The Greatest of All) who has given us the power to think and to write and who has made me able to achieve the milestone of completing the PhD. But when it comes to acknowledge the support that different people has provided me during the research the first and the foremost names are of my supervisors Dr. Tayyab Maqsood and Professor Derek H.T. Walker. Words are not enough to show my indebtedness to them. I feel that they have polished me from a scratch to a researcher and made me able to complete this research. I will always be thankful to them in my entire life.

I am also immensely appreciative of Professor Ron Wakefield, Associate Professor Jennie Carroll and the Pakistani Government for the financial assistance provided for the duration of this research. Without their continuous support it will not be able for me to complete this research. I will also like to acknowledge the support of my colleagues (i.e. Dr. Tee, Ehsan Gharie, and Ali Noor) for their valuable input for this research. Their presence in the research room has made the environment conducive for research. I have learnt a lot from them and will always remember the time spent with them.

In the end I will like to thank my parents to whom I dedicate this research. They always motivated and supported me to go for the highest possible education. I will also like to acknowledge the support of my brother (i.e. Kashif) and my sisters (Dr. Sumera, Saima and Samreen) for the period of this research. I cannot thank enough my wife Rukham and my daughter Raheen for their patience and support for this research. Their support has motivated me to complete this research.
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Abstract

In less developed countries the implementation of project management tools and techniques is still in its early phases of development. It is a relatively modern practice that attempts to achieve planned objectives within specific time and cost limits, through optimum use of resources and by using an integrated planning and control system. The growth and acceptance of project management is continuing to increase as resources become scarce in less developed countries. The capability of the public sector is pivotal to the growth of the economy. The need for project management expertise in public sector organisations has become fundamental in order to deal with the enormous responsibility of managing a number of projects. This research investigates the project management practices in public sector organisations of a less developed country. Pakistan is selected from the list of less developed countries. The Pakistani public sector is divided into three main areas of the planning, the service and the consultant & contractor. Most of the times these three sectors are involved in public sector development projects in Pakistan. Eleven public sector organisations are selected for the purpose of this research. Each of these organisations is selected as a case study. The results of these case studies helped explain the current state of project management in Pakistani public sector organisation.

The funding process of public sector projects is explored and is graphically presented. The thesis also highlights the reporting process of the public sector project throughout the project life cycle. This process is also graphically illustrated. The project management practices in the public sector are then compared with the best practices and a maturity level of project management in Pakistani public sector is derived. This research concluded that the maturity level of public sector projects in Pakistan is at level 2 where processes still depend on individuals and there is minimum guidance available. The project success is still unpredictable, and cost and schedule fluctuations persist throughout the projects. There is no integration of databases, although schedule
information is generally abundant. Although some of the organisations in planning and service sectors are progressing towards level 3, in general the competency level of the Pakistani public sector organisations is at level 2. The research also helps to identify the different types of constraints associated with the projects in a less developed country. These constraints are categorised by the theme of less developed country, public sector organisation, culture and project management. This is done on purpose so as to distinguish between the issues which can be improved by taking an initiative at the organisational level and the issues which can only be improved by taking a major policy initiative at the political level. This identification of different level / types of constraint may help the international donor agencies to better perceive the situation in the less developed countries toward managing the public sector projects.
Chapter 1

Introduction

This research is exploratory and qualitative in nature. It investigates the project management practices in the public sector of a less developed country. The main objective of this research is to identify the governance and management practices of the public sector in a less developed country. In addition, the aim is to explore the issues and difficulties that the public sector organisations encounter during the process of managing a project. This is essential for the reason that identification of the causes for projects failure may help the similar projects in the future. The structure of the research is predominantly qualitative in nature, involving an in-depth exploration of public sector project management practices in a less developed country.

This chapter provides an overview and summarises the scope of the thesis. It explains the research background, the rationale for the research, research objectives, research questions, research methods and scope and limitation of this research.

1.1 Background

Project is defined as a temporary endeavour undertaken to create a unique product or service, temporary means that the project has a definite ending point, and unique means that the product or service differs in some distinguishing way from all similar products or services (PMI, 1996, p.4). Project management is defined as an application of knowledge, skills, tools and techniques to project activities to meet project requirements. This is accomplished through the application and integration of the project management processes of initiation, planning, executing, monitoring and controlling and closing (PMI, 2004). Mintzberg (1983) cited in Soderlund (2004b) states that most of the emergent
industries since world-war II are project intensive. This widespread use of projects in organisations demanded an approach that can efficiently manage these temporary endeavours which are critical to the organisations strategic objectives. This led the researchers and professionals of the field to devise an approach that can efficiently manage the projects. Initially the focus of research on projects was exclusively on the implementation of a single project (Crawford et al, 2006). Project research in general now spans a variety of level of analysis. Concept such as the management of projects and the management by projects clearly point to the current devotion of project research (Soderlund, 2004a &b). An important factor here is that the researchers suggest management of projects to be at the core of understanding the modern firm (ibid).

Public sector organisations are differentiated in comparison with their commercial counterparts in the private sector. There is no profit maximising focus, little potential for income generation and, generally speaking, no bottom line against which performance can be measured (Boland and Fowler, 2000). The vast majority of public sector organisations still generate most of their income from the State (ibid). However, the capability of the public sector is pivotal to the growth of the economy (Rwelamila, 2007). Furthermore, the need for project management expertise in public sector organisations has become fundamental in order to deal with the enormous responsibility of managing a number of projects (ibid).

In less developed countries the implementation of project management tools and techniques is still in its early phases of development. It is a relatively modern practice that attempts to achieve planned objectives within specific time and cost limits, through optimum use of resources and using an integrated planning and control system (Abbasi and Al-Mharmah, 2000). According to Schlichter (1999) project management has led a number of organisations to be more effective and efficient in delivery of their products and services, to have more accurate budgeting and scheduling and improved productivity. The growth and acceptance of project management is continuing to increase as resources become scarce in less developed countries.
1.2 Rationale for the Research

Adler (1991) observed that most of the models and theories in organisational and managerial behaviour were developed from America and other Western research. Similarly, project management theories are also based primarily on North American research and experience (Chapman, 2004). Turner (1993) cited in Muriithi and Crawford (2003) observe that contrary to the common belief that the Western-oriented techniques or project management are just straightforward procedures that anyone can learn and implement, there are considerable cross-cultural problems in using the approach in non-Western countries. Cultures vary from country to country, and within countries. As a result, values at work and in social settings vary accordingly. Personal choices and work values are culturally dependent (Muriithi and Crawford, 2003). Stuckenbruck and Zomorrodiand (1987) perceive that in attempting to address the relevance of project management to less developed countries, two questions in particular are focused on: (1) is project management equally applicable to all less developed countries (2) when is it applicable, what form of project management would be recommended. This consideration is for the intention that most projects are established and administered by the government or its affiliates in the less developed countries. Furthermore, they observe that large and medium-sized projects almost always present major problems for the less developed countries. Abbasi and Al-Mharmah (2000) argues that existence of several social, cultural, political and financial problems leads to poor management performance in less developed countries. Therefore, the strategy for implementing project management in less developed countries must be consistent with the cultural and characteristics of the particular society and configuration of its economical, political and administrative systems.

In recent years, public sector performance measurement and ‘public sector project management’ (author’s emphasis) has attracted much attention in the literature. However, almost all papers that have been published in academic journals focus on the public sector in European, North American countries, Australia or New Zealand (Bakhshi, 1991). There is little literature available about the project management in the public sector of less developed countries. Few authors have (Abbasi & Al-Mharmah, 2000; Kartam et al.,...
2000; Partington, 1996; Bryde, 2008; Sonuga et al., 2002) identified different barriers which hinders the project success in less developed countries. These are:

- lengthy approval procedures,
- existing administrative system,
- change orders,
- lack of ownership
- lack of authority, and
- poor estimation of activity cost etc.

However, all of them have emphasised on further research to investigate the limitations and potential for project management system in different environment. This research is carried out with this rationale.

### 1.3 Problem Statement

To investigate the project management practices in public sector of a less developed country and to explore the issues that hinders the successful implementation of these practices.

### 1.4 Research Objectives

The rationale developed in the above section leads to the following research objectives:

- Investigate the issues related to the public sector development projects in a less developed country
- Explore the current practices of funding of public sector projects in a less developed country
• Identify the current practices of selection and governance of the projects within a less developed country’s public sector
• Compare the current practices of managing the project in a less developed country’s public sector with the best practices.

1.5 Research Questions

The research objectives above are translated into the following research questions:

• How the projects are identified and selected in a less developed country’s public sector?
• What is the funding mechanism of the projects?
• How the projects are approved in a less developed country?
• How the projects are governed in a less developed country?
• What are the issues and constraints related with the project management processes in a less developed country’s public sector organisations?

1.6 Research Methods

In this section the aim of the researcher is to identify the appropriate methodology for the research. Fellows and Liu (2003) argue that with various approaches of inquiry, research students are often at a loss for understanding what methodologies exist and how one makes an informed choice of an option for research. They further states that choice is affected by consideration of the scope and depth of the problem. The objective of this research is to investigate the project management practices in less developed country public sector organisations therefore it can be categorised as an exploratory study. Sekaran (2003) argues that an exploratory study is undertaken when not much is known about the situation at hand, or no information is available on how similar problems or research issues have been solved in the past. Creswell (2009) links this with qualitative research and states that qualitative research is exploratory and is useful when the
A researcher does not know the important variables to examine. This type of approach may be needed because the topic is new, the topic has never been addressed with a certain sample or group of people, and existing theories do not apply with the particular sample or group under study (Morse, 1991).

Qualitative researchers study things in their natural settings, attempting to make sense of or interpret phenomenon in terms of the meaning people bring to them (Creswell, 1998). This interpretation of the phenomenon fits the research in the social constructivist paradigm. Habermans (1970) cited in Easterby-Smith et al. (2002) has referred this kind of research as interpretive methods. Extensive interviews with many people might have to be undertaken to get a handle on the situation and understand the phenomena (Sekaran, 2003).

The pattern and the inductive logic of qualitative research is explained in the figure 1.1 below:

1. **Researc**her poses generalisation of theories from past experiences and literature
2. **Researc**her looks for broad patterns, generalisation, or theories from themes or categories
3. **Researc**her analyse data to form themes or categories
4. **Researc**her asks open ended questions of participants or record field-notes
5. **Researc**her gathers information (e.g. Interviews, observation)
The aim of the research is to explore the project management practices therefore the nature of the questions posed are how, why and what. Case studies are the preferred method when how and why questions are posed and they can be exploratory in nature (Yin, 2009). The plan of this research is also to get the overall picture of the project management practices in different public sector organisations and to identify the factors that influence the project management practices. Berg (2004) perceives that many qualitative investigators use the case study approach as a guide to their research. By concentrating on a single phenomenon, individual, community, or institution, the researcher aims to uncover the manifest interaction of significant factors characteristic of this phenomenon, Individual, community, or institution. In addition, the researcher is able to capture various nuances, pattern, and more latent elements that other research approaches might overlook. Yin (2009) states that case studies also allow the capture and analysis of many variables, but are generally restricted to a defined event or organisation. These features of case study research make it a valuable tool for the exploration of project management practices in a less developed country. The data gathered through thorough interviews in case study method is analysed by using the content analysis technique. Content analysis is perceived as a careful, detailed, systematic examination and interpretation of a particular body of material in an effort to identify patterns, themes, biases and meanings (Leedy and Ormrod, 2005; Neuendorf, 2002). Therefore, this research had adopted the technique of content analysis to analyze the case study data. This has been done by:

- Coding the individual transcript data into sentences and themes
- categorising data based on these themes
- summarising all individual data to present a case study

1.7 Research Scope and Limitation
The objective of this research are to provide a detailed explanation of project management practices in less developed country, the factors that hinders the successful implementation of project management practices. For the purpose of this research Pakistan is selected as the context of this study. The public sector has a pivotal role in the growth of the economy therefore public sector project management practices is selected as the boundary of the research in Pakistan. The public sector is further divided into the planning sector, the service sector and the consultant and contractor sector so as to provide the in-depth picture of the situation. Project Management Institute’s best practice is taken as a reference for comparison due to its reputation as a de facto international standard and also because of the implementation of these standards in public sector projects in Pakistan. This could also be the limitation of the research as PMI model is predominantly developed from North American research and experience.

1.8 Structure of the Thesis

This thesis is divided into eight chapters. It starts with the introduction of the thesis followed by literature review and research methodology and design chapters. Subsequently it discusses the data analysis in four chapters and finally concludes the report with the conclusion chapter. A brief summary of these chapters are given below:

The first chapter gives an introduction about the thesis. It starts by the introduction / background of the problem and then goes on to describe the rationale behind doing this research. Subsequently the chapter discusses the research objectives and the questions that this research will address. In the last section of the chapter, a discussion is presented on the adoption of methodology for this research, the scope and the limitation of this research.

The purpose of the second chapter is to review the research in different areas of project management related to this research. This includes different definitions of project and project management, project types and life cycle, history and evolution of project management, different project management bodies of knowledge areas, different
approaches to project management, current practices in project management, project success vs. project management success, project management maturity, public sector context, project management in public sector, less developed countries and environment, and project management in less developed countries.

The aim of the third chapter is to explain the research methodology and design that was used to carry out this research. The chapter starts with the discussion on research, philosophical perspective and paradigms of research followed by a discussion on research approach and strategy. Subsequently the argument was made about the selection of an appropriate methodology for this research. The next section of the chapter describes the research design for the research. This is followed by the discussion on the data collection and analysis techniques. Later the data analysis technique of content analysis is illustrated along with the example of data analysis. The last section of the chapter discusses about the reliability, validity and ethical standards of this particular research.

The purpose of the fourth chapter is to present results of a case study on project management (PM) practices being undertaken in Pakistani public sector organisations. It begins by explaining the project management process in public sector organisations in Pakistan. This is followed by the two case studies of national and provincial level planning sector organisations in Pakistan. Each case study follows the same structure: it starts with descriptions of the organisations. It then discusses the current project management practices in these organisations followed by identifying the constraints in these practices. Subsequently the approach used by the different organisations in the planning sector in managing the project is presented in tabular format to compare project management practices with the project management institute’s best practice (PMBOK). In the last section of the chapter, the issues that were identified then categorised and presented in tabular format.

The fifth chapter discusses the report on the results of case studies on PM practices performed in service sector public organisations in Pakistan. After the initial case study on the planning sector in chapter 4, the research objective in this chapter was to explore the
remaining processes of PM in the public sector. Subsequently the chapter discusses the different case studies from service sector and analyses the data accordingly. The approaches by the different organisations in service sector towards managing the project is then merged and presented in a tabular format. In the last section of the chapter, the issues that were identified then categorised and presented in tabular format.

The purpose of the sixth chapter is to report on the results of a case study on PM practices performed in consultant sector organisations. After the initial case studies on the planning and service sectors in chapter 4 and 5, the research objective in this chapter is to explore the processes of PM in the public sector in the context of contractor & consultant organisation. Subsequently the chapter discusses the involvement of the consultant organisation in different stages of the project life cycle and analyses the data accordingly. The approach by the contractor & consultant organisations in managing the project is then presented in a tabular format. In the last section of the chapter, the issues that are identified are categorized and placed under their respective theme in a table.

The chapter seven begins with the comparison of project management practices among the three sectors of the economy (the planning sector, the service sector and the consultant and contractor sector). This is followed by the comparison of project management practices against the best practices mentioned in the Project Management Body of Knowledge (PMBOK). In the last section of the chapter, the maturity level of project management in the public sector projects of Pakistan is mentioned.

The eighth chapter starts with the discussion about the findings of this research thesis. The findings are discussed against the research objectives envisaged at the start of the research. Subsequently the chapter discusses about the recommendations proposed by this research, followed by the contribution of knowledge and the limitations of this research. Lastly, the chapter proposes the recommendations for future research.
1.9 Chapter Summary

The chapter is an introduction to the Thesis “Investigating project management practices in a less developed country”. The chapter starts with the background of the project management, its importance towards managing the project and its perception as a valuable tool to manage public sector projects by efficiently utilization of scarce resources. An argument is presented on the Western orientation of the management practices and its inappropriateness for different cultures. This argument is then linked with the perception of different researchers on the exploration of project management practices in different culture and environment. The problem statement, research objectives and research question for this research has followed the discussion.

In the last section of the chapter the argument is made on the selection of case studies method to appropriately answer the how and why question posed in this research. The data gathered through interviews in the case study is then analysed using the content analysis technique. Subsequently the scope of the research in exploring the project management practices in public sector of Pakistan and the adoption of PMI BOK for comparison is presented followed by the discussion on limitation of this research.
Chapter 2: Literature Review

2.1 Chapter Objectives

The purpose of this chapter is to provide an understanding to the concept of project, Project Management (PM), the context of managing the projects in the public sector and its current state. This resulted in the author’s review of literature on the following major topics:

- Definitions
- Project Environment
- PM Bodies of Knowledge (BOKs)
- Current Practices
- PM Maturity
- Public sector environment
- PM in LDCs
- Project types and life cycle
- History and Evolution of PM
- Different Approaches to PM
- Project success Vs PM success
- PM in public sector
- Less Developed Countries (LDCs)

The chapter starts with defining the concept of project and provides an overview of different perspective regarding it. It then delves into explaining the different categories of projects, the development stages of the project and the importance that projects possess in the contemporary organisations. Subsequently the review explores the concept of project management and its evolution from managing a single project to the concept of project as business.

The formation of international association of project management and their role in developing the standards of project management is then discussed. This steers the discussion to different Bodies of Knowledge (BOKs) and paradigms in project management and the conclusion of a de facto international standard. A section is devoted after this to illustrate the distinction between project and project management success.

The review on public sector, public sector environment and project management in public sector describes how public sector is different than the private sector and what are the constraints that make project management unique in the public sector context?
The review on Less Developed Countries (LDCs) describes the constraints in the LDCs, the state of the public sector in the LDCs, Culture in the LDCs and summarise the current state of PM in LDCs as an outcome of it and argues for the need for further investigation in the public sector of LDCs.

**2.2 Understanding Project**

**2.2.1 What is Project**

The term project is described in different ways in the research literature. This is illustrated below:

- Project is defined as a temporary endeavour undertaken to create a unique product or service, Temporary means that the project has a definite ending point, and unique means that the product or service differs in some distinguishing way from all similar products or services (PMI, 1996, p.4)

- Project has been termed as a human endeavour and may legitimately be regarded by its stakeholders as a project when it encompasses a unique scope of work that is constrained by cost and time, the purpose of which is to create or modify a product or service so as to achieve beneficial change defined by quantitative and qualitative objectives (Cooke-Davies, 2001, p.20).

- Project is described as a “value creation undertaking based on specifics, which is completed in a given or agreed timeframe and under constraints, including resources and external circumstances” (Ohara, 2005, p.15)

- A project is regarded as a business case that indicates the benefits and risks of the venture, demonstrating a unique set of deliverables, with a finite life-span, by using identified resources with identified responsibilities (Bradley, 2002).

The common themes in these definitions is that projects are unique in their output, having a definite starting and ending point, are temporary in nature and are carried out to manifest the organisation’s strategic objectives. These temporary structures are playing a vital role in today’s modern organisations and a growing interest is recorded in the significance of these temporary structures in organisations.
2.2.2 Types of Projects

Projects are carried out in a wide variety of situations and they differ from each other in size, scope, industry etc. This variation makes it difficult to create a single comprehensive taxonomy for the projects (Shenhar and Dvir, 2004). There are two well known approaches for the classification of projects. These are: i) goal-and-method matrix presented by Turner and Cochrane (1993) and ii) the four dimensional NCTP (novelty (N), complexity (C), technology (T) and pace (P)) framework presented by Shenhar and Dvir (2004). The goal and mixed method classifies the projects into four types. This classification is based on the principle of how well the goals and methods of the project is defined.

Turner and Cochrane (1993) defines that the type 1 projects in goals and methods matrix are the ones in which the goals and methods are well defined. Typical projects in this classification are the engineering projects. The type 2 projects according to them are the ones in which the goals are well defined but the method are vague. The projects in this category are usually related with the development of a product. They perceive that the type 3 projects are the kind of projects in which the methods are well defined but the goals are not that clear. Projects such as software development fall in this category. The type 4 projects in the goal and method matrix are those in which both the goals and methods are not well defined. Projects related to research and organisational change falls in this type of projects. This is depicted in the Figure below:

![Goal-and-method Matrix](Source: Turner and Cochrane, 1993)

After a series of research studies Shenhar and Dvir (2004) developed the NCTP framework. This framework involves four dimensions: novelty (N), complexity (C), technology (T) and pace (P). Each dimension includes at least three different types of projects.
The first dimension of novelty is defined as a product novelty: which means that how the new product is to its potential. It also means that how much the customers are familiar with this kind of product and how much they will use and benefit from it. In this dimensions there are three kinds of project types, which are: derivate product, platform product and breakthrough product. In first type of projects (that is: derivate products) the existing product is improved and extended. This kind of projects includes cost reduction, product improvement, product modification and additions to existing line of products. The second type of projects (that is: platform products) are the ones in which a new generation of an existing product is developed/created. This kind of projects includes the development/creation of new families of product to form the basis for numerous derivates. The third kind of projects in this dimension are the ones in which a new concept, idea or a new use of a product is introduced in the market (Shenhar and Dvir, 2004, p1271-1272).

The second dimension is of technological uncertainty. The types of projects which fall in this dimension are the low-tech projects, medium-tech projects, high-tech projects and super high-tech projects. The higher the technological uncertainty at the time of project initiation requires longer development phase, more design cycles, more testing etc (Shenhar and Dvir, 2004, p1272).

The third dimension is of complexity. The types of projects in this dimension are of assembly level, system level and array level projects. The assembly level projects involve in creating a collection of components which at later a stage combined into a single unit. This single unit is involved in performing a single function such as a stand-alone product or service. The system level projects involve a complex collection of interactive elements and subsystem. These jointly dedicated to a wide range of functions to meet a specific operational need. The array level projects in this dimension are the projects which deals with large, widely dispersed collection of system that works together to achieve a common purpose. The examples of this kind of projects are the city public transportation system, national air defence system, or interstate telecommunication infrastructure (Shenhar and Dvir, 2004, p1277-1278).

The fourth dimension is of pace. The types of projects in this dimension are the projects which differ by urgency, time and goals. This is identifies in this framework as pace, fast-competitive and critical blitz (Shenhar and Dvir, 2004, p1280). The Figure 2.2 will illustrate the NCTP framework with different types of projects in the four dimensions.
Apart from these two well known approaches, Khazanchi and Zigurs (2004) categorise the projects into three types based on their complexity. The complexity is defined in terms of attributes of team size, culture, language, gender composition, personal characteristics, resources and knowledge (Khazanchi and Zigurs, 2004). The three main types of projects are as follows:

1. Lean Projects
2. Hybrid Project
3. Extreme Projects

1) **Lean Projects:**

Lean projects are defined as having low capacity, narrow scope and relatively low risks. Such projects tend to be easily subdivided into manageable parts due to relatively clear
and tangible requirements or outcomes. The goals in these projects are usually unambiguous and therefore the outcome is achieved in short time using known methodologies. (Khazanchi and Zigurs, 2004).

2) Hybrid Projects:

Hybrid projects are defined as having varying level of complexity, scope and risks. These projects require a management approach that emphasises coordination between people and the activities. Therefore in hybrid projects a special emphasis should be given to the technologies that enhance coordination (Khazanchi and Zigurs, 2004).

3) Extreme Projects:

Extreme projects are defined as having high complexity, broad scope and high risk. Such projects are generally mission critical. Consequently, extreme projects require intense activity and participation by a number of teams and stakeholders. Therefore an extreme project requires a management approach that emphasis on communication. Communication is required not only to develop a shared understanding of the problem before any work can begin, but also at all stages of the project (Khazanchi and Zigurs, 2004).

2.2.3 Project Development Stages or Life Cycle

Traditionally, a project is divided into three or four phases during its development stage. These phases can also be called as project life cycle. These development stages remain the same regardless of the methodology being used. These stages can be categorised as:

- Initial Phase
- Intermediate Phase
- Final Phase (PMI, 2004)

In any specific project, for reason of complexity these phases can further be divided into sub phases. Labuschagne and Brent (2004) have divided the project life cycle into
six phases. These phases can be categorised under the broader three phases as described by PMI.

![Project Life Cycle Diagram](image)

**Initial Phase**
- Pre feasibility
- Feasibility
- Development

**Intermediate Phase**
- Execution and testing

**Final Phase**
- Launch
- Post Implementation Review

Figure 2.3: Project Life Cycle (Adapted from: Labuschagne and Brent, 2004)

A project phase is generally concluded with a review of the work accomplished and the outcome of the deliverables (PMI, 2004).

### 2.2.4 Project Environment

Project environment is fundamental to the project success (PMI, 2004). Virtually all projects are planned and implemented in a certain social, economic and environmental context. These contextual variations can affect the project positively and negatively.

Gilbert (1983) depicts the project and its environment as a series of overlapping circles all of which are largely, but not entirely, contained in the immediate environment, signifying the local community, national government and its agencies. This is illustrated in the Figure 2.4 below:

![The Project and its Environment Diagram](image)

Figure 2.4: The Project and its environment (Source (Gilbert, 1983))
The outer solid –line circle represents the international economic and political environment within which the project exists. This circle is surrounded by the dotted line; labelled as ‘people’. This dotted line is a reminder that people are everywhere –within the project and in its environment. Therefore, a special consideration is required from the project team to understand the cultural, social, environmental and political environment of the project (PMI, 2004).

### 2.2.5 Importance of Projects in organisations

Mintzberg (1983) cited in Soderlund (2004b) states that most of the emergent industries since world-war II are project intensive. This widespread use of projects in organisations demanded an approach that can efficiently manage these temporary endeavours which are critical to the organisations strategic objectives. This led the researchers and professionals of the field to devise an approach that can efficiently manage the projects. Initially the focus of this research was exclusively on the implementation of a single project. Project research in general now spans a variety of level of analysis. Concept such as the management of projects and the management by projects clearly point to the current devotion of project research. An important factor here is that the researchers suggest management of projects to be at the core of understanding the modern firm (Soderlund, 2004 a and b). The concept of management of projects or project management is discussed in detail in the next section.

### 2.3 Project Management (PM)

#### 2.3.1 Background

The foundation of the project management can be traced back to as early as civilization itself. But the modern project management has its roots in the Second World War and is developed in construction and defence industry during the industrial revolution. Most recently the demand for project management has increased as number of projects is increased dramatically in a broad range of industries (Cooke-Davies and Arzymanow, 2003).
2.3.2 What is Project Management

Project management is defined in different ways in the research literature. Some of these definitions are as follows:

- Project Management is described as a collection of tools and techniques to direct the use of diverse resources toward the accomplishment of a unique, complex, one-time task within time, cost and quality constraint. Each task requires a particular mix of these tools and techniques structured to fit the task environment and life cycle (from conception to completion) of the task (Oisen, 1971: Cited in Atkinson, 1999).

- Project Management is expressed as planning, organizing, monitoring and controlling of all the aspects of a project and the motivation of all the involved stakeholders to achieve the project objectives safely and within agreed time, cost and performance criteria. (APM, 1995).

- Project management is termed as an application of knowledge, skills, tools and techniques to project activities to meet project requirements. Project Management is accomplished through the application and integration of the project management processes of initiation, planning, executing, monitoring and controlling and closing. (PMI, 2004).

- Project management is also articulated as a professional’s capability to deliver, with due diligence, a project product that fulfills a given mission, by organizing a dedicated project team, effectively combining the most appropriate technical and managerial methods and techniques and devising the most efficient and effective breakdown and implementation routes (Ohara, 2005).

Turner (1996) suggested that project management could be described as the art and science of converting vision into reality whereas Atkinson (1999) argues that perhaps project management is simply an evolving phenomenon, which will remain vague enough to be non-definable. This flexibility can be regarded as its strength.

In its early days the project management was solely concerned with the implementation of single project in that era (Kartam et al. 2000). But, today many organisations have embraced the concept of project management. This is mainly because of its systematic approach of managing the projects (Morgan, 1987). It’s a way to generate consistent results when undertaking new initiatives and a powerful business tool that can transform an organisation’s ability to perform well (Artto et. al, 2008). Project
management can also be used throughout the organisation to boost personal and collaborative productivity. This can be done by building a standardised system that embeds best practices into the way projects are managed (Milosevic and Patanakul, 2005).

2.3.3 Evolution of Project Management

The industrial revolution marked the beginning of what is referred to today as the modern organisation in early 50s. This is the era in which the economic activity was in full swing in many western countries, with engineering and construction project making a major impact on the environment. This rapid growth demanded a tool and technique which is capable of organising and managing projects at various locations (Abbasi and Al-Mharmah, 2000). During this era, network analysis and planning techniques, like Program Evaluation and Review Technique (PERT) and Critical Path Method (CPM) formed the focus of development in project management. In 1960s, these techniques continued to be popular in the construction industry (Crawford et al 2005). Development in the field of project management in the 1960s also included the formation of two major professional associations. Shenhar (1996) cited in Crawford et al (2006) noted that the focus on teamwork was the defining feature of project management in 1970s. While Stretton (1994) cited in Crawford et al (2006) notes 70’s era as an emphasis on work breakdown structures and systems concepts. The 1980s were typified by a focus on project organisation, project risk and the external influences (Crawford et al. 2006). This era also led to the development of the international standards for project management. Although project management grows in term of a profession until 1980 but still it was perceived as the sole domain of engineers, finding a niche specifically in the civil engineering industry (Van Der Merwe, 2002). Winter et al., (2006 a and b) conducted a research on the future direction in the field of project management and suggested five future directions for project management. These are summarised in the form of a table below:
Table 2.1: Future Directions for Project Management (Source: Winter et al., 2006 b, p.642)

<table>
<thead>
<tr>
<th>Theory About Practice</th>
<th>Direction 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>The life cycle model of projects and project and PM</td>
<td>Theories of the complexity of projects and PM</td>
</tr>
<tr>
<td>From: the simple lifecycle based models of projects and PM, And,</td>
<td>Towards: the development of new models and theories which recognise and illuminate the complexity of projects and PM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theory For Practice</th>
<th>Direction 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projects as instrumental process</td>
<td>Projects as social process</td>
</tr>
<tr>
<td>From: the instrumental lifecycle image of projects as a linear sequence of tasks to be performed on an objective entity</td>
<td>Towards: concepts and images which focus on social interaction among people, illuminating the flux of events and human actions and framing of projects within an array of social agenda, practices, stakeholder relations, politics and power.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Direction 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product creation as the prime focus</td>
</tr>
<tr>
<td>From: concept and methodologies which focus on product creation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Direction 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrow conceptualisation of projects</td>
</tr>
</tbody>
</table>
From: concepts and methodologies which are based on the narrow conceptualisation that project start from a well defined objective

Towards: concepts and approaches which facilitate broader and ongoing conceptualisation of projects as being multidisciplinary, having multi purposes, not always pre-defined, but permeable, contestable and open to renegotiation throughout.

<table>
<thead>
<tr>
<th>Theory in Practice</th>
<th>Direction 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practitioners as trained technicians</td>
<td>Practitioners as reflective practitioners</td>
</tr>
</tbody>
</table>

From: training and development which produces practitioners who can follow detailed procedures and techniques

Towards: learning and development which facilitates the development of reflective practitioners who can learn, operate, and adapt effectively in complex project environments, through experience, intuition and pragmatic application of theory in practice

Similarly other prominent researcher (Kwak and Anbari, 2009; Soderlund, 2004a; Cicmil et al, 2006; Artto et al, 2008; Artto and Kujala, 2008) have discussed the evolution of project management from managing a single project to multiple projects and then towards project as strategy and business. The Figure below may illustrate this evolution.

![Figure 2.5: Evolution of Project Management](image-url)
The next section describes the formation of international associations. These bodies were formed to examine and to develop project management practices.

### 2.3.4 Formation of International Associations

By the end of the 1960s there was an increased understanding to recognize project management as a separate discipline (Benitez Codas, 1987). This recognition led to the creation of the two major professional bodies in the field of project management.

The International Project Management Association (IPMA) was founded in Europe in 1965. The vision behind the formation of IPMA was to promote project management and to lead the research in the development of the profession (IPMA, 2009).

In 1969, the Project management Institute (PMI) in United States was formed to serve the interests of the project management industry. The premise of PMI is that the tools and techniques of project management are common and they can be used across different industries (PMI, 2009).

### 2.4 Development of International Standards / Guide

The role of standards for project management profession has been an important issue for many years (Duncan, 1995). A variety of benefits have been identified which accrue from standardisation. General benefits which apply to both technological and professional standardisation include encouragement of technological innovation, guaranteeing marketplace, competition and convenience (JEDEC cited in Crawford and Pollack, 2008). In 1981, PMI Board of Directors authorised the development of a Body of Knowledge (BOK), containing standards and guidelines of practice that can be widely used throughout the profession. This initiative resulted in 1996 by the publication of: A Guide to the Project Management Body of Knowledge commonly referred to as a PMBOK. On the other hand the IPMA developed the ICB: IPMA (IPMA Competency Baseline). Work on the ICB was initiated in 1993 and first version, in English, French and German, was presented in June 1998 (Crawford, 2004)
The next section will discuss the various standards that are related to project management. These are as follows:

- Project Management Body of Knowledge (PMBOK) by PMI
- Association for Project Management (APM) BOK by UK APM
- Project IN Controlled Environments (PRINCE2) by Office of Government Commerce UK
- Project and Program Management for Enterprise Innovation (P2M) by Engineering Advancement Association of Japan (ENAA)

2.4.1 Project Management Institute BOK

The PMI has developed arguably the most significant Project Management standard, PMBOK Guide (PMI, 2004), currently in its fourth edition. The PMBOK Guide is approved as an American National Standard by American National Standard Institute (ANSI) and is recognised by the Institute of Electrical and Electronics Engineers (IEEE) as an IEEE standard (IEEE, 2009).

The PMI (2004) describes that much of the knowledge of tools and techniques for managing projects are unique to project management. However, understanding and applying the knowledge, skills, tools and techniques which are recognised as best practices are not sufficient alone for effective project management. PMI emphasises that in addition to the knowledge of tools and techniques, there are various other areas that are also vital in the application of project management. These are:

- Application Area Knowledge, standards and regulations
- Understanding the project environment
- General management knowledge and skills; and
- Interpersonal skills

The PMBOK guide divides the project into the five phases and describes it as a project management process groups. It also advocates that for the project to be successful the project team must select the appropriate processes within the process group to meet the project objectives. These process groups are defined as:
A part from these five process groups the Guide also divides the project management into nine knowledge areas. The processes in these nine knowledge areas are depicted in the Figure below.

Figure 2.6: Project Management Knowledge Areas (Source: PMI, 2004)
The guide also provides a matrix that maps project management process onto five project management process groups. The PMBOK has become a de facto international standard for project management knowledge (Crawford and Pollack, 2008). However, it is also acknowledged that it has been developed predominantly for a North American audience (Murithi and Crawford, 2003).

Table 2.2: Mapping of the PM Processes to the PM Process Group and the Knowledge Areas (Source: PMI, 2004)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Integration Management</td>
<td>Develop Project Charter</td>
<td>Develop Project Management Plan</td>
<td>Direct and Manage Project Execution</td>
<td>Monitor and Control Project Work Integration Change Control</td>
<td>Close Project</td>
</tr>
<tr>
<td>Project Scope Management</td>
<td>Scope Planning</td>
<td>Scope Definition</td>
<td>Create WBS</td>
<td></td>
<td>Scope Verification Scope Control</td>
</tr>
<tr>
<td>Project Time Management</td>
<td>Activity Definition</td>
<td>Activity Sequencing</td>
<td>Activity Resource Estimating</td>
<td>Activity Duration Estimating</td>
<td>Schedule Control</td>
</tr>
<tr>
<td>Project Cost Management</td>
<td>Cost Estimating</td>
<td>Cost Budgeting</td>
<td></td>
<td></td>
<td>Cost Control</td>
</tr>
<tr>
<td>Project Quality Management</td>
<td>Quality Planning</td>
<td></td>
<td>Perform Quality Assurance</td>
<td>Perform Quality Control</td>
<td></td>
</tr>
<tr>
<td>Project Human Resource Management</td>
<td>Human Resource Planning</td>
<td></td>
<td>Acquire Project Team Develop Project Team</td>
<td>Manage Project Team</td>
<td></td>
</tr>
<tr>
<td>Project Communication Management</td>
<td>Communications Planning</td>
<td></td>
<td>Information Distribution</td>
<td>Performance Reporting Manage Stakeholders</td>
<td></td>
</tr>
<tr>
<td>Project Procurement Management</td>
<td>Plan Purchase and Acquisition Plan Contracting</td>
<td>Request Seller Response Select Sellers</td>
<td>Contract Administration</td>
<td></td>
<td>Contract Closure</td>
</tr>
</tbody>
</table>
2.4.2 Association for Project Management BOK

The IPMA has evolved since 1965 then into a network, or federation, comprising 30 national project management associations representing approximately 20,000 members primarily in Europe but also in Africa and Asia. The largest member of the IPMA is the UK Association for Project management. In UK, the Association for project management (APM) was formed in 1972 and currently has more than 13,500 individual and 300 corporate members (APM, 2006). APM has developed an independent knowledge standard, the APM Body of Knowledge currently in its fifth edition. This document takes a significantly different perspective on project management than that presented by the PMBOK Guide in terms of both what is considered to be relevance and how this information is conveyed (Crawford and Pollack, 2008).

The APM describes that project management is the discipline of managing projects successfully. Project management can and should be applied throughout the project lifecycle, from the earliest stages of concept definition into operations and maintenance. It comprises the management of all that is involved in achieving the project objectives safely and within agreed time, cost, technical, quality and other performance criteria. Project management provides the single point of integrative responsibility needed to ensure that everything on the project is managed effectively to ensure a successful project deliverable.

The APM BOK the book is divided into four major categories:

- Project management
- Organisational Issues
- Tools and Techniques
- General Management

These four categories are then subdivided into 40 elements / process of project management. Willis (1995) argues that any document of this nature that covers such a wide range of subjects will inevitable contains few anomalies but what’s important is that all project management-associated aspects are covered in this BOK.

The elements in the categories defined in APM BOK (3rd Edition) are illustrated in the Figure 2.7 below:
This model from APM has worked well over the decade since it was launched in 1993 and is now widely used as the basis of competency assessment by many companies in Europe (Morris et al. 2000). In 2005 the APM has revised its Body of Knowledge and produced a 5\textsuperscript{th} edition of APM BOK. According to Morris et al. (2006) the new addition of APM BOK is broader in scope and its broadness is explicitly based on the success and failures of research that lead to the management of projects paradigm. The 5\textsuperscript{th} edition of BOK is based on an extensive review of literature and survey of professionals views on the knowledge considered necessary for professionals. The latest approach of APM to project management is illustrated in table 2.3:

![Figure 2.7: Elements of APM Body of Knowledge (BOK) (Source: Willis, 1995)](image)

<table>
<thead>
<tr>
<th>Systems Management</th>
<th>Organisation and People</th>
<th>General Management</th>
<th>Techniques and Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programme Management</td>
<td>Project Management</td>
<td>Project Management</td>
<td>Operational/Technical Management</td>
</tr>
<tr>
<td>Project Life Cycle</td>
<td>Project Environment</td>
<td>Project Strategy</td>
<td>Marketing and Sales</td>
</tr>
<tr>
<td>Project Strategy</td>
<td>Project Appraisal</td>
<td>Project Appraisal</td>
<td>Finance</td>
</tr>
<tr>
<td>Project Success/Failure Criteria</td>
<td>Integration</td>
<td>Integration</td>
<td>Information Technology</td>
</tr>
<tr>
<td>Integration</td>
<td>Systems and Procedures</td>
<td>Systems and Procedures</td>
<td>Law</td>
</tr>
<tr>
<td>Systems and Procedures</td>
<td>Organisation</td>
<td>Organisation</td>
<td>Procurement</td>
</tr>
<tr>
<td>Decision</td>
<td>Control and Cooperation</td>
<td>Control and Cooperation</td>
<td>Quality</td>
</tr>
<tr>
<td>Communication</td>
<td>Leadership</td>
<td>Leadership</td>
<td>Safety</td>
</tr>
<tr>
<td>Delegation</td>
<td>Team Building</td>
<td>Team Building</td>
<td>Industrial Relations</td>
</tr>
<tr>
<td>Conflict Management</td>
<td>Negotiation</td>
<td>Negotiation</td>
<td></td>
</tr>
<tr>
<td>Management Development</td>
<td>Management Development</td>
<td>Management Development</td>
<td></td>
</tr>
</tbody>
</table>
It is cleared from the above table that in the 5th edition the APM has expanded its knowledge areas to provide a holistic approach to project management.

2.4.3 PRoject IN Controlled Environments 2 (PRINCE2)

PRINCE stands for Projects IN Controlled Environments and is a management approach owned and promoted by the Office of Government Commerce (OGC, part of UK treasury). PRINCE was initially published in 1989 and has derived its roots from an
earlier method called Project Resource Organisation Management and Planning Technique PROMPT (a project management method created by Simpact Systems Ltd in 1975). In 1996 a consortium of some 150 European organisations contributed and published a version 2 of PRINCE (PRINCE2, 2009). PRINCE2 was originally aimed at the public sector; however, it is now being adopted faster in the private sector and is growing in importance internationally (Fox et al., 2007).

PRINCE2 is described as a structured method for effective project management (Wideman, 2002). The project management process in PRINCE2 is divided into four stages. These stages are:

- Pre-project stage,
- Initiation Stage,
- Continuation Stage, and
- Closing Stage (Portman, 2009)

The model further divides these stages between seven main processes and three main sections. The illustration of which is shown in the Figure below.

<table>
<thead>
<tr>
<th>Directing</th>
<th>Managing</th>
<th>Delivering</th>
</tr>
</thead>
<tbody>
<tr>
<td>PreProject</td>
<td>Initiation Stage</td>
<td>Starting Up a Project (P1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Managing a Stage Boundary (P6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Initiating a Project (P2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Managing Product Delivery (P5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling a Stage (P4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Managing Product Delivery (P5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling a Stage (P4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closing a Project (P7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Managing a Stage Boundary (P6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Managing Product Delivery (P5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling a Stage (P4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closing a Project (P7)</td>
</tr>
<tr>
<td></td>
<td>Subsequent Stage(s)</td>
<td>Managing a Stage Boundary (P6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling a Stage (P4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Managing Product Delivery (P5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling a Stage (P4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closing a Project (P7)</td>
</tr>
<tr>
<td></td>
<td>Final Stage</td>
<td>Directing a Project (P3)</td>
</tr>
</tbody>
</table>

Figure 2.8: The PRINCE2 Process Model (Source : Portman, 2009)

In addition to these seven processes and three main sections, there are different themes in PRINCE2. These themes are used as a tool by project managers for the execution of the processes. They are also used to organise and directs the project.

These themes are:

- Business Case (Why)
• Organisation (who)
• Planning (where, how, when and how much)
• Controls
• Configuration management
• Risk management (what if)
• Quality
• Change management

The table below will list and explain the themes, processes and their interaction in the PRINCE2 model in the form of a summary.

Table 2.4: Summary of PRINCE2 Model (Source: Bradley, 2002, p, 20-23)

<table>
<thead>
<tr>
<th>PRINCE2 Processes</th>
<th>Abbreviation</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting up a project</td>
<td>SU</td>
<td>Establishes the objectives and approach to the project; Sets up the project management team; Plans for the Initiation process, which looks to answer the question “do we have a worthwhile and viable project?” before asking for commitment of resources to set up a project environment</td>
</tr>
<tr>
<td>Initiating a Project</td>
<td>IP</td>
<td>Plans the whole project in terms of its products, activities, resources usage and quality; set the baseline for the business benefits and risks</td>
</tr>
<tr>
<td>Directing a Project</td>
<td>DP</td>
<td>Provides authorisation for work to be carried out and resources to be committed. Authorisation for project initiation and project closure and, in some cases, its premature termination. The process is “owned” by the project board –the overall authority for the project –the Executive member is accountable for the overall business success of the project</td>
</tr>
<tr>
<td>Controlling a Stage</td>
<td>CS</td>
<td>The basic day-to-day project management process – authorising work to create or change</td>
</tr>
</tbody>
</table>
products, collecting and reflecting “actual”, assessing progress and reporting to senior management. Capturing proposed changes and errors and escalating these, where appropriate to the project board.

**Managing Product Delivery**  
**MP**  
The main “workshop” for the project where the majority of resources are consumed. This process is where the Products of the project are created. Progress reports (checkpoint reports) are provided to the project manager. Quality review and delivery of products occurs here.

**Manage Stage Boundaries**  
**SB**  
Reporting on the achievements of the current management stage and the impact on the overall project plan and business case. Planning the next stage (product, activities, resource usage). Putting together exception plans when the management stage has suffered a significant departure from its approved plan.

**Closing a Project**  
**CP**  
Preparation for closing the project in an orderly way. Customer sign-off, preparation of an End-project report and identification of lessons learned and follow-on recommendations. Planning for a post project review.

### PRINCE2 Themes

<table>
<thead>
<tr>
<th>Description</th>
<th>Used By</th>
<th>Explanation</th>
</tr>
</thead>
</table>
| Organisation | SU, SB        | Organisation Structure+ Role Descriptions. Predominantly used in the “starting up a project” Process where the executive and project manager are appointed in the first process, and the project management is designed and appointed. The project management team is reviewed at the end of each management stage within “Managing Stage Boundaries”.

| Planning     | SU, IP, CS, MP, SB, CP, PL, DP | All processes use the planning theme. The initiation of the project is planned during “Starting up a Project”; the project itself is |
| Controls                        | SU, IP, CS, MP, SB, CP, PL, DP | All the processes use the controls theme. The processes which make particular use of this theme are “Initiating a project” (which sets up the overall project control structure); “Controlling a stage” (which uses checkpoint reports to capture progress, and records actual usage of resources. Highlight reports are used to inform the project board of progress); “Managing Product Delivery” generates checkpoint reports for control purposes. Stage approval is handled by “Managing Stage Boundaries” were Management Stages are approved via End Stage Assessments. This process also uses exception reporting and planning to control significant departures from plan. “Directing a project” is the process within which overall authorisations are made; this process uses the key controls of End Stage Assessment, Exceptions assessment, exceptions assessments, tolerance, project initiation and project closure. |
| Business Case                  | SU, IP, SB, DP                | The Business case is viewed as the “driving force” of any PRINCE2 project. The business benefits are measured by the business case which is outlined in “Starting up a project” and formally recorded in “initiating a project” where it forms an important part of the Project Initiation Document (PID). The business case is up-dated at least during “Managing stage boundaries” when the end stage report created |
—more often if appropriate. When Project Issues are being analysed the impact on the business case will be reviewed. During “closing a project” the business case will be sued in preparing the Post Project Review Plan.

The Business case has close ties with the management of risk theme and the two themes are usually treated in unison.

| Management of Risk | SU, IP, SB, DP | Risk analysis is carried out initially in “starting up a project” when the project brief is created and a risk log established. The initially identified risks are refined in “initiating a project” where the business case for the project is established.

The risk analysis is updated during “Managing Stage Boundaries” to provide the basis for decision support for the project board when they review the project at the End Stage Assessment in “Directing a Project”. No specific risk analysis tools or techniques are recommended.

Management of risks has close ties with the business benefits which are measured and presented as the business case for the project. |
| Quality | SU, IP, CS, MP, PL | The customer’s quality expectations are first identified in “Starting up a project” and quality aspects are planned in “Initiating a project”. When the project is approved, “controlling a stage” and “Managing product delivery” enable specific quality criteria to be set for each product via product description described in the Planning process. |
| Configuration Management | IP, CS, MP, CP | Configuration Management is not optional in PRINCE2. This theme addresses the proper |
safeguarding and management of products and their associated documentation. “Initiating a project” sets up the project files and “Controlling a Stage” and “Managing product delivery” executes the configuration management arrangements. Project files are archived in “Closing a Project” mainly for audit purposes.

| Change Control | CS | Managing proposals for change is an important aspect of project management and the process “Controlling a Stage” is where such proposal are captured, evaluated and actions decided upon. |

The PRINCE2 guide provides recommendations to use the PRINCE2 approach within a closed organisation. It further states that the PRINCE2 approach is a single unified (closed) methodology starting from developing the initial product breakdown structure through to identifying the corresponding network scheduler. It is because of this unified approach the monitoring is carried out in a closed and organised way. In addition, PRINCE2 also contains suggestions for the adaptation of the project so that each project can be precisely customized (Portman, 2009).

### 2.4.4 Project and Program Management for Enterprise Innovation (P2M)

The Japan Project Management Forum (JPMF) is a division of the Engineering Advancement Association (ENNA), which was founded in 1978 as a non-profit organisation based on corporate rather than individual membership. ENNA addresses the needs of industry and corporations. Its membership includes 250 engineering and project based companies. In the 90s, Japanese companies experienced a deflationary depression called the ‘lost ten years.’ To survive and to regain their global competitiveness, they looked for solution in the ‘kaikaku’ (reforms) of business management, organisation and technology. All these companies applied a new project management paradigm and related framework called ‘Kaikaku Project Management’. Based on this paradigm, a Japanese new framework for Project and Programme Management called P2M: Project and Program Management for Enterprise Innovation
was developed in 2000-2001 (Bredillet, 2008). ENNA has published P2M: A Guide of Project and Program Management for Enterprise Innovation in 2002, the guide is also available in English translation (Crawford and Pollack, 2008).

Bredillet (2008) states that P2M proposes a framework based on a Mission Driven Approach and an insightful thinking. This enables solving complex ambiguous problems in uncertainty. Furthermore, the P2M approach integrates multi/interdisciplinary knowledge and methodologies. The approach of P2M is to recognized three kinds of projects consisting of concept development (Scheme model), implementation (System model), and operation (Service model) and to generate diversified, creative and synergistic business models. This could also be called as a domain of P2M.

The scheme model means a conception plan to develop a mission into multiples scenarios, with a scheme report concerning the feasibility as a deliverable. The key attributes of the scheme model are the definition of feasibility, internal structure and external relationship, and flexible adaptation to the owner request to changes (Ohara, 2005).

The system model is based on the systems approach. This method principally pursues optimisation with project engineering techniques, of which typical cases are program design and EPC (Engineering, Procurement, and Construction) for projects. This method focuses on control with the phase approach that divides work process by the time axis and by the work breakdown concept (ibid)

The service model draws on a completed systems functions to crate potential value. The service model takes the form of a project in which goods are produced and services are provided by using a completed system through a program or project (ibid).

The Figure below will illustrate these three models:

<table>
<thead>
<tr>
<th>Insight and ideas of missions (Scheme Model)</th>
<th>Planning and Execution of projects (System Model)</th>
<th>Effective use and maintenance of systems (Service Model)</th>
</tr>
</thead>
</table>

Conventional PM

P2M

Figure 2.9: Domain of P2M (Source: PMAJ, 2009)
These business models can be seen as a deliverable of programme management (Ohara, 2009). The key characteristics of P2M can be summarised in the Figure below:

![Project Management Tower (PM Tower)](source-url)

**Figure 2.10: Project Management Tower (PM Tower) (Source: Ohara, 2005)**
The first step of Project Management Entry of P2M describes how to make a first step as a Mission-achievement professional. The second step of Project Management explains the basic definition and framework of project management. The third step of programme management introduces program management that organically combines multiple projects. The fourth step of segment management offers 11 domains of project management. Project management domains are used in a standalone or combined manner for individual tasks and challenges of project and program management (ENNA, 2005).

2.5 Comparison of Various Project Management Bodies of Knowledge

2.5.1 Comparison of PMI BOK with PRINCE2

The first difference between PMBOK and PRINCE2 is that PMBOK consists of twelve chapters describing function based knowledge areas. These knowledge areas are further illustrated with their respective project management processes in the form of inputs, tools and techniques and outputs. Whereas PRINCE2 is a project life cycle based methodology which has six out of eight major processes running from “starting up a project” to “closing a project”. The remaining two, “planning” and “directing a project” are continuous process supporting the other six. Each of these has their respective sub-processes totalling 45 in all (Wideman, 2002).

In PRINCE2 the project life cycle does not starts with the feasibility study instead it considered it as inputs to the project life cycle, perhaps as separate projects in their own right. Whereas the PMBOK recognises that the project needs assessment or feasibility study may be the first phase of the project. In PRINCE2 parallel levels of management are defined (which includes project directors or executives, project managers and team level management personal) whereas, the PMBOK recognises the project manager as an individual responsible for managing the project. Therefore it can be inferred that in PMBOK the project manager is the person who is firmly in charge of the project (Wideman, 2002).
2.5.2 Comparison of PMI BOK with APM BOK

The difference between the APM and PMI BOKs in essence is whether the project management core is essentially about process or performance (Morris et al., 2000). The PMI BOK has been developed by practical professionals whereas the APM BOK on the other hand has been more directly informed by researcher (Morris et al. 2006). The PMI BOK generally covers project management processes and practices. So one can conclude that the PMI BOK is solely involved to get the project accomplish on time, in budget and within the defined scope. It does not address the technical, commercial or environmental issue although it does refer to them in the starting chapters. On the other hand the APM BOK does address these broader topics.

The APM BOK talks about strategy and context of project management in organisational level and then specifically divides the management of projects into five broad areas. Whereas the PMI BOK discuss about the nine knowledge areas of project management and five process groups to manage a project. Although there is no mentioning of program and portfolio management in PMI BOK however PMI does recognise this and produces the standard of program and portfolio management in the form of separate publication and standards. The PMI recommends reading these standards with PMBOK to realise projects as a strategy at organisational level.

2.5.3 Comparison of PMBOK with P2M

The P2M moves beyond the classical process and competence bodies of knowledge (BOKs) and standards proposed by the well established professional bodies. Industries and professional bodies strive to create an integrated framework, which translate strategic aims into operational processes thereby improving performance and creating value. P2M is an attempt to realise those efforts. As a comparison of P2M with PMBOK, P2M is broader in scope and is an effort to develop thoughts on understanding project management as an entrepreneurial activity. It’s more inclined towards the standards which attempts to link organisation strategy with portfolio, program and project management. Whereas, PMBOK is specifically focus on the implementation of a successful project.
The above body of knowledge’s (PMBOK, APM BOK, P2M) are not inconsistent but the conceptual breadth—the scope—of each of them increase as one goes from PMI’s PMBOK, to APM BOK and then to the Japanese BOK, P2M. The latter two, the APM BOK and P2M are much broader in conceptual breadth and scope than the PMBOK (Morris et al., 2006). But still the PMI BOK is considered as a de facto international standard for project management knowledge mainly because of the international audience it has gathered (Crawford and Pollack, 2008).

2.6 A Case for Globally Accepted Standard of Project Management

The development of standards in project management began with recognition of shared interests, resulting in fairly informal community gatherings. Through regular meetings and recognition of shared experience, practitioners began to think of themselves as a community and a profession. This led to attempts to define and delineate that profession in order to make it visible and acceptable to those outside the community (Crawford 2004). Over the last decade different standards or BOKs has been introduced in the profession of project management. Duncan (1998) classifies these standards into three categories of project related, organisation related and people related. The project related standard are focused on the knowledge and practices of management of projects with the view point of an individual project. The organisation related projects are focused on the knowledge and practices of management of projects with the view point of an enterprise. And, the people related standards are focused on the development, assessment and certification of people. The table below will illustrate this classification.

Table 2.5: Different PM Standards focusing on people, Projects and Organisations
(Source: Crawford et al. 2008)

<table>
<thead>
<tr>
<th>People</th>
<th>Projects</th>
<th>Organisations</th>
</tr>
</thead>
<tbody>
<tr>
<td>South African Qualification Authority (SAQA)</td>
<td>International Project Management Association Competence Baseline (IPMB)</td>
<td>Organizational Project Management Maturity Model (OPM3)</td>
</tr>
<tr>
<td>National Competency Standards for Project Management (NCSPM)</td>
<td>The Association for Project Management Body of Knowledge (APM BoK)</td>
<td>Office of Government Commerce Managing Successful Programmes (OGC MSP)</td>
</tr>
<tr>
<td>British Standards (BS 6079)</td>
<td></td>
<td>Office of Government Commerce Project Management Maturity Model (OGC PMMM)</td>
</tr>
<tr>
<td>International Standards Organization (ISO 10006)</td>
<td></td>
<td>Projects in Controlled Environments (PRINCE 2)</td>
</tr>
</tbody>
</table>
These standards were helpful in developing the profession yet they were evolving from within a national boundary and have the perception of being influenced by national culture and practices (Crawford and Pollack, 2008; Morris et al., 2006). Though in the early ages of the profession these national bodies were dominant in building the profession but now the profession has global audiences and this led to the call for a globally applicable standard of project management.

This call was answered in the formation of a working group on Global Performance Based Standard for Project Management Personnel (GPBSPMP) in 2002. After two years and six working session a draft standard was released for public review by GPBSPMP. A high number of reviews were received on this draft and after three years of diligent work a Global Project Management Framework (GAPPSS) has been released and is currently being piloted by a major global corporation. This standard can be seen as an attempt to further the profession, by providing opportunities for countries without existing standards to have a basis of criterion of their own and by creating a global basis for professional reciprocity (Crawford and Pollack, 2008).

### 2.7 Other Approaches to Project Management

All of the above approaches to project management are based on the process based methodologies. A part from these process based methodologies other paradigms for managing projects has also surfaced the research literature. Some of these approaches are as follows:

- Critical Chain Project Management
- Complex Project Management
- Structured System Analysis and Design Method (SSADM)

#### 2.7.1 Critical Chain Project Management (CCPM)

Critical Chain project management which was developed and publicized by Dr. Eliyahu M. Goldratt in his book ‘Critical Chain’ is a novel approach for managing projects (Raz et al., 2003). Goldratt is well known in the operations management community as the inventor of the Theory of Constraints (TOC). TOC is a tool for managing repetitive
production system based on the principle that every system has a constraint, and system performance can only be improved by enhancing the performance of the constraining resource (ibid).

CCPM is an extension of the TOC designed specifically for project environment. In CCPM the first step is to identify the critical chain activities by using the critical path method. The next step is to recalculate the project schedule based on shortened task duration estimates for the critical activities. The difference between the project duration based on new estimates and the original is called the project buffer. The same procedure applies for calculating the activities which are not critical and a buffer is created which is called feeding buffer. This buffer is placed in the path where it feeds back into the critical chain path. According to CCPM a feeding buffer represents the extent of protection of the critical chain against the uncertainty. The third type of buffer used by CCPM is called a resource buffer, which is a virtual task inserted prior to critical chain tasks that require critical resources. Its purpose is to issue a signal to the critical resources that a critical task to which they are assigned is due to start shortly. The resource buffer does not actually consume any resources and it adds neither time nor cost to the project. As progress is reported the CCPM schedule is recalculated, keeping the final due date of the project constant by adjusting the buffer sizes (Raz et al., 2003). In other words in a CCPM the flexibility in the start time of the resources and the ability to quickly switch between the activities and activities chains keep the whole project on schedule.

The opponents of CCPM methods dismiss the hype that CCPM can lead to superior performance and argues that experienced project managers have known the principles behind CCPM for decades and CCPM's uniqueness is in the terminology rather than in its substance (Raz et al., 2003).

2.7.2 Complex Project Management

A recent addition in the list of professional organisation in the field of project management is the college of complex project managers. The college of complex project managers has developed their own standards to manage the complex projects and called it as The Competency Standards for Complex Project Managers (CSCPM). The principle behind this is that the complex system is formed out of many components whose behaviour is emergent and the behaviour of the complex system cannot be simply inferred from the behaviour of its components (Whitty and Maylor, 2009). So, to
manage this complex system a complex project manager is required who by understanding complexity and accepting it, can gain insight and have a capability to steer a project towards its intended outcomes. The Complex project managers need to focus on aspects of complex projects that distinguish them from traditional projects.

Whitty and Maylor (2009) articulate that the opponent of this standard argues that the definition of complex does not stand up to any scrutiny. They further argue that there has been no analysis of the problems that the establishment of this initiative is intended to solve. In addition to this the process by which the college and the standards have progressed has gone un-checked; and that the standard is not established on evidence based practice.

2.7.3 Structured System Analysis and Design Method (SSADM)

The structured systems analysis and design method (SSADM) is the standard structured method used for computer project in UK government departments. SSADM has also been adopted as a standard by public utilities, local government, health authorities, foreign governments and several large private sector organisations. The basic principles of SSADM are shared, to a varying degree, by many of the modern structured methods of system analysis and design (Ashworth, 1988). The structure of the SSADM project is depicted in the Figure below:

![Figure 2.11: Stages of SSADM (Source: Ashworth, 1988)](image-url)
The proponents of the SSADM argues that its being used in large number of projects principally in the area of government data processing systems and experience shows that the method has improved the quality of system analysis and design. They also accentuate that a large number of projects are now completed on time and their implementation was considered to be a success (Ashworth, 1988).

2.8 Current Practices in Project Management

Numerous methods and techniques have been developed, covering all aspects of managing projects from their genesis to their completion, and these have been disseminated widely in books and journals through the work of professional bodies. But how these techniques are currently practiced in the real world and to what extent these techniques are used in the management of projects is presented by the research conducted by Abbasi and Al-Mharmah (2000) in the less developed countries and by White and Fortune (2002) in the developed countries.

Abbasi and Al-Mharmah (2000) conducted a study on project management practices in Jordan and selected a sample of 50 firms. The data was collected through a questionnaire which was filled out by interviewing the person in charge of the planning and management department. The main part of the questionnaire was focused on investigating the most implemented techniques of project management in these firms. The table below will show the project management practices being implemented in these organisations.

Table 2.6: Project Management Practices in a Less Developed Country (Source: Abbasi and Al-Mharmah, 2000)

<table>
<thead>
<tr>
<th>Technique</th>
<th>%</th>
<th>95% Confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program evaluation and review technique (PERT)</td>
<td>21.9</td>
<td>6.7–37.0</td>
</tr>
<tr>
<td>Activity on arrow (AOA)</td>
<td>9.4</td>
<td>0.0–18.8</td>
</tr>
<tr>
<td>Activity on node (AON)</td>
<td>6.3</td>
<td>0.0–12.6</td>
</tr>
<tr>
<td>Bar chart</td>
<td>53.1</td>
<td>34.9–71.4</td>
</tr>
<tr>
<td>Organization breakdown structure (OBS)</td>
<td>31.3</td>
<td>14.3–48.2</td>
</tr>
<tr>
<td>Work breakdown structure (WBS)</td>
<td>28.1</td>
<td>11.7–44.6</td>
</tr>
<tr>
<td>Critical path method (CPM)</td>
<td>34.4</td>
<td>17.0–51.8</td>
</tr>
<tr>
<td>Time cost analysis</td>
<td>50.0</td>
<td>31.7–68.3</td>
</tr>
<tr>
<td>Resource leveling</td>
<td>25.0</td>
<td>9.1–40.9</td>
</tr>
<tr>
<td>Reporting progress</td>
<td>53.1</td>
<td>34.8–71.4</td>
</tr>
<tr>
<td>Developing and implementing corrective plans</td>
<td>40.6</td>
<td>22.6–58.6</td>
</tr>
<tr>
<td>Evaluation of project success</td>
<td>43.8</td>
<td>25.6–61.9</td>
</tr>
<tr>
<td>Project management software</td>
<td>68.8</td>
<td>51.8–85.7</td>
</tr>
</tbody>
</table>
White and Fortune (2002) conducted a study to explore the project management practices currently being carried out in the industry. They conducted a pilot survey and a questionnaire was sent to 30 project managers representing seven organisations. The responses from this pilot survey were used to generate a revised questionnaire which was sent to 995 project managers representing 620 organisations from both public and private sectors. Of the 995 questionnaire that were sent out in the main survey, 236 were returned. The response rate thus was 23.72 %.

The main section in the questionnaire was on methods, tools and techniques and methodologies. In this section 44 different methods, tools and techniques and methodologies were investigated. This was done so as to get the response on the current techniques used in the projects. These 44 options were grouped under the following main themes of:

1. Methods/methodologies
2. Project management tools
3. Decision making techniques
4. Risk assessment tools
5. Computer models /database
6. Computer simulations

The table below will show the different kind of tools and techniques of project management that were being used in the industry.
<table>
<thead>
<tr>
<th>PM method/ methodology/ tool/technique</th>
<th>Count of frequency of use</th>
<th>Total Used</th>
<th>Mean</th>
<th>Mode</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PM method and methodologies</strong></td>
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<tr>
<td>PRINCE</td>
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<td>PRINCE2</td>
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<tr>
<td>SSADM</td>
<td>17</td>
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<td>The European Risk Management method (RISKMAN)</td>
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<td>The RIBA Plan of Work</td>
<td>2</td>
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<tr>
<td>Other PM methods and methodologies</td>
<td>16</td>
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<tr>
<td>In house PM methods</td>
<td>128</td>
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<td>In house similar to RINCE</td>
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<td><strong>PM Tools</strong></td>
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<td>Critical Path Method (CPM)</td>
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<td>Work Breakdown Structure (WBS)</td>
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<td>Cash flow Analysis (CFA)</td>
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<td>Gantt Bar Charts</td>
<td>152</td>
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<td>Graphical Evaluation and Review Technique ( GERT)</td>
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<tr>
<td>Program Evaluation and Review Technique (PERT)</td>
<td>24</td>
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<tr>
<td>Strength Weakness Opportunity Threat (SWOT)</td>
<td>41</td>
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<tr>
<td>Other PM tools</td>
<td>21</td>
<td></td>
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<tr>
<td>PM software</td>
<td>182</td>
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<tr>
<td>In house PM Tools</td>
<td>5</td>
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<tr>
<td><strong>Decision Making Techniques</strong></td>
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<td>172</td>
<td>0.73</td>
<td>0</td>
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<td>Cost Benefit Analysis (CBA)</td>
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<td>Decision Analysis (DA)</td>
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<td>Sensitivity Analysis (SA)</td>
<td>19</td>
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<tr>
<td>Expressed preferences</td>
<td>23</td>
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<tr>
<td>Implied preferences</td>
<td>11</td>
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<tr>
<td>Revealed preferences</td>
<td>11</td>
<td></td>
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<tr>
<td>Other decision making techniques</td>
<td>9</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>In house decision making techniques</td>
<td>2</td>
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<tr>
<td><strong>Risk Assessment Tools</strong></td>
<td></td>
<td>147</td>
<td>0.62</td>
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<tr>
<td>Life Cycle Cost Analysis (LCCA)</td>
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<td>Event Tree Analysis (ETA)</td>
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<td>Fault Tree Analysis (FTA)</td>
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<td>Probability Analysis</td>
<td>34</td>
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<td>Reliability Analysis</td>
<td>13</td>
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<td>Uncertainty Analysis</td>
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<td>Failure Mode and Effect Analysis (FMEA)</td>
<td>10</td>
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<td>Hazard Analysis (HAZAN)</td>
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<tr>
<td>Hazard and Operability Studies (HAZOP)</td>
<td>9</td>
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<tr>
<td>Operation and Maintenance Risk Analysis (OMRA)</td>
<td>4</td>
<td></td>
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<tr>
<td>Preliminary Hazard Analysis (PHA)</td>
<td>5</td>
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<tr>
<td>Other Risk Assessment Tools</td>
<td>7</td>
<td></td>
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<tr>
<td>In house Risk Assessment Tools</td>
<td>14</td>
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<tr>
<td><strong>Computer Model / Database / Indexes</strong></td>
<td></td>
<td>40</td>
<td>0.17</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>CRUNCH</td>
<td>1</td>
<td></td>
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<tr>
<td>Lesson Learn Files (LLF)</td>
<td>23</td>
<td></td>
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<tr>
<td>Expert Systems</td>
<td>4</td>
<td></td>
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<tr>
<td>In house computer models / database / indexes</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Computer Simulations</strong></td>
<td></td>
<td>11</td>
<td>0.05</td>
<td>0</td>
<td>2</td>
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<tr>
<td>Hertz</td>
<td>1</td>
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<tr>
<td>Monte Carlo</td>
<td>10</td>
<td></td>
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<tr>
<td><strong>Other Techniques</strong></td>
<td></td>
<td>11</td>
<td>0.05</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Other techniques</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>All Methods Tools and Techniques</strong></td>
<td></td>
<td>1210</td>
<td>5.13</td>
<td>3</td>
<td>23</td>
</tr>
</tbody>
</table>
Cooke-Davies (2004) states that if the art and science of managing the projects is to advance, then practices that lead to project success are to be encouraged over those that lead to failure. The next section of the literature review will discuss about the success of project and project management.

2.9 Project Success Vs Project Management Success

One of the most common approaches to project success has been the fulfilment of golden triangle of cost, time and scope. Although this may seem true in some cases—and appropriate in the short run when time to market is critical—there are many examples where this approach is simply not enough (Shenhar et al., 2001). Several authors (De Wilt, 1998; Shenhar et al, 1997; Pinto and Slevin 1988) have agreed that there could be different criteria for the success of the project. The Figure below will depicts the project success criteria perceive by Pinto and Slevin.

![Figure 2.12: Pinto and Slevin’s Model of Project Success Criteria (Source Cooke-Davies, 2004b)](image-url)
De wilt (1998) cited in Cooke-Davies (2001) distinguishes between project success (measured against the overall objectives of the project) and project management success (measured against the widespread and traditional measures of performance against cost, time and quality). Furthermore, the different objectives projects are designed to achieve can be arranged in a hierarchy, with not all equally important, and that the different stakeholders in the project such as owner, user, sub-contractor, supplier, or designer may all have success criteria that differ from each other. This makes the measurement of success a complex and inexact matter, since it is possible for a project to be a success for one party and a disaster for another. It can also appear to be success one day and a failure the next day (Cooke-Davies, 2001).

Shenhar et al., (2001) gave an example of the construction of Sydney opera house and states that the project took three times longer than the anticipated and cost almost five times higher than planned. But once it completed it quickly became Australia’s most famous landmark. Therefore one can infer that in the context of managing the project the Sydney opera house can be termed as a failure but as a project it is highly successful.

The literature on project success factors is more extensive than on success criteria (Crawford, 2001: cited in Cooke-Davies, 2004b; Belout and Gauvreau, 2004). The table below will illustrate the viewpoint of different researcher on the critical success factor of project and project management:

Table 2.8: Critical Factor for Project and Project Management Success (Adapted from: Cooke-Davies, 2004b)

<table>
<thead>
<tr>
<th>Writers</th>
<th>Critical factors for Project Success</th>
</tr>
</thead>
</table>
| Baker, Murphy and Fisher (1974 and 1988) | 1) Goal commitment of project team  
2) Accurate initial cost  
3) Adequate project team capability  
4) Adequate funding to completion  
5) Adequate planning and control technique  
6) Minimal start-up difficulties  
7) Task (vs. social) orientation |
<table>
<thead>
<tr>
<th>Critical factors for Project Management Success</th>
<th>Writers</th>
</tr>
</thead>
</table>
| 8) Absence of bureaucracy  
9) On-site project manager  
10) Clearly established success criteria | Pinto and Slevin (1988) |
| 1) Project mission  
2) Top management support  
3) Project schedule/plans  
4) Client consultation  
5) Personnel / Recruitment  
6) Technical tasks  
7) Client acceptance  
8) Monitoring and feedback  
9) Communication  
10) Troubleshooting | |
| 1) The appropriate technology has been selected for the project.  
2) Communication channels were defined before the start of the project.  
3) All proceeding methods and tools were used to support the project well.  
4) The project leader had the necessary authority. | Lechler (1998) |
| 1) Project Definition  
2) Technical performance  
3) Monitoring and Control  
4) Organisational support administration  
5) Team Selection  
6) Communication and Leadership  
7) Team development  
8) Task oriented decision making and problem solving  
9) Strategic direction  
10) Stakeholder management | Crawford (2001) |
| 1) Project Scope management  
2) Performance management | Cooke-Davies (2002) |
Cooke-Davies (2004b) articulates that both project success and project management success are important to any project. If a project achieves project success without project management success, there is the inevitable conclusion that even greater benefits could have been realised. On the other hand, if project management success is achieved without project success, then the owner or sponsor has failed to obtain the benefits that the project was designed to achieve (Fortune and White, 2006).

As project become the currency for improved business performance, making project management a core capability of successful organisations in turn becomes paramount. But to demonstrate the true competence, project management success cannot be an occasional event. Performance that is good, on average is not sufficient. Repeatability and relentless improvement must be the standard. Therefore to understand an organisation’s project management effectiveness is to determine its project management maturity (PMM). It’s significant in a sense that by having a grasp of where a company lies on the spectrum, management can determine its project management strength and weakness (Ibbs et al., 2004).

2.10 Project Management Maturity (PMM)

Companies frequently opt to implement standard project management method as given by PMI, APM etc. These companies expect that such an approach can lead to better performance (Milosevic and Patanakul, 2005). Recently, the Project Management Institute (PMI) issued a new standard, the Organisational Project Management Maturity Model (OPM3) which suggests the adoption of standard project management methods. The purpose of this standard is to provide a way for organisations to understand their project management practices and to measure the maturity of PM process (PMI, 2003).

The concept of maturity was born in Total Quality Management movement, where the application of statistical process control techniques showed that improving the maturity level of any technical process leads to two things: a reduction in the variability inherent in the process, and an improvement in the performance of the process (Cooke-Davies, 2003). Based on this concept Carnegie-Mellon University has developed a model called
the Capability Maturity Model to measure organisation process maturity. According to this model the organisation process maturity advances through five stages. These stages are:

Level 1: Ad hoc (Chaotic) --- the starting point for use of a new process
Level 2: Repeatable ---- the process is able to be used repeatedly, with rough repeatable outcomes
Level 3: Defined --- the process is defined/confirmed as a standard business process
Level 4: Managed --- the process is managed according to the metrics described in the defined stage
Level 5: Optimised: process management includes deliberate process optimisation or improvement.

Paulk et al. (1991) presented a five stage model to measure the process maturity. These five stages and the requirement of these stages are given in the table below:

Table 2.9: Organisation Project Management Competency Table (Source: Paulk et al, 1991)

<table>
<thead>
<tr>
<th>Competence level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 = Optimized</td>
<td>Continual improvement of process</td>
</tr>
<tr>
<td></td>
<td>Continual collection of data to identify</td>
</tr>
<tr>
<td></td>
<td>Analysis of defects for prevention</td>
</tr>
<tr>
<td>4 = Managed</td>
<td>Process is quantitatively measured</td>
</tr>
<tr>
<td></td>
<td>Minimum of metrics for quality and productivity exist</td>
</tr>
<tr>
<td></td>
<td>Collection of process experiences</td>
</tr>
<tr>
<td>3 = Defined</td>
<td>Process defined and institutionalized</td>
</tr>
<tr>
<td></td>
<td>Process groups defined</td>
</tr>
<tr>
<td>2 = Repeatable</td>
<td>Process depends on individuals</td>
</tr>
<tr>
<td></td>
<td>Minimum of process controlling/guidance exists</td>
</tr>
<tr>
<td></td>
<td>Highly risky in case of new changes</td>
</tr>
<tr>
<td>1 = Initial</td>
<td>Ad hoc process, not formalized</td>
</tr>
<tr>
<td></td>
<td>No adequate guidance</td>
</tr>
<tr>
<td></td>
<td>No consistency in product delivery</td>
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</tbody>
</table>
Based on the above model Rwelamila (2007) presented a project management maturity concept. In his perception at level 1 (initial) an organisation has no formal project management processes in place. Success of any project at this level depends on individual effort, since systems and procedures are poorly defined. The PM process is unclear and projects are marked by cost, quality and schedule problems. Interfacing with functional areas within the organisation is usually laden with communication problems (Rwelamila, 2007).

At level 2 (repeatable) PM systems and processes for planning, scheduling, tracking and estimating are in place and perceived as important within an organisation. The tools are seen as a solution to some of the performance problems, yet they are not used in a fully integrated form. Project success continues to be unpredictable, and cost and schedule fluctuations persist throughout the projects. There is no integration of databases, although schedule information is generally abundant (ibid).

At the defined level (level 3) the organisation has standardised approach to project management within the organisation. The project management systems, defined and documented, are integrated into the organisation systems and procedures. Project performance is predictable, with a high degree of accuracy. Schedule and cost performance tend to improve and utility considerations are considered appropriately. Strong emphasis is placed on scope management, which is perceived as a fundamental part of managing projects (Rwelamila, 2007).

At the fourth level (managed level) process management is measured and controlled. Management is linked with the information flow on major projects and knows how to use and interpret the information. Systems are able to generate integrated management-level information without reprocessing and reformatting. Project performance tends to conform to plans, thus the project success rate is high. There is consolidated project database, which can be accessed for estimating and benchmarking purposes (ibid).

At the top level of PM maturity (the optimised level), project management processes within an organisation are continuously improved. A sophisticated system exists such that both top-level management reporting requirements and tracking needs are met.
Resource optimisation is a reality, not only at the project level but also on an organisational basis. Reliable information can be rolled up across all projects and analysed from an organisation-wide standpoint (ibid).

In addition to the above discussion on project management maturity the PMI (2003) defined project management maturity as the degree to which an organisation practices organisational project management. The two most renowned project management maturity models are OGC’s PMMM (Office of Government of Commerce which has produced PRINCE2, Project Management Maturity Model) and OPM3 developed by Project Management Institute (PMI). Integral in measuring the organisation project management maturity the organisation advances through a series of five stages of maturity. The table below will illustrate the PMMM by OGC’s.

Table 2.10: Characteristics of Project Management Maturity Model (PMMM) by OGC’s
(Source: Cooke-Davies, 2004a)

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Project Definition</td>
<td>Project Establishment</td>
<td>Organisational Focus</td>
<td>Project Metrics</td>
<td>Proactive Problem Management</td>
</tr>
<tr>
<td></td>
<td>Requirement Management</td>
<td>Project Management</td>
<td></td>
<td>Technology Management</td>
</tr>
<tr>
<td></td>
<td>Risk Management</td>
<td>Success</td>
<td></td>
<td>Continuous Process Improvement</td>
</tr>
<tr>
<td></td>
<td>Project Planning</td>
<td>Project Training</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Project Monitoring and</td>
<td>Integrated Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>Lifecycle control</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Management of Suppliers</td>
<td>Inter-team coordination</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and External parties</td>
<td>Quality Assurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Project Quality Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Configuration Definition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and Control</td>
<td></td>
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</tbody>
</table>

The Project management institutes launched an organisational project management maturity model (OPM3) in 2003. The basic building blocks at the heart of OPM3 are five different kind of entity:
1. Best practices associated with organisational project management
2. Capabilities that are prerequisite to best practices
3. Outcomes that attest the given capability of the organisation
4. Key Performance Indicators (KPIs) that provide the means of measuring the outcomes
5. Pathways that identify the capabilities aggregating the best practices (Cooke-Davies, 2004a)

In addition to these five building blocks the model is designed to be used by the organisations for four types of purposes. These are:

1. To understand what practices and process have been found to be useful for organisation to achieve its aims
2. To measure an organisation ability to implement its high level strategic planning
3. To drive business improvement
4. To integrate organisational practices and processes in the domains of portfolio management, program management and project management.

The next section of the literature review will discuss about the project management practices in the public sector organisations followed by the project management practices in the public sector in the less developed countries.

2.11 Project Management in Public Sector

2.11.1 Understanding Public Sector Organisations

Public sector organisations are structured as pyramids: the policies and decisions are formulated at the top, responsibilities and tasks are also decided at the upper level of the pyramid and assigned to the lower levels through a hierarchical chain of command. Power rests at the top of the hierarchy (Sotirakou and Zeppou, 2005). Public sector organisations are different than their private sector counterpart because of the complex organisational environment, goals, structure and managerial values (Boyne, 2002). These variables create differences in how the basic functions of management are carried out in the public and private sector organisations. The table below highlights the key differences in the public and private sector organisations.
Table 2.11: Differences in Public and Private Sector Organisations (Adapted from: Boyne, 2002)

<table>
<thead>
<tr>
<th>Public Sector Organisations</th>
<th>Private Sector Organisations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ownership:</strong> Public sector organisations are owned collectively by members of political communities</td>
<td>Private sector organisations are owned by entrepreneurs or stakeholders (Rainey et al., 1976)</td>
</tr>
<tr>
<td><strong>Funds:</strong> Public sector organisations are funded largely by taxation from public</td>
<td>Private sector organisations are funded by the fees paid directly by customers (Walmsley and Zald, 1973)</td>
</tr>
<tr>
<td><strong>Control:</strong> Public sector organisations are controlled predominantly by political forces</td>
<td>Private sector organisations are predominantly controlled by the market forces (Dahl and Lindblom, 1953)</td>
</tr>
<tr>
<td><strong>Complexity:</strong> Public sector organisation faces a variety of stakeholders</td>
<td>In the private sector organisations the stakeholders are limited than the public sector organisations (Metcalfe, 1993)</td>
</tr>
<tr>
<td><strong>Permeability:</strong> Public sector organisations are open systems that can be easily influenced from external events</td>
<td>Private sector organisations may ignore the demand from external parties towards policy formulation and implementation (Ring and Perry, 1985)</td>
</tr>
<tr>
<td><strong>Instability:</strong> Public sector organisations are more influenced by the political instability</td>
<td>Private sector organisations are less influenced or affected than their public sector counterparts (Bozeman, 1987)</td>
</tr>
<tr>
<td><strong>Competition:</strong> Public sector organisations have less competitive pressure</td>
<td>Private sector organisations have more competitive pressure (Boyne, 1998)</td>
</tr>
<tr>
<td><strong>Goals:</strong> Public sector organisations have distinctive and multiple goals imposed upon them by the numerous stakeholders that they must attempt to satisfy</td>
<td>Private sector organisations have more focused goals (Flynn, 1997)</td>
</tr>
<tr>
<td><strong>Structure:</strong> Organisation in the public sector have more formal procedures for decision making and are less flexible and more risk</td>
<td>Private sector organisations are flexible in their decision making and are less risk averse than their public sector counterparts</td>
</tr>
</tbody>
</table>
Red Tape: The red tape implies an unnecessary and counter-productive obsession with rules rather than results. Public sector organisations are rigid in following the rules.

Red Tape: The private sector organisations are not that rigid in following the rules and processes as does the public sector; they are more concerned with the results and outcomes.

Bozeman and Scott, 1996

Autonomy: Managers have less freedom to react to the circumstances.

Autonomy: Much more freedom than their public sector counterparts.

Allison, 1979

Managerial Values: Less materialistic

Managerial Values: More materialistic.

Pratchett and Wingfield, 1996

Commitment: Stronger desire to serve the public.

Commitment: More concerned with the demand of the individual customer.

Perry and Porter, 1982

Spittler and McCracken (1996) perceive that most public sector organisations are functionally divided and bureaucratic. They further state that this division into functional areas can be for a variety of reasons. One obvious reason is that it maintains specialisation. Sometimes it is undertaken to segregate the steps in procurement and sometimes to maintain the chain of command. This is done for the reason that the responsibility is readily understood and accountability is easily traced. In addition to this the process of conceptualising, funding, designing, constructing and operating a project involves functional division of the organisation (ibid).

This structure of public sector organisations tends to bring with it a set of challenges. These challenges arise from the behaviour of the employees in the functional areas. This happens in a manner that the employees specifically focus on their own area of expertise with little understanding of how their actions will impact others (Brunetto and Farr-wharton, 2003). Some of the problems that arise due to these conditions are as follows:

- Lack of information flow
- Incorrect decision making
- Short term outlook etc (Spittler and McCracken, 1996).

The Figure 2.13 below will illustrate the functional areas in a particular public sector organisation.
The environment in which the public sector organisations work is inherently important to understand. The next section will discuss about the environment in which the public sector organisation has to work.

### 2.11.2 Public Sector Environment

Global competition and market liberalisation, the information technology revolution and the emergence of knowledge society have created an unpredictable and complex working environment for public sector organisation (Sotirakou and Zeppou, 2005). The last decade has been characterised by an intense analysis of what government pursues and what are the practices it uses to realise its efforts. Public administration, in particular has been vilified for being inflexible in performing its roles (Zajac, 1997; Box, 1999; Glyn, 2006). According to recent public opinion polls, confidence in public institutions is in decline throughout the world. Public sector organisations are experiencing continuing pressure from the public to modernise and to make government more efficient (Osborne and Gaebler, 1992; Frederickson, 1996; Durst and Newell, 1999).

![Figure 2.13: Public Sector Organisations division through Functional Areas (Adapted from: Spittler and McCracken, 1996)](chart)

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### 2.11.2 Public Sector Environment

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To eschew this pressure, public managers try hard to enhance performance through the implementation of various modernisation and change reforms (Haque, 2003). These reforms are often termed as re-organisation, re-engineering and as organisational change in the literature (Osborne and Gaebler, 1992; Drucker, 1989). In public sector often these reforms are undertaken to reduce public spending, to improve effectiveness, to respond to new social demands etc (Andrews, 2008). These calls for the reforms in the public sector lead to a new paradigm of managing public sector often referred to as New Public Management (NPM). Common and Minogu (1998) cited in Sarker (2006) observe the factors that led to the emergence of the NPM model. Some of these factors are as follows:

- The fiscal crisis of government,
- Poor performance of the public sector in different arenas,
- bureaucracy,
- lack of accountability,
- corruption,
- change of people’s expectations and
- the emergence of better alternative forms of service delivery

The next section explains NPM in more detail.

2.11.3 New Public Management (NPM)

NPM is an answer to the call of ‘reinventing the government’ (Osborne and Gaebler, 1992) on the basis of market base economy. It represents a major shift from the conventional public administration in various ways. Some of the key characteristics of NPM are as follows:

- a change in the focus of management systems and management effort from inputs and processes to output and outcomes;
- a move towards greater measurement;
- a preference for more specialised lean and autonomous organisational forms rather than old bureaucratic structure;
- a widespread substitution of contract or contract-like relationships for hierarchical relationships;
• the use of market and market-like mechanism for the delivery of public services (including privatisation, contracting out, the development of internal markets and so forth);
• a broadening relationship between the public and private sectors (characterised by the growth of public/private partnerships) and
• a swing of priorities from universalism, equity, security and resilience towards efficiency and individualism (Pollitt, 2001 cited in Sarker, 2006).

NPM advocates the adoption of management techniques which are proved useful in the private sector. Project Management is one of those techniques which have recently attracted a lot of attention in the private sector. It is a systematic effort through which an organisation can achieve its goals efficiently. But for project management to work in the public sector the officials and managers of these organisations must understand the different facets of the project management body of knowledge in public sector context (ibid). The next section will discuss about the project management in public sector.

2.11.4 Project Management in Public Sector

Spittler and McCracken (1996) states that ever since humans began building major projects for public good, the search to manage these projects effectively has continued. The public sector requires that its projects be managed with simplicity and with minimum possible costs. However, public sector organisations tend to be conservative, with slow response time and with bureaucratic culture as discussed in the section 2.10.1. These are commonly believed to be undesirable qualities and detrimental to effective project management. They further perceive that project management within the public sector is aimed at ensuring that the organisations resources are being used in ways consistent with its disparate goals and objectives. Therefore to achieve these disparate goals and objectives with minimum cost a suitable practice for the right job should be chosen. The next section will discuss these effective practices for the public sector projects.

Planning in Public Sector Projects

Effective and accurate planning is required at the start of the project for the project to be successful. In public sector projects the planning and decision making inevitably become political activities (Dennis, 2000). Planning becomes a process not only of
analysing problems, goals and alternative course of action, but also of advocating position, influencing behaviour and intervening in the policy making process to affect the outcome of decisions (Rondinelli, 1976). Planning consists of a set of procedures whereby decision makers attempt to:

- Identify and define major problems and goals,
- Analyse relevant environment and strategic conditions,
- Project trends, needs, opportunities and constraints,
- Transform goals into operational targets,
- Identify alternatives course of action for achieving goals and targets,
- Calculate cost and benefit of each alternatives,
- Estimate the probabilities of future events,
- Projected trends occurring,
- Determine the potential non-economic gains,
- Losses and consequences of each alternative,
- Choose the optimal alternatives or set of actions,
- Integrate the chosen course of action into a comprehensive plan.

In addition to understand the above characteristics of planning in a public project there are number of processes that need to be followed to plan project effectively. These are:

- Defining the deliverables
- Defining the work packages
- Estimating the work
- Scheduling the work packages
- Managing resource availability
- Creating the budget
- Integrating schedule and budget
- Identifying key performance Indicators
- Identifying critical success factors (Harpum, 2004)

**Procurement / Contracting Strategy in Public Sector Projects**

Spittler and McCracken (1996) states that by choosing a properly matched contracting strategy the chances of projects success can increase. They further describes that the
contracting strategy comprises of; the type of contract, the method of selecting the contractors and the method of determining the contract price.

They further describe that there are six prevalent contracting strategies for public sector projects. These are:

- General contractor
- Construction management
- Multiple primes
- Design-build
- Turnkey, and
- Build operate transfer

The public sector organisations are usually traditional in selecting the contracting strategy. Usually their contracting strategy involves a separate designer, a general contractor (responsible for construction only), and a fixed lump-sum contract awarded through competitive bidding (ibid).

Coordination in Public Sector Projects

Coordination is the practice through which an organisation’s functional divisions communicate with, and understand each other. An effective coordination is required through the project life cycle for a successful project. Spittler and McCracken (1996) states the for effective project management the coordination into the three stages of the project life cycle is vital. These are:

- coordination during the design process,
- coordination during the construction process,
- Coordination after the construction is complete.

In public sector organisations coordination is a mechanism through which the flow of information becomes smooth among different parts of the organisations. This flow of information is vital for the decision making process.
Risk Associated in Managing Public Sector Projects

The public sector involves inherent ambiguities because of the conflicting political interests of the stakeholders (Aarnaboldi et al., 2004). Shen et al. (2006) discusses the risk associated with the public sector projects. A number of other studies Baldry (1998); Cango et al., (2001); Ling and Hoi, (2006) undertaken world wide also emphasised their findings. According to these studies, risks affecting public sector projects can be grouped into the following major categories:

- Project Related Risks
- Government Related Risks
- Client Related Risks
- Design Related Risks
- Consultant Related Risks
- Market Related Risk

**Project Related Risks:**
These risks include cost and time over runs, poor contract management, and contractual disputes, delays of tendering and selection procedures, poor communication between project parties.

**Government Related Risks:**
These risks consist of inadequate approved project budgets, delays in obtaining permissions, changes in Government regulations and laws, lack of project controls, administrative interference.

**Client Related Risks:**
These risks include inadequate project budgets, poor project brief, variations in project specifications, delays in the settlement of contractor’s claims, lack of project control.

**Design Related Risks:**
These risks represent inadequate soil investigation, delays in design, ambiguities and inconsistencies in design and design changes.
**Consultant Related Risks:**
These risks include inadequate estimates, financial difficulties, lack of experience, poor management, and difficulty in controlling nominated subcontractors.

**Market Related Risks:**
These risks include increase in wages, shortages of technical personnel, materials inflation, shortage of materials, shortage of equipments required.

To manage these risks efficiently project management bodies of knowledge advocates the adoption of risk management techniques. Therefore, risk management can be used as a tool for managing a project effectively throughout its life cycle. Many authors (Baker, 1986; Hall, 1986; Williams, 1993; Yeo, 1996: cited in Dey, 2000) have shown the effective and efficient use of risk management in managing public sector projects.

The process of risk management consists of:

- Identifying risk factors;
- Analysing their effect;
- Responding to risk; and
- Controlling the responses (ibid)

**Cost and Schedule Management in Public Sector Projects**

Project cost management is described as the process which involves the activity in planning, estimating, budgeting and controlling costs so that the project can be completed within the approved budget (PMI, 2004). Spittler and McCracken (1996) states that on public sector project the cost management typically means cost control. They further describes that this is done in public sector by preparing a budget in detail, by regularly monitoring the expenditures against the budget and by constantly evaluating the amount of work remaining. But in public sector sometimes the project managers are forced to carry unrealistic low contingencies in their budget in order to get approval. This can cause problems on large projects or on projects with long time horizon (Avots, 2000).
Schedules are used for planning the sequence and duration of the work, coordinating the actions of multiple participants, and monitoring progress. In addition to this, schedules are also used for tracking compliance with legal requirements, managing resources, assigning responsibilities and communicating with project stakeholders. In public sector, the careful delineation of responsibilities and consideration of the key aspects of the scheduling needs will result in greater project success.

In recent years, public sector performance measurement and ‘public sector project management’ (author’s emphasis) has attracted much attention in the literature. However, almost all papers that have been published in academic journals focus on the public sector in European, North American countries, Australia or New Zealand (Bakhshi, 1991). There is little literature available about the project management in the public sector of less developed countries which is the focus of this research. The next section will discuss about the project management literature in the public sector of less developed countries.

2.12 Project Management in the Public Sector of Less Developed Countries (LDCs)

2.12.1 Less Developed Countries (LDCs)

The United Nations (UN) (2001, p.3) divides countries into two groups: developed and developing countries (or less developed countries). Countries in North America, Europe and the former USSR, Japan, Australia and New Zealand, are all categorised as developed countries, whereas all others are regarded as developing countries (or less developed countries). Compared with the developed countries, the less developed countries have, in general, a lower human development index (which measures a country’s performance in three areas: education, health and society purchasing power), a lower level of industrialisation, a lower level of average income per inhabitant, and a higher level of population growth (Caiden and Wildavsky, 1980: cited in Mimba et al., 2007).
2.12.2 General Constraints in LDCs

LDCs face a lot of constraints such as social, economic, administrative and political. Stuckenbruck and Zomorrodian (1987) list these constraints as:

- poverty and slum conditions,
- Inadequate health care,
- High unemployment,
- Insufficient national income per capita,
- lack of investment capital,
- severe national debt,
- illiteracy,
- insufficient water supplies,
- Inadequate basic facilities for housing, industry and public utilities
- Great distance between social strata
- A heavy concentration of political power and lack of public participation in policy decision,
- Administrative incapacity and its irresponsiveness to public needs,
- Shortage of skilled manpower, especially at managerial levels.

All of these constraints make the management of projects particularly difficult in the less developed countries.

2.12.3 Public Sector in the LDCs

Public sector in LDCs is very challenging. The public sector in the LDCs is affected by the following characteristics which hamper its decision-making, control and accountability (Mimba et al., 2007). These characteristics are:

- a Low institutional capacity;
- a limited involvement of stakeholders ;
- a high level of corruption; and
- a high level of informality.

These are discussed next in detail.
Low institutional capacity

The World Bank (2004) defines institutional capacity as the ability of an institution to decide and to pursue its goals, to perform tasks, and to improve performance constantly. In a public sector, institutional capacity can be defined as the organisation’s ability to identify problems, to develop and evaluate policy alternatives, and to operate the government’s programs (Howitt, 1977 cited in Mimba et al., 2007). It is commonly believed that public sector organisations in less developed countries still have a limited institutional capacity (Cassel and Janovsky, 1998; Frischtak, 1994). Some of the characteristics of public sector organisation with weak institutional capacity are:

- weakness in regulatory practice,
- a low level of public accountability,
- administrative inefficiencies,
- limited human resources,
- a lack of facilities,
- and insufficient funding (IMF, 2003).

These characteristics lead to situations in which it takes long bureaucratic procedures, with a lack of transparency, to inadequate delivery of goods and services to the citizens (Haque, 2003 cited in Mimba et al., 2007).

Limited Involvement of Stakeholders

The involvement of stakeholders –such as citizens- in the public sector organisations is limited in the less developed countries as compared to the developed countries (Graves et al., 2002). It seems that public sector organisations pay attention only to the more powerful stakeholders. Batley (1999) indicates that the officials and the civil servants of the public sector organisations are powerful group being the internal stakeholders. The external stakeholders, such as donor agencies and non-governmental organisations (NGOs) have also been able to achieve influence usually because of the funding that they can provide to public sector organisations. (Lux and Straussman, 2004 cited in Mimba et al., 2007)
High Levels of corruption

Corruption can be defined as the abuse of public power for private gain (World Bank, 2009). In general, the less developed countries have a relatively high degree of low level corruption. According to the UN (2001), this type of corruption has become one of the acute problems facing the delivery of public goods and services in less developed countries. It increases the costs of the public goods and services delivered to the citizens. The high level of poverty in these countries might be the main reason for their public sector officials and civil servants to be susceptible to corruption. The countries that pay inadequate salaries to their public sector officials and civil servants seem to have a higher level of corruption (Van Rijckeghem and Weder, 1997: cited in Mimba et al., 2007). Currently most LDCs are faced with the problem of a weak control system and a low-income level for most of their citizens in general, and for their public sector officials and civil servants in particular hence corruption is rampant.

High Level of informality

Informality can be found in all countries, but in the LDCs it is often a main tenet of the economic system, including the private as well as the public sector (Schick, 1998). The informality can be described as the mechanism of not following the formal rules and regulations (Mimba et al., 2007). Schick (1998) suggests that the high level of informality in many LDCs can relate to the often relatively weak formal processes to regulate economic activity. Under these circumstances, it is probable that rules and regulations are routinely breached. In the public sector, this could, for instance, lead to situations in which a civil servant is hired not because he was the winning candidate in the formal hiring process but because he knows the right person.

Less developed countries are characterised by a low level of average income per inhabitant. This low level of income can result in the situation where public sector cannot raise sufficient resources for an institutional capacity (Andres, 1994). This can affect the public sector ability towards good governance. Moreover, related to the absence of good governance, the control system of public sector organisations in LDCs is, generally speaking, rather weak. This aspect, combined with a large gap between the needs and incomes of public sector officials and civil servants, is regarded as an important source for both corruption and informality (Mimba et al., 2007).
Akin to the concept of informality is the existence of clientelism in the institutional, administrative and political spheres. It has devastating effects in stiffing the capacity of a state in pushing through a reform process. Clientelism can be defined as a subset of relationship pertaining to a wide range of patron-client transactions, which is well established in most LDCs (Sarker, 2006). This practice operates through social networks and organised clientelist lobbies. This clientelism opens the door to corruption and inefficiency. It promotes widespread evasion of civil service rules and other controls disrupt of government and inattention to outputs and results of public programs (Schick, 1998; Malcolm and Tony, 1998, Ram, 1996).

**Governance**

Governance can be described as the manner in which power is experienced in the management of a country’s economic and social resources (The World Bank, 1991: cited in Kulshreshtha, 2008). Many empirical studies carried out since the mid-1990s have confirmed that governance influences economic growth and development of nations (Mauro, 1995). Many attempts have been made in the LDCs with support of the donor agencies such as World Bank to reform and to improve governance via its development project in core areas of government as well as specific sectors such as the social and infrastructure sectors (Kulshreshtha, 2008). But these attempts have yielded insignificant effect. Kulshreshtha (2008) states that these failures can be linked to the donor agencies one-size-fit-all approach to governance reforms and institutional development while ignoring the underlying realities in the form of culture in the LDCs (ibid).

The following Figure 2.14 depicts the model provided by Mimba et al., (2007) to achieve good governance in developing countries or LDCs.
2.12.4 Project Environment in LDCs

Youker (1992) indicates that success or failure of hundreds of World Bank development projects in less developing countries depends on factors in the general environment outside the direct control of the project manager. Some of these problems listed in the study are as follows:

- A shortage of local funds that the government has promised for the project
- The inability to hire and retain qualified human resources
- The ineffective transfer of technology and difficulty in building institutional capacity
- Difficulty in changing the policy environment
- Inadequate accounting, financial management systems and auditing
- A shortage of supplies and materials due to overall economic problems
Many other scholars Galbraith, (1973; Thompson, (1967); Hellsten and Larbi, (2006) have also shown how environment contingencies, such as uncertainty, complexity, allocation of authority and the availability of resources can affect the success of a project. Bastani (1998) add that the external influences such as traditions, norms, values, and procedures can also affect the project. Therefore, a special consideration is required from the project team to understand the cultural, social, environmental and political environment of the project and the country (PMI, 2004).

2.12.5 Culture in LDCs

Muller and Turner (2004) state that culture appears to be difficult to define. They further describes that a review by stohl (2001) revealed that over 300 definitions of the term exist and that scholars have identified dozens of dimensions of cultural variability in terms of different beliefs, values, and practices. However, in agreement with many other researchers, Stohl identifies the work of Hofstede (1984) as the most influential scholarly work in the area of culture. Hofstede (1984, p21) defines culture as “the collective programming of the mind, which distinguishes the member of one human group from another.”

Zwikael et al. (2005) describe that culture is a collective phenomenon, they further states that it is learned in the same social environment and is shared by the people partly; or as a whole who lived in those environment. Chapman (2004) states that Culture influences the values of an individual. These values in turn act to formulate the attitudes projected by the person. These values also influence the behaviours of the individual and the group to which they belong. Therefore, culture acts to define the actions or behavior that is acceptable within the social group. A manager cannot manage effectively when their actions contravene conventions acceptable to the groups they are managing. Deductive reasoning concludes that culture affects management (Adler, 1991).

Culture effects Project Management in LDCs

It has been established (Jaeger and Kanungo, 1990; Kanungo and Mendoca, 1996: cited in Soeters and Tessema, 2004) that the transfer of western management techniques to less developed countries (LDCs) has its own culture-related issues and dynamics. This difference in culture in developed and less developed countries has
attracted a lot of attention in the management literature. According to Hofstede (1982, 2000; Hofstede and Bond, 2001) the culture can be classified into four dimensions. These four dimensions are:

Individualism/collectivism – A measure of the level of emotional dependence that members have towards others in their organisational groups.
Power distance – The power or influence that a superior has over an employee
Uncertainty avoidance – A measure of an individual’s tolerance to the unknown, and the overall tolerance of the society
Masculinity/femininity – Measure of importance of assertiveness versus nurturing in the society

In less developed countries there are certain socio-cultural values that are, on the whole, quite different from those of the developed countries. Soeters and Tessema (2004) perceives that management professionals in less developed countries are not proactive instead they are ‘fatalistic’ and ‘passive’. They further states that these professionals are ‘authoritarian’ and ‘paternalistic’ and do not consider the malleable nature of their employees. They accept that consideration of the context override rules and principles. Finally they tend to remember their friends, associates and relatives when it comes to the allocation of resources and positions. This is all part of the collectivist culture and high power distances in LDCs (ibid). An example of this is given in the succeeding paragraph.

Pakistan

This research focus on Pakistan from the LDCs. According to Hofstede’s (1982) findings Pakistan is classified in eastern culture. It is predominantly a Muslim country and has many commonalities with the neighbouring Muslim countries. It is ranked 14 for individualism orientation. Based on this score, Pakistan has a collectivist culture. In collectivist societies, private life is invaded by group’s interests, whereas in individualistic societies identity is based on individuals (Hofstede, 2009). Triandis (1980) suggested that collectivism may have its antecedents in resource scarcity and the presence of large extended families. Like many collectivist societies Pakistani society tends to operate on the basis of personal relationships among individuals, rather than on the basis of impersonal institutions. Another feature of Pakistani culture
is high degree of hierarchical distance. This illustrates that the power in the society is distributed unequally. Therefore, Pakistani society is characterised by highly traditional values such as collectivism and hierarchical distance that favour the status quo and make any transformation extremely difficult. Under such circumstances the performance is often compromised.

Kiggundu et al. (1983) add two other observations specifically with respect to less developed countries. On the basis of an extensive literature survey, they argue that the utilization of administrative techniques focusing on the technical core of the organisation (organisational tasks, technology, administration techniques) is not very problematic in developing countries. However, western theories that deal with the organisation’s relationship with its environment (culture, politics) are difficult to implement, necessitating major adjustments to conventional theory. In context of project management in the public sector the impact of this difference can be seen as an outcome of lack of communication, human resource planning, recruitment and selection and employee involvement (Raiden et al. 2004). Abbasi and Al-Mharmah (2000) concludes that the strategy for implementing project management in developing countries must be consistent with the cultural and characteristics of the particular society and configuration of its economic, political and administrative systems.

Similarly, Muriithi and Crawford (2003) suggests that western management concepts may be wholly or partially inapplicable and irrelevant to other cultures. This may be because value at work and in social settings are culturally based –therefore when dealing with human behaviour (i.e. management) we must recognise the cultural context. They further states that contrary to common belief that the western oriented techniques of project management are just straight forward procedures that anyone can learn and implement, there are considerable cross-cultural problems in using the approach in non-western countries. They presented a framework for developing appropriate approaches to project management in Africa or in less developed countries (writer’s emphasis).

The Figure 2.15 below will illustrate this framework:
Figure 2.15: Conceptual Framework for the attainment of appropriate approaches of Project Management in LDCs (Adapted from: Muriithi and Crawford, 2003)

### 2.12.6 LDCs Management of Public Sector Projects

In many less developed economies; the public sector is poorly managed and lacks the capacity to provide social and infrastructural services (Dlakwa, 1990). The crux of the problem lies in a paucity of resources and weak or inadequate incentives for the public officials to deliver services efficiently (Kulshreshtha, 2008). Johnston and Dyrssen (1991) argue that it is not sensible to deny that numerous social factors make the work of management in less developed countries particularly difficult and unrewarding. It is probable that the wealthier a society, the better its management is likely to be. Therefore, many less developed countries face a growing need to reform their public institutions to provide better performance incentives to their public officials and to reduce the service delivery time by ensuring greater transparency and accountability in decision making (Kulshreshtha, 2008).
In most of the LDCs the initial growth and development projects for the economy are focused on infrastructure development, transportation, irrigation and agriculture (Muspratt, 1987). The next phase of the development is then concentrated in the construction for manufacturing services and communications (ibid). The lack of knowledge and tools of the new techniques in the growing field of project management is common in LDCs especially in the public sector which results in the failure of the project with respect to scope, time and cost (Chan, 2001; Sonuga et al. 2002). The irony of the situation is that even the projects used extra time and money but still mostly did not complete the scope which is mentioned in the initial project document (ibid).

Struckenbruck and Zommorrodian (1987) perceive that project management is an efficient approach for the optimum utilization of the scarce resources and for better fulfilment of development project in LDCs. This is because it uses an integrated planning and control system with a single point of responsibility and accountability (i.e. the project manager) (ibid). Several other authors Abbasi and Al-Mharmah, (2000); Kartam et al., (2000); Partington, (1996); Bryde, (2008); Sonuga et al., (2002) identify different barriers which hinders the project success. These are:

- lengthy approval procedures,
- existing administrative system,
- change orders,
- lack of ownership
- lack of authority, and
- poor estimation of activity cost etc.

However, all of them have emphasised on further research to investigate the limitations and potential for project management system in different environment.


2.13 Chapter Summary

This chapter describes the author’s review of literature related to the following major topics:

- Definitions
- Environment
- PM Bodies of Knowledge (BOKs)
- Current Practices and success
- Public sector environment
- Less Developed Countries (LDCs)
- Project types and life cycle
- History and Evolution
- Different Approaches to PM
- PM Maturity
- PM in public sector
- PM in LDCs

The following themes emerged from the literature review:

- Projects are known as one of the most significant characteristics of modern organisations and they are carried out to manifest the organisation’s strategic objectives.
- Projects can be classified into different categories mostly based on their goals, nature and complexity.
- Projects are divided into three major phases during their development stages, this also termed as project life cycle.
- Consideration to project Environment is fundamental to project success.
- Project management is at the core of understanding the modern firms and vital to project success.
- Project Management is articulated as a profession which achieves the project objective by the involvement of all the stakeholder and by using the application of knowledge, skills, tools and techniques.
- The profession of project management has evolved from managing a single project, practices in limited industries to a powerful business tool or a social process to achieve strategic objectives.
- Different international association were formed to spread and to develop the bodies of knowledge (BOKs).
• Different Bodies of Knowledge (BOKs) have emerged in the profession and PMI BOK has been considered as a de facto international standard for project management knowledge yet all of them have been involved from within a national boundary. This calls for a case for global body of knowledge for project management.

• Different other approaches have emerged in the literature to manage the projects. These approaches articulate a paradigm different than process based methodologies on which most of the BOKs are based. Still they are not that widely accepted.

• A distinction emerges between project success (measured against the overall objectives of the project) and project management success (measured against the widespread and traditional measure of performance against cost, time and quality). Both of them are different but important to any project.

• A repeatable and relentless improvement must be a standard to achieve regular successful projects. To demonstrate this competency of organisations towards managing the projects the project management maturity model are used. These models are based on the concept of Capability Maturity Model. The underline theme is that an organisation process or project management maturity advances through a series of five stages from ad hoc (lowest) to optimized (highest) level.

• Public sector organisations are different that the private organisation because of their rigid structure, influence of politicians, lack of competition etc.

• Project management in public sector organisations is difficult because of their organisational structure, political influences, slow response time etc.

• Management and planning in public sector projects is not only a process of analysing problems, goals and alternative course of action but its an art of advocating, influencing and intervening in the policy making process to achieve the desired outcome.

• A properly matching contracting strategy, proper coordination and risk management increases the chances of project success in public sector projects.

• Project Management in the public sector of less developed countries is even more difficult to manage because of the additional problem of low institutional capacity, high level of corruption and lack of following the rules and regulations.
Chapter 3: Research Methodology and Design

3.1 Chapter Objectives

The aim of this chapter is to explain the research methodology and design that was used to carry out this research. The chapter starts with the discussion on research, philosophical perspective and paradigms of research followed by a discussion on research approach and strategy. Subsequently the argument was made about the selection of an appropriate methodology for this research. The next section of the chapter describes the research design for the research. This is followed by the discussion on the data collection and analysis techniques. Later the data analysis technique of content analysis is illustrated along with the example of data analysis. The last section of the chapter discusses about the reliability, validity and ethical standards of this particular research.

3.2 What is Research?

Sekaran (2003) describe research as a process that identifies problems by pursuing a step-by-step logical, organised and rigorous method, gather data, analyse them, and draw valid conclusions from them. He further states that the research is not based on hunches, experience and intuition, but is purposive and rigorous.

The research can be classified into three main types: pure, applied and action research (Easterby-Smith et al., 2002). The pure research is intended to lead to theoretical development –there may, or may not, be any practical implications. Applied research is intended to lead to the solution of specific problems. Action research is a reflective process of progressive problem solving led by individuals working with others in teams or as part of a community of practice to improve the way they address issues and solve problems (Easterby-Smith et al, 2002).
The pure research can be further divided into three forms: discovery, invention, and reflection. Discovery occurs when a totally new idea or explanation emerges from empirical research, which may revolutionise thinking on that particular topic. Invention takes place when a new technique, method or idea is created to deal with a particular kind of problems. Reflection is where an existing theory, technique or group of ideas is re-examined, possibly in a different organisational or social context (Easterby-Smith et al, 2002).

Research is always based on assumptions that are philosophically grounded and relate to a person’s view or perception of ‘reality’. This perception of ‘reality’ often referred in research literature as Epistemology and Ontology. Epistemology derives from two Greek words: ‘episteme’ which means knowledge or science; and ‘logos’ which means knowledge, information theory or account (Johnson and Duberley, 2004). In other words, epistemology is the study of criteria by which we can know what does and does not constitute scientific knowledge (ibid). Easterby-smith et al (2002) describe it as the theory of knowledge and assumptions about what can be called knowledge rather than belief. Epistemology concerns what constitutes acceptable knowledge in a field of study (Saunders et al, 2007). Epistemological assumptions are concerned with the very bases of knowledge –its nature and forms, how it can be acquired, and how communicated to other human beings (Cohen et al, 2007). The key epistemology assumption is that the stock of knowledge advances as science actually learns more about the world as well as through the exposure of the fraudulent and the eradication of mistakes (Johnson and Duberley, 2004).

Ontology on the other hand is the theory of being based on suggestions about the nature or phenomenon (Lancaster, 2005). It is the way that researcher perceives and understand the nature of the ‘real world’. Ontological assumptions are concerned with the very nature or essence of the social phenomena being investigated (Cohen et al, 2007). Creswell (1998) argues that ontological issue addresses the nature of reality for the researcher; reality is constructed by individuals involved in the research situation (Creswell, 1998). The table 3.1 will help explain these two terms:
Table 3.1: Ontology and Epistemology (Source: Easterby-Smith et al. 2002)

<table>
<thead>
<tr>
<th>Ontology</th>
<th>assumptions that researcher make about the nature of reality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epistemology</td>
<td>General set of assumptions about the best ways of inquiring into the nature of the world</td>
</tr>
</tbody>
</table>

Research undertaken in the natural science context has a different perspective and position on the nature of research philosophy from that of social science context (Maqsood, 2006). These different perspectives have given rise to two different streams of research with different notions (ibid). These are discussed in the next section.

### 3.3 Research Paradigms

Paradigm derives from the Greek word ‘paradeigma’ which means a pattern, model or plan (Johnson and Duberley, 2004). A Paradigm is a philosophical position of defining reality (Saunders, et al. 2007) that has an agreement within a defined group of people at a specific time. Kuhn, 1962 cited in Easterby-Smith et al., 2002 describe paradigm as the progress of scientific discoveries in practice, rather than how they are subsequently reconstructed within text books and academic journals. A paradigm or worldview is “a basic set of belief that guides action” (Guba, 1990). Paradigms are universally recognised scientific achievements that for a time provide model problems and solutions to a community of practitioners (Johnson and Duberley, 2004). The paradigms are most commonly divided into two groups Positivist and Social Constructivist.

Cohen et al (2007) describes that Positivism has been a recurrent theme in the history of western thought from the Ancient Greeks to the present day; it is historically associated with the nineteenth century French philosopher, Auguste Comte, who was the first thinker
to use the word for a philosophical position. His positivism turns to observation and reason as mean of understanding behavior; explanation proceeds by way of scientific description. Comte’s position led to a general doctrine of positivism which held that all genuine knowledge is based on sense experience and can be advocated only by means of observation and experiment. The followers of this belief are called Positivist. The Positivist believes that the world is actually concrete and external and therefore their exploration can only be based upon observed and captured facts through direct data or information (Easterby-Smith et al. 2002). The positivist approach has the element of being logical, an emphasis on empirical data collection, cause and effect oriented, and deterministic based on a priori theories (Creswell, 2007).

The opponents of positivist philosophy criticise that positivist view of science is mechanistic and reductionist (Cohen et al, 2007). They define life in measurable terms rather than inner experience, and exclude notions of choice, freedom, individuality and moral responsibility. They see the universe as a machine rather than a living organism (ibid). This led to the development of a new paradigm called Social Constructivist. Social Constructivist believes that ‘reality’ is not objective and exterior, but is socially constructed and given meaning by people (Easterby-Smith et al, 2002). The idea of social constructivism focuses on the ways that people make sense of the world especially through sharing their experience with others via the medium of language (ibid). Social constructivist develops subjective meanings of their experience –meanings directed toward certain objects or things (Creswell, 2007). These meanings are varied and multiple, leading the researcher to look for the complexity of view rather than narrow the meanings into few categories and ideas (ibid). The goal of the researcher then is to rely as much as possible on the participants’ view of the situation (ibid). Some of the key characteristics of these two paradigms are illustrated in the table 3.2.
Table 3.2: Positivist and Social Constructivist (Source: Easterby-Smith et al., 2002)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Positivist</th>
<th>Social constructivist</th>
</tr>
</thead>
<tbody>
<tr>
<td>The observer</td>
<td>Must be independent</td>
<td>Is part of what is being observed</td>
</tr>
<tr>
<td>Human interests</td>
<td>Should be relevant</td>
<td>Are the main drivers of science</td>
</tr>
<tr>
<td>Explanations</td>
<td>Must demonstrate causality</td>
<td>Aim to increase general understanding of the situation</td>
</tr>
<tr>
<td>Research progresses through</td>
<td>Hypotheses and deductions</td>
<td>Gathering rich data from which ideas are induced</td>
</tr>
<tr>
<td>Concepts</td>
<td>Need to be operationalised so that they can be measured</td>
<td>Should incorporate stakeholder perspectives</td>
</tr>
<tr>
<td>Units of analysis</td>
<td>Should be reduced to simplest terms</td>
<td>May include the complexity of 'whole' situation</td>
</tr>
<tr>
<td>Generalisation through</td>
<td>Statistical probability</td>
<td>Theoretical abstraction</td>
</tr>
<tr>
<td>Sampling requires</td>
<td>Large numbers selected randomly</td>
<td>Small numbers of cases chosen for specific reasons</td>
</tr>
</tbody>
</table>

Saunders et al (2007) perceives that the research philosophy that the researcher adopts contains important assumptions about the way in which the researcher view the world. These assumptions will underpin the researcher’s research strategy and the methods he/she choose as part of that strategy.
3.4 Deduction and Induction

The basis building blocks of any research can be categorised as deduction and induction (Sekaran, 2003). These are also termed as research approaches (Saunders et al., 2007) in research ‘Onion’ as shown in Figure 3.1. Deduction is defined as a process by which the researchers arrive at a reasoned conclusion by logical generalisation of a known fact (Sekaran, 2003). Whereas, Induction is defined as a process where the researchers observes certain phenomenon and on this basis of this arrive at conclusion. In other words it is a process where the researcher logically establishes a general proposition based on observed facts (ibid).

Sekaran (2003) express that theories based on deduction and induction helps us to understand, explain or predict phenomena. He further states that a research approach can be categorised as descriptive, explanatory and exploratory.

Figure 3.1: Research Onion (Source: Saunders et al., 2007, p 102)
3.5 Research Methodologies and Methods

Methodology is the combination of techniques used to enquire into a specific situation, whereas, methods are the individual techniques for data collection, analysis etc. (Easterby-smith, et al. 2002). Cohen et al, (2007) states that if methods refer to techniques and procedures used in the process of data gathering, the aim of methodology then is to describe approaches to, kinds and paradigms of research. The research methods are divided into two main types: quantitative and qualitative. The table 3.3 below will highlight some of the characteristics of these two methods:

Table 3.3: Quantitative Methods & Qualitative Methods (Source: Creswell, 2009)

<table>
<thead>
<tr>
<th>Quantitative Methods</th>
<th>Qualitative Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Pre determined</td>
<td>• Emerging Methods</td>
</tr>
<tr>
<td>• Instrument base questions</td>
<td>• Open-ended questions</td>
</tr>
<tr>
<td>• Performance data, attitude data,</td>
<td>• Interview data, observation data,</td>
</tr>
<tr>
<td>observational data and census data</td>
<td>document data and audio-visual data</td>
</tr>
<tr>
<td>• Statistical analysis</td>
<td>• Text and image analysis</td>
</tr>
<tr>
<td>• Statistical interpretation</td>
<td>• Themes, patterns interpretation</td>
</tr>
</tbody>
</table>

Saunders et al. (2003) describe that in quantitative research the researcher ask specific questions. Furthermore quantitative is concerned with numerical measurement and statistics data. It uses mathematical models to test the hypotheses, and supports the view of the positivist paradigm that there is an objective reality that can be accessed and measured. Various methodologies that may fall in this category are illustrated in the table 3.4 below:
Table 3.4: Various Quantitative Approaches (Source: Sekaran, 2003)

<table>
<thead>
<tr>
<th>Research methodologies</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Experiment</td>
<td>Identification of the precise relationship between chosen variables in a designed laboratory situation. Uses quantitative analysis and allows intensive study of a small number of variables.</td>
</tr>
<tr>
<td>Field Experiment</td>
<td>Extension of laboratory experiments into real life situations. However it is often difficult to find organisations prepared to be experimented upon.</td>
</tr>
<tr>
<td>Archival Analysis</td>
<td>Based upon the quantitative and qualitative analysis of archival records to describe the incidence or prevalence of a phenomenon, or to be predictive about certain outcomes.</td>
</tr>
<tr>
<td>Forecasting Future</td>
<td>Providing insights into likely future events or impacts, these studies use techniques that include regression analysis, time series analysis, or the Delphi method and change analysis. They attempt to deal with the impact of change, but must deal with complexity and changing relationships between variable understudy.</td>
</tr>
<tr>
<td>Research</td>
<td></td>
</tr>
<tr>
<td>Simulation</td>
<td>Used to study situations that are otherwise difficult to analyse by simulating the behavior of the system by the generation or introduction of random variables.</td>
</tr>
<tr>
<td>Surveys</td>
<td>Questionnaires, interviews and observations are used to obtain data on the practices, situations or views of a sample of a particular population. Surveys allows large number of variables to be analysed quantitatively, but do not provide insight into underlying causes.</td>
</tr>
</tbody>
</table>

In qualitative research the researcher purpose is to explore therefore more open ended questions are asked to learn more from the participants. Qualitative researchers then are most interested in how humans arrange themselves and their settings and how inhabitants of these settings make sense of their surroundings through symbols, rituals, social structure, social rules and so forth (Berg, 2007). Therefore, qualitative research in more concerned with data that is not amenable to numerical measurement (Lancaster,
Various methodologies that may fall in this category are illustrated in the table 3.5 below:

<table>
<thead>
<tr>
<th>Research methodologies</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Study</td>
<td>Case studies can either be explanatory, exploratory, or descriptive, in all cases focusing on contemporary phenomenon in real-life settings. They allow the capture and analysis of many variables, but are generally restricted to a defined event or organisation, making generalisation difficult.</td>
</tr>
<tr>
<td>Archival Analysis</td>
<td>Based upon the quantitative and qualitative analysis of archival records to describe the incidence or prevalence of a phenomenon, or to be predictive about certain outcomes.</td>
</tr>
<tr>
<td>History</td>
<td>Explanatory studies that deal with operational links over time.</td>
</tr>
<tr>
<td>Action Research</td>
<td>This is applied research where there is an attempt to obtain results and benefits of practical value to groups with whom the researcher is allied, while at the same time maintaining a holistic perspective and adding to theoretical knowledge. The underlying philosophy is that the presence of the researcher will change the situation under investigation.</td>
</tr>
<tr>
<td>Grounded Theory</td>
<td>A structured approach to forming and eliciting theory grounded in data.</td>
</tr>
<tr>
<td>Content Analysis</td>
<td>It involves of gathering certain key phrases and words from data these key frames or words are then been collected to make a meaning full sentence. These sentences were then being collected under different themes (Easterby-Smith et al., 2002)</td>
</tr>
</tbody>
</table>

According to Yin (1994) the relationship between the research question and the research methodology is important in selecting the appropriate research methodology. Various methodologies and the research questions that they address are given below in the table 3.6:
Table 3.6: Research approaches and Questions (Source: Maqsood, 2006)

<table>
<thead>
<tr>
<th>Research Methodologies</th>
<th>Research Questions</th>
<th>Research Methodologies</th>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Experiment</td>
<td>How, why</td>
<td>Case Study</td>
<td>How, Why</td>
</tr>
<tr>
<td>Field Experiment</td>
<td>How, why</td>
<td>Archival Analysis</td>
<td>Who, what, where, how many/much</td>
</tr>
<tr>
<td>Archival Analysis</td>
<td>Who, what, where, how many/much</td>
<td>History</td>
<td>How, Why</td>
</tr>
<tr>
<td>Forecasting Future Research</td>
<td>What, how much</td>
<td>Action Research</td>
<td>What to do, how, why</td>
</tr>
<tr>
<td>Simulation</td>
<td>What, how</td>
<td>Grounded Theory</td>
<td>what</td>
</tr>
<tr>
<td>Surveys</td>
<td>Who, what, where, how much/many</td>
<td>Content Analysis</td>
<td>what</td>
</tr>
</tbody>
</table>

3.6 Data Collection

3.6.1 Sources of Data

Data can be collected from primary or secondary sources. Primary data refer to information obtained firsthand by the researcher on the topic of interest for the purpose of the study. Some examples of this kind of data are individual, focus groups, panels etc (Sekaran, 2003). Secondary data refer to information gathered from sources already
existing. Some examples of this kind of data are company records, government publications, industry analyses etc (ibid).

### 3.6.2 Types of Data Collection Methods

Data collection methods are an integral part of a research. The main types of data collection methods include interviews, questionnaires, observations, documentation, archival records (Yin, 2009) etc. The table 3.7 below will list the advantages and disadvantages of two main data collection methods.

Table 3.7: Advantages and Disadvantages of Interviews & Questionnaire (source: Sekaran, 2003)

<table>
<thead>
<tr>
<th>Mode of Data Collection</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Can establish rapport and motivate respondents</td>
<td>• Takes personal time</td>
</tr>
<tr>
<td></td>
<td>• Can Clarify the questions, clear doubts, add new questions</td>
<td>• Cost more when a wide geographical region is covered</td>
</tr>
<tr>
<td></td>
<td>• Can read non verbal clues</td>
<td>• Respondents may be concerned about confidentiality of information given</td>
</tr>
<tr>
<td></td>
<td>• Can use visual aids to clarify points</td>
<td>• Interviewers need to be trained</td>
</tr>
<tr>
<td></td>
<td>• Rich data can be obtained</td>
<td>• Can introduce interviewer bias</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Respondents can terminate the interview at any time</td>
</tr>
<tr>
<td>Questionnaire</td>
<td>• Wide geographical area can be reached</td>
<td>• Response rate is almost always low.</td>
</tr>
</tbody>
</table>
Interviews are further divided into three main types of structured, semi-structured and unstructured interviews. This is discussed in table 3.8 below.

Table 3.8: Types of Interview (Source: Berg, 2007)

<table>
<thead>
<tr>
<th>Structured Interviews</th>
<th>Semi-structured Interviews</th>
<th>Unstructured Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most formally structured</td>
<td>More or less structured</td>
<td>Completely unstructured</td>
</tr>
<tr>
<td>No deviation from question order</td>
<td>Questions may be recorded during the interview</td>
<td>No set order to any questions</td>
</tr>
<tr>
<td>Wording of each question asked exactly as written</td>
<td>Wording or questions flexible</td>
<td>No set wording to any questions</td>
</tr>
<tr>
<td>No clarifications or answering of questions about the interview</td>
<td>Interviewer may answer questions and make clarifications</td>
<td>Interviewer may answer questions and make clarifications</td>
</tr>
<tr>
<td>No addition question may be added</td>
<td>Interviewer may add or delete probes to interview between subsequent subjects</td>
<td>Interviewer may add or delete questions between interviews</td>
</tr>
<tr>
<td>Similar in format to a pencil-and-paper survey</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.7 Sampling

Sekaran (2003) perceive that in research investigations it is almost impossible to gather data from the entire population therefore samples rather than entire population is used. They further states that study of samples rather than the entire population is also sometimes likely to produce more reliable results. There are two main types of sampling: probability and non-probability sampling.

In probability sampling, the elements in the population have some known chance of probability of being selected as sample subjects (ibid). The social science often examine research situations in which one cannot select the kinds of probability samples used in large-scale surveys and which conform to the restricted needs of a probability sampling. In these situations, investigators rely on non-probability sampling (Berg, 2007). In non-probability sampling, the investigator does not base his or her sample selection on probability theory. Rather, efforts are undertaken (1) to create a kind of quasi-random sample and (2) to have a clear idea about what larger group or groups the sample may reflect (ibid). The table 3.9 below will list the different sampling techniques and their advantage and disadvantages.

Table 3.9: Different Sampling Techniques (Source: Sekaran, 2003)

<table>
<thead>
<tr>
<th>Sampling Technique</th>
<th>Description</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probability Sampling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simple random samplin</td>
<td>All elements in the population are considered and each element has an equally chance of being chosen as the subject</td>
<td>High Generalisability of findings</td>
<td>Not as efficient as stratified sampling</td>
</tr>
<tr>
<td>Method</td>
<td>Description</td>
<td>Advantages</td>
<td>Disadvantages</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Systematic sampling</td>
<td>Every nth element in the population is chosen starting from a random point in the population frame</td>
<td>Easy to use if population frame is available</td>
<td>Systematic biases are possible</td>
</tr>
<tr>
<td>Stratified random</td>
<td>Population is thereafter divided into meaningful segments; thereafter subjects are drawn in population to their original numbers in the population</td>
<td>Most efficient among all probability designs</td>
<td>More time consuming than simple random sampling or systematic sampling</td>
</tr>
<tr>
<td>Cluster sampling</td>
<td>Groups that have heterogeneous members are first identified; then some are chosen at random; all the members in each of the randomly chosen groups are studies</td>
<td>In geographical cluster the cost of data collection is low</td>
<td>The least reliable and efficient among all probability sampling designs since clusters are more homogeneous than heterogeneous</td>
</tr>
<tr>
<td>Area sampling</td>
<td>Cluster sampling within a particular area or locality</td>
<td>Cost effective</td>
<td>Takes time to collect data from an area</td>
</tr>
<tr>
<td>Double sampling</td>
<td>The same sample or a subset of the sample is studied twice</td>
<td>Offers more detailed information on the topic of study</td>
<td>Individual may not be happy responding a second time</td>
</tr>
</tbody>
</table>
### Non-probability Sampling

<table>
<thead>
<tr>
<th>Methodology</th>
<th>Description</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenience sampling</td>
<td>The most easily accessible members are chosen as subjects</td>
<td>Quick, convenient and less expensive</td>
<td>Not generalisable at all</td>
</tr>
<tr>
<td>Judgement sampling / purposive</td>
<td>Subject selected on the bias of their expertise in the subject investigated</td>
<td>Sometimes the only meaningful way to investigate</td>
<td>Generalisability is questionable; not generalisable to the entire population</td>
</tr>
<tr>
<td>quota sampling</td>
<td>Subjects are conveniently chosen from targeted groups according to some</td>
<td>Very useful where minority participation in a study is critical</td>
<td>Not easily generalisable</td>
</tr>
<tr>
<td></td>
<td>predetermined number or quota</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3.8 Selecting the Methodology for this research

In this section, the aim of the researcher is to identify the appropriate methodology for the research. Fellows and Liu (2003) argue that with various approaches of inquiry, research students are often at a loss for understanding what methodologies exist and how one makes an informed choice of an option for research. They further state that choice is affected by consideration of the scope and depth of the problem. The objective of this research is to investigate the project management practices in Pakistani public sector organisations. Therefore, this research can be categorized as an exploratory study. Sekaran (2003) argues that an exploratory study is undertaken when not much is known about the situation at hand, or no information is available on how similar problems or research issues have been solved in the past. Creswell (2009) links this with qualitative
research and states that qualitative research is exploratory and is useful when the researcher does not know the important variables to examine. This type of approach may be needed because the topic is new, the topic has never been addressed with a certain sample or group of people, and existing theories do not apply with the particular sample or group under study (Morse, 1991).

Qualitative researchers study things in their natural settings, attempting to make sense of or interpret phenomenon in terms of the meaning people bring to them (Creswell, 1998). This interpretation of the phenomenon places this research in the social constructivist paradigm. Easterby-Smith et al. (2002) has referred this kind of research as interpretive methods. Extensive interviews with many people might have to be undertaken to get a handle on the situation and understand the phenomena (Sekaran, 2003) in this kind of research. The pattern and the inductive logic of qualitative research is explained in the Figure 3.2 below:

![Figure 3.2: The inductive logic of Qualitative Research (Source: Creswell, 2009)](image-url)
Different approaches and relationship between the research question and approaches in social constructivist or qualitative research are listed in Table 3.5 and 3.6. The aim of the research is to explore the project management practices therefore the nature of the questions posed are how, why and what. The case studies are the preferred method when how and why questions are posed and they can be exploratory in nature (Yin, 2009). The aim of this research is also to get the overall picture of the project management practices in different public sector organisations and to identify the factors that influence the project management practices. Berg (2004) perceives that many qualitative investigators use the case study approach as a guide to their research. By concentrating on a single phenomenon, individual, community, or institution, the researcher aims to uncover the manifest interaction of significant factors characteristic of this phenomenon, Individual, community, or institution. But, in addition, the researcher is able to capture various nuances, pattern, and more latent elements that other research approaches might overlook. Yin (2009) states that case studies also allow the capture and analysis of many variables, but are generally restricted to a defined event or organisation (ibid). This fits case study method to be adopted for this research.

**3.9 Understanding Case Study Research**

The word case comes from the Latin noun casus, which means an individual object (Liamputtong, 2009). In research some consider “the case” an object of study (Stake, 1995), a unique aspect (Smeijsters and Aagaard, 2005) or a methodology (Merriam, 1988; Yin, 2009). A case study is an exploration of a bounded system or a case (or multiple cases) over time through detailed, in depth data collection, involving multiple sources of information and is rich in context (Creswell, 1998). Yin (2009) describe case study as an empirical inquiry that investigates a contemporary phenomenon in depth and within its real life context, especially when the boundaries between the phenomenon and context are not clearly evident. Berg (2004) explain case study as a method involving systematically gathering enough information about a particular person, social setting, event, or group to permit the researcher to effectively understand how the subject operates or functions. Luck et al. (2006) define case study as a detailed, intensive study
of a particular contextual, and bounded, phenomenon that is undertaken in real life situation.

Stake (1995) suggests that researchers have different purposes for studying cases. He suggests that case studies can be classified into three different types: intrinsic, instrumental and collective. Intrinsic case study are undertaken in order to understand that particular case in question. Instrumental case studies examine a particular case in order to gain insight into an issue or theory and collective case studies inspect groups of individual studies that are undertaken to gain a fuller picture. Yin (2009) terms case studies as descriptive (providing narrative accounts), explanatory (testing theories) or exploratory (can be used as a pilot study for larger social research). Strauman (1999) identifies four kinds of case studies: an ethnographic case study – single in depth study; action research case study; evaluating case study; and educational case study.

In creating formal designs for case-study investigation, Yin (2009, p.27) recommend five components:

- Study questions
- Its propositions (if any are being used) or theoretical framework
- Identification of unit of analysis
- The logical linking of the data to the propositions (or theory)
- The Criteria for interpreting the findings

A Case study’s questions are generally directed towards how and why. This provides an important clue regarding the most relevant research methods to be used (Yin, 2009). The study’s proposition derives from these how and why questions and assist in developing a theoretical framework. Not all studies will have propositions. An exploratory study, rather than having propositions, may have a stated purpose or criteria that will provide guidance and a kind of operating framework for the case study to follow (Berg, 2004, p.293). The unit of analysis defines what the case study is focusing on (what the case is), such as an individual, a group, an organisation, a city, and so forth (ibid). Linkage between the data
and the proposition involves: pattern matching, explanation building, time-series analysis, logic models, and cross-case synthesis (Yin, 2009). The actual analysis will require that the researcher combine or calculate the case study data as a direct reflection of researcher’s initial proposition (ibid). The criterion for interpreting the findings is the least developed aspect of case studies (Yin, 1994).

Creswell (1998) also suggests five steps in designing the case study research. These are:

- The researcher must identify his or her case;
- The researcher must consider whether to study a single case or multiple cases;
- Selecting the case requires that the researcher establish a rationale for his or her purposeful sampling strategy;
- Having enough information to present an in-depth picture of the case;
- Deciding the boundaries of a case

Creswell (1998) in designing a case study research purpose that investigators first should consider of what type of case study is most promising and useful. He further states that the case can be single or collective, multi-sited or within–site, focused on a case or on an issue (intrinsic, instrumental). In choosing what case to study, an array of possibilities for purposive sampling is available.

Case studies frequently follow the interpretive tradition of research –seeing the situation through the eyes of participants –rather than the quantitative/positivist paradigm, though this need not always is the case (Cohen et al, 2007). Therefore, a key issue in case study research is the selection of information (Cohen et al, 2007). Goetz and LeCompte (1984) notes that the researcher task is to determine the groups for which the initial research question is appropriate, the contexts that are potentially associated with the question, and the time periods to which the question may be relevant. Similarly, Bogdan and Biklen (1992) suggests that when proposing a study, researchers should address issues surrounding where the study is to be done, who the subjects are, how the subjects are determined , time for each activity, data that will be included , and how analysis will be
conducted. Yet, they also suggest that when determining who the most important subjects are or the boundaries of the cases, researcher “intuition” and the research questions guide what to be examined. The data collection activity and the probable outcome in the case study method are illustrated in table 3.10 below:

Table 3.10: Data collection Activities (Adapted from: Creswell, 1998)

<table>
<thead>
<tr>
<th>Data Collection Activity</th>
<th>Case Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is Traditionally studied?</td>
<td>A bounded system such as a process, activity, event, program, or multiple individuals</td>
</tr>
<tr>
<td>What are typical access and rapport issues?</td>
<td>Gaining access through gatekeeper, gaining confidence of participants</td>
</tr>
<tr>
<td>How does one select sites or individual to study?</td>
<td>Finding a “case” or “cases” an atypical case or maximum variation or extreme case</td>
</tr>
<tr>
<td>What type of information typically is collected?</td>
<td>Extensive forms such as documents, records, interviews, observation etc.</td>
</tr>
<tr>
<td>How is information recorded?</td>
<td>Field notes, interview and observation protocols</td>
</tr>
<tr>
<td>What are common data issues?</td>
<td>Interviewing and Observing issues</td>
</tr>
<tr>
<td>How information is typically stored?</td>
<td>Field-notes, transcriptions, computer files</td>
</tr>
</tbody>
</table>
The next section of the chapter will discuss about the research design to carry out this research project.

### 3.10 Research Design

Research design is plans and procedures for research that span the decision from broad assumption to detailed methods of data collection and analysis (Creswell, 2009). Furthermore, the overall decision involves which design should be used to study a topic. Informing this decision should be the worldview assumptions the researcher brings to the study; procedure of inquiry (called strategies); and specific methods of data collection, analysis and interpretation. The selection of the research design is also based on the nature of the problem or issue being addressed, the researchers’ personal experiences, and the audience for the study (ibid). The Figure 3.3 below will highlight the framework of design for this research.

![Figure 3.3: A Framework for Design –The interconnection of worldviews, Strategies of Inquiry and Research Methods (Adapted: Creswell, 2009)](image-url)

Figure 3.3: A Framework for Design –The interconnection of worldviews, Strategies of Inquiry and Research Methods (Adapted: Creswell, 2009)
Cooper and Schindler (2006) perceive that the research design is the blueprint for fulfilling objectives and answering questions. Research Design refers to the process of research from conceptualizing a problem to writing research questions, and on to data collection, analysis, interpretation, and report writing (Bogdan & Taylor, 1975: Cited in Berg, 2004). Yin (2009) commented, “The design is the logical sequence that connects the empirical data to a study’s initial research questions and, ultimately, to its conclusions” (p.24).

In Qualitative Research the role of the researcher, the person reading a textual passage and the individual from whom qualitative data are collected play a more central role in the researchers’ design decision (Denzin & Lincoln, 2008). One important thing to remember in research design is highlighted by Lancaster (2005) as when the research involves, or cuts across, different cultures as when, for example, the research encompasses say different geographical divisions in a multinational organisation, there can be particular problems of methodology and interpretation. Even where the research is confined to one country; internal organisational culture too can be an issue in planning and conducting research projects. Because this type of research is conducted directly within an organisational environment the researcher must be careful to ensure that the research approach, techniques of data collection and so on are appropriate to organisational systems and procedure.

In case of this research, the research design is categorised as a series of case studies that helps understand the project management practices in Pakistani public sector organisations. The detail discussion about the research design is presented after the Figure 3.4. The Figure 3.4 below will illustrate the research design to carry out this research project.
Figure 3.4: Research design Adopted for this research

Select Research Topic

Conduct Literature Review

Develop research Questions

Selection of less developed country

Selection of public sector organisations

Pakistan

Classifying public sector into Planning, Service and Contractor sector

Investigation of project management practices

Identification of issues and constraints in current PM practices

Comparison of different public sector organisations with best practices (PMI)

Recommendation, Conclusion and Future directions

Selection of Research Methodology

CASE STUDY APPROACH

• Case studies on planning sector organisations
  • Case studies on service sector organisations
  • Case studies on contractor sector organisations
3.10.1 Rationale for Selecting Case Studies

The objective of this research was to provide a detailed explanation of project management practices in a less developed country. The researcher had selected Pakistan as the context of this study mainly for the reason that this doctoral research is funded by the government of Pakistan. The selection of research strategy for the research was dominated by the nature of the research questions which tends to make the study as an exploratory study. Therefore case study approach was selected and Pakistan is selected as an object/case from the less developed countries.

Public sector organisations were selected within Pakistan as the unit of analysis for the case and for this study. The project management practices in public sector in Pakistan makes the boundary of this research. To clearly understand the project management practices in public sector organisations, it’s imperative to investigate all the entities involved in the process. In this research these entities or organisations were classified into three categories of i) planning sector, ii) service sector and iii) consultant & contractor sector. The planning sector organisations were involved in approving and monitoring the project. The service sector organisations were involved in initiating, planning and managing the project. The consultant and contractor sector organisations which were involved in the implementation stage of the project. The Figure 3.5 will help clarify the involvement of these organisations in the PM process in Pakistan.

![Diagram of Sector wise involvement of the organisations in the PM Process](Attachment)

Figure 3.5: Sector wise involvement of the organisations in the PM Process
3.10.2 Selection of Participants and Organisations

The process of selecting the right individuals, objects, or events for study is known as sampling (Sekaran, 2003). Therefore for the selection of right individuals, objects or events for this research judgment sampling (a non-probability sampling technique) was used. In judgment sampling sometimes also refers as purposive sampling the subject were selected on the bias of their expertise in the object investigated to get the meaningful data. Eleven organisations were selected for the purpose of this research. A separate case study was conducted on these individual organisations. This makes this study as a multiple case study research. Most of these organisations are famous in terms of the services provided to the Nation. Table 3.11 illustrates the number of organisations selected, the number of participants and the role of the participants in these organisations. Out of these 11 organisations 2 were from the planning sector, 8 were from service sector and 1 was from the contractor sector. The two organisations selected from the planning sector were at Federal and Provincial level. The Federal level planning organisations administer all the public sector projects in the country where as the Provincial level public sector organisation was responsible for managing the projects on provincial level. Most organisations lie in the service sector. There was only one contractor sector organisation that was involved in the public sector projects and falls under the public realm.

Table 3.11 Number of participants and the organisations covered along with the role of the participants

<table>
<thead>
<tr>
<th>Number of Organisation Involved</th>
<th>Nature of organisation</th>
<th>Number of Participants</th>
<th>Number of Interviews conducted</th>
<th>Participants and their role in the organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning Sector (2)</td>
<td>Federal Level Planning Organisation</td>
<td>3</td>
<td>3</td>
<td>Senior Executive (1) Planning Mangers (2)</td>
</tr>
<tr>
<td>Case Study (A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case Study (B)</td>
<td>Provincial Level Planning Organisation</td>
<td>3</td>
<td>3</td>
<td>Project Managers (3)</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---------------------</td>
</tr>
<tr>
<td><strong>Service Sector (B)</strong></td>
<td>Electric Supply Organisation</td>
<td>3</td>
<td>3</td>
<td>Senior Executive (1) Planning Manager (1) Project Director (1)</td>
</tr>
<tr>
<td>Case Study (A)</td>
<td>Telecommunication Service Organisation</td>
<td>3</td>
<td>3</td>
<td>Senior Executive (1) Project Manager (2)</td>
</tr>
<tr>
<td>Case Study (B)</td>
<td>Highways Maintenance and Construction Organisation</td>
<td>3</td>
<td>3</td>
<td>Project Director (1) Project Manager (2)</td>
</tr>
<tr>
<td>Case Study (C)</td>
<td>Research Sector Organisation</td>
<td>2</td>
<td>2</td>
<td>Senior Executive (1) Project Manager (1)</td>
</tr>
<tr>
<td>Case Study (D)</td>
<td>Water (natural) resource management Organisation</td>
<td>3</td>
<td>3</td>
<td>Senior Executive (1) Project Manager (2)</td>
</tr>
<tr>
<td>Case Study (E)</td>
<td>Education Sector Organisation</td>
<td>3</td>
<td>3</td>
<td>Project Director (1) Project Manager (2)</td>
</tr>
<tr>
<td>Case Study (F)</td>
<td>Information Technology Sector</td>
<td>2</td>
<td>2</td>
<td>Project Director (1) Project Manager</td>
</tr>
</tbody>
</table>
### 3.10.3 Collection of Data

Primary data for the purpose of research was collected with semi-structured interviews. The semi-structured individual interviews were designed to be focused in terms of topics covered. They are also flexible in a sense that researcher can steer the questions into the areas that appears promising from the point of view of providing rich data and/or additional insights.
The data was collected from project directors, senior executives and project managers of the public sector organisations. All of these participants had an experience of more than ten years of managing the public sector projects and were well versed with processes and issues involved in managing the public sector projects in Pakistan.

As the researcher aim was to investigate of what was going on in the organisation therefore semi structured interviews questions were asked. This has been done to get as much data as possible for the research from the participants and intervention was only made if the discussion is going too far from the topic. The interviews were done from the planning sector organisations. The interviews remained focus on initiation, planning, monitoring & controlling phases of the project. This was done because the planning organisations in Pakistani public sector mostly deals with these phases of the projects but any useful data that is contributed by the participant for any other phase was also collected to get a better understanding of the processes. Subsequently the other two sectors of service and contractor sectors were explored to get the overall picture of the current project management practices in the public sector in Pakistan.

**Interview Questions**

The participants were asked open ended questions. This was done to eliminate the bias. Sekaran, (2003) states that information obtained through interviews should be as free as possible of bias. Bias refers to errors or inaccuracies in the data collected (ibid). Easterby-Smith et al (2002) suggest that to avoid bias open ended questions may be asked. The following questions were asked in the interviews:

1) How do you identify / select the projects?
2) What is the funding mechanism of the project?
3) How long does it takes for the project to get approved and what are the difficulties associated with this process?
4) What kind of procedures do you often employ to ensure the project is on track?
5) What kind of issues do you face in your current project management processes?
6) What improvements are you looking forward to have in your current project management practice/processes?

### 3.11 Data Analysis

Miles and Huberman (1994) identify three major approaches to qualitative data analysis: interpretative approaches, social anthropological approaches, and collaborative social research approaches. This research follows an interpretative approach of data analysis. An interpretative approach is the approach which provides a mean for discovering the practical understandings of meanings and actions. Researchers with a more general interpretative orientation are likely to organise or reduce data in order to uncover patterns of human activity, action and meaning (Berg, 2007). The certain facets of research that recur during any style of qualitative analysis are as follow:

- Data are collected and presented into text (e.g. field notes, transcripts)
- Codes are analytically developed or inductively identified in the data and affixed to sets of notes or transcript pages
- Codes are transformed into categorical labels or themes
- Material are sorted by these categories, identifying similar phrases, patterns, relationships, and commonalities or disparities
- Sorted material are examined to isolate meaningful patterns and processes
- Identified patterns are considered in light of previous research and theories, and a small set of generalisation is established (ibid)

The steps involved in the qualitative data analysis are illustrated in the Figure 3.6 below:
The next section will discuss the data coding technique used to analyse the data for this research project.

### 3.12 Content Analysis as a Data Analysis Technique for this Research

Content analysis is a careful, detailed, systematic examination and interpretation of a particular body of material in an effort to identify patterns, themes, biases and meanings (Leedy and Ormrod, 2005; Neuendorf, 2002). Berg (2007) states that the criteria of selection used in any given content analysis must be sufficiently exhaustive to account for each variations of message content and must be rigidly and consistently applied so that
others researchers or readers, looking at the same messages, would obtain the same or comparable results (ibid).

The categories the researcher use in the content analysis can be determined inductively, deductively, or by some combination of both (Strauss, 1987). Bryman (1988) suggests that there may be a number of good reasons for adopting an inductive approach to your research project and the analysis of the data that are produced. These are as follows:

- The project may be an exploratory study seeking to generate a direction for further work;
- The scope of the research may be constrained by adopting restrictive theoretical propositions that do not reflect the participants views and experience

Abrahamson (1983, p. 286) indicates that an inductive approach begins with the researchers immersing themselves in the documents in order to identify the dimensions of themes that seem meaningful to the producers of each message. Berg (2007) perceives that in order to present the perception of others in the most forthright manner, a greater reliance on induction is necessary. He further states that the development of categories in any content analysis must drive from inductive reference concerning pattern that emerge from the data.

In content analysis the text is coded or broken down, into manageable categories on a variety of levels—word, word sense, phrase, sentence, or theme—and then examined (ibid). This research had adopted the technique of content analysis to analyze the case study data. This has been done by

- Coding the individual transcript data into sentences and themes
- Categorizing data based on these themes
- Summarizing all individual data to present a case study

The Figure 3.7 next will illustrate the seven stage model for qualitative content analysis.
Figure 3.7: Stage Model of Qualitative Content Analysis (Source: Berg, 2007)
3.12.1 Example of Data Analysis

Transcript of the Interview
We are asked to develop the base line project plan so we are engaged with the client department like C&W, PITB, health department etc so we engage them and their contractor and consultant to sit with us so we study the scope make the WBS and make a structure, identify the activities organize them develop a project plan, establish the critical path and once we establish the critical path and the project plan is given to the client department we start the monitoring process. But unfortunately the project plan which we give them is not followed by the contractors. The contractor work on their own plan. So we go to the site and collect the data and check the progress of the deliverables and forecast the progress of the project, in fact we use the EVM techniques to monitor the progress of the project.

<table>
<thead>
<tr>
<th>Interview Notes</th>
<th>Codes</th>
<th>Categories</th>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>we study the scope make the WBS and make a structure, identify the activities organize them develop a project plan, establish the critical path”</td>
<td>Scope, WBS, Structure, identify the activities, organisation, project plan, critical path</td>
<td>Planning</td>
<td>Current Project Management Practices</td>
</tr>
</tbody>
</table>
Once we **establish the critical path** and the **project plan is given to the client department** we start the **monitoring process**. So we **go to the site and collect the data and check the progress of the deliverables and forecast the progress of the project**, infect we **use the EVM techniques to monitor the progress of the project**.

<table>
<thead>
<tr>
<th>Critical path for monitoring</th>
<th>Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Go to site for monitoring</td>
<td></td>
</tr>
<tr>
<td>Collect the data</td>
<td></td>
</tr>
<tr>
<td>Check the progress of deliverables</td>
<td></td>
</tr>
<tr>
<td>Forecast the progress, EVM technique for monitoring</td>
<td></td>
</tr>
</tbody>
</table>

But unfortunately the **project plan** which we give them is **not followed** by the contractors. The **contractor work on their own plan**.

<table>
<thead>
<tr>
<th>Project plan not followed</th>
<th>Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor work on their own plan</td>
<td></td>
</tr>
</tbody>
</table>

**Issues in Project Management Practices**
3.13 Validity and Reliability

Gerring (2007) states that validity and reliability are the two important factors in qualitative research as it help in evaluating and judging the quality of the research. A case study requires attention to construct validity, reliability, and external validity (Yin, 2009). These terms are explained by Yin (2009) as follows:

Construct Validity: identifying correct operational measures for the concepts being studies
Reliability: demonstrating that the operations of a study –such as the data collection procedures –can be repeated with the same results
External Validity: defining the domain to which the study’s finding can be generalized

Yin (2009) suggests that validity can be increase through clarifying back with respondents on the draft report. He further states that the reliability can be demonstrated by the using the appropriate case study protocol and external validity can be achieved through using the replication logic in multiple case studies.

In this research the validity, reliability and external validity was assured by:

- Collecting the data from different sources i.e. project managers, project directors and chief executives.
- Sharing the key information of the draft with the respondents
- Using the replication logic in different case studies conducted in different public sectors in Pakistan
- The protocol of the case study ensured that the same procedures followed across the investigation
3.14 Ethics

Ethics are norms or standards of behavior that guide moral choices about our behavior and our relationship with others. The goal of ethics in research is to ensure that no one is harmed or suffers adverse consequences from research activities (Cooper & Schindler, 2006). As a researcher the obligation was not only professionally but in particular ethically to make value judgment and use discretion in resolving the ethical issues (Lancaster, 2005). Therefore for the purpose of this research the ethical standards of doing the research were strictly followed. It was assured to all the respondents who took part in the research that there privacy were kept intact at all times during and after the research.

The researcher had also ensured the conformance of this research in accordance to RMIT University’s ethical code of practice in research. Before the data collection phase a formal application for ethics approval was launched to carry out the data collection phase. Consent is sought from the applicants on the consent form provided in the RMIT ethics application before the start of the interview for his willingness to participate in the research project. A copy of the consent form is given to the participants with the option to withdraw from the data collection phase at his or her discretion.
3.15 Summary of the Chapter

This chapter has discussed the research methodology and design of this research. The chapter begins with the definition of research and argues about the philosophical perspectives of epistemology and ontology. Subsequently it defines the paradigm and discussed about the two common paradigms of Social Constructivist and Positivist.

A discussion on basic building blocks of research: Induction and Deduction is presented followed by the explanation on different methodologies and methods (quantitative and qualitative) of research. Next an argument is made on the selection of Social Constructivist / Interpretive paradigm for this research. This is followed by the discussion on the selection of case study methodology and qualitative methods of inquiry for this research.

Research design is then explained through a diagram and discussed. Data analysis technique of content analysis is then explained followed by the example of data analysis from this research. In the last section of the chapter, the reliability, validity and ethical standards and how it’s achieved in this research was discussed.
Chapter 4: Project Management Practices in Pakistani Public Sector Organisations – The Planning Sector Context

4.1 Chapter Objective

The purpose of this chapter is to present result of case studies on project management (PM) practices being undertaken in Pakistani public sector organisations. It begins by explaining the project management process in public sector organisations in Pakistan. This is followed by the two case studies of national and provincial level planning sector organisations in Pakistan.

Each case study follows the same structure: it starts with description of organisations. It then discusses the current project management practices in these organisations. It is followed by the constraints identification in these practices. Subsequently the approach used by the different organisations in the planning sector in managing the project is presented in tabular format to compare project management practices with the project management institute’s best practice (PMBOK). In the last section of the chapter, the issues that were identified then categorised and presented in tabular format.

4.2 Pakistan and its Public Sector

Pakistan is located in South Asia. It shares borders with India, China, Iran and Afghanistan. The Arabian Sea is Pakistan’s southern boundary. The country has a total area of 796,095 sq km and is nearly four times the size of the United Kingdom. Pakistan is divided into four provinces namely Punjab, Sindh, Khaibar Pakhtoon Khua and Baluchistan. The federal administrative tribal areas (FATA), Azad Kashmir and Northern Areas also come under the jurisdiction of Pakistani government (Government of Pakistan, 2009). The population of the country is 181 million as of 2009 (Population Reference Bureau, 2009). The literacy rate of the country is 49 % (UN HDI Report, 2009). The GDP
growth rates have seen a steady increase in the last 5 years (Planning Commission, 2007).

The public sector organisations in Pakistan are divided into two broad categories of Federal and Provincial level organisations. The Federal level organisations are entrusted with the task of managing and providing the services throughout the country whereas the Provincial level organisations are confined in providing services to their respective provinces. In less developed countries, the public sector organisations are inundated with corruption, inefficiency, bloated size and other such factors which have negatively affected the performance of the public sector in these countries (Mimba et al, 2007). Unfortunately Pakistan also suffers with these kinds of problems. These factors can vary depending upon the socio-economic situation of the country. The next section of the chapter will discuss how the public sector planning organisations manage projects in Pakistan.

4.2.1 Initiation and Planning Phase

Project management process in Pakistani public sector organisations starts with the identification of the project. The first phase is to formulate the project in the form of a project proposal by the executing department. This proposal is referred to as PC-I (Planning Commission-I). There are three kinds of PC-I forms for three types of sectors namely:

a) The Infrastructure sector
b) The Production sector
c) The Social sector
The Infrastructure Sector

The projects which are related to transport, communication, IT, energy, and housing and irrigation come under the infrastructure category.

The Production Sector

The projects related to agriculture production, agriculture extension, industries commerce and minerals come under the production category.

The Social Sector

The projects which are related to education, training and manpower, health, nutrition, welfare, family planning, tourism, culture, sports, mass media, research and governance comes under the social sector category.

The PC-I (attached in Appendix A) form includes the name and location of the project, the responsible authorities, cost estimates, justification, implementation schedule and the proposed benefits of the project.

The next stage is to carry out feasibility studies if the project is a mega project. A report has to be submitted in the form of PC-II (Planning Commission II) as a feasibility study. It includes the name of the project and the administrative authorities, feasibility of the project and the expected results of the project. A consulting firm is hired most of the time to prepare this report. This happens due to a lack of qualified manpower in the department. This is a practice that usually takes an additional 3-6 months in the project.

The next phase is the approval of the project. This is based on the value of the project. The projects which are up US $ 1 million are approved by the Departmental Development Sub-Committee (DDSC). This committee is headed by the chief executive of the department. If the project exceeds US $ 1 Million but is under US $ 10 million then the
project is approved by the committee named as the Provincial Development Working Party (PDWP). This committee is headed by the Chief Minister of the respective province. The chairman of the provincial Planning and Development Department (P&D Department) and chairmen of other provincial level organisations are members of this committee. Projects which are above US $ 10 million go to the federal government and have to be approved by the Central Development Working Party (CDWP) headed by the chairman of the planning commission. All the chief executives of the national level organisations are members of this committee.

The highest approval body is the executive committee of the National Economic Council (NEC) which is headed by the Prime Minister. This committee comprises of ministers from various disciplines and the chairman of the planning commission. The mega projects with substantial loan components are approved by this committee.

The approval at higher level requires prior approval at the preceding level – so if the project is to receive approval from CDWP then it has to be approved by the PDWP and the DDSC first. The time for these approvals ranges from 3-4 weeks for the DDCS to 4-6 months for the CDWP. The projects having a substantial loan component go to the NEC and the NEC can take a one year for approval. These projects are usually funded by donor agencies. This process is illustrated graphically in Figure 4.1.

If the project exceeds the budget requested in the PC-I, then a request has to be prepared in the form of project revision (Revised PC-I). In this process the client organisation has to amend the proposal as per the instructions of the approval authority. This is a process usually takes 4-5 months for large development processes.
Figure 4.1: Approval Process of Funding for any Public Sector Project in Pakistan

1. **Project up to US $1 million**
   - **YES**
     - Approved by departmental development sub-committee (DDSC)
   - **NO**
     - If Provincial Level organisation

2. **If Federal Level organisation**
   - **NO**
     - If Provincial Level organisation

3. **Project is greater than US $1 M but less than US $10 M**
   - **YES**
     - Approved by the provincial development working party (PDWP) headed by the chairman of the planning and development department
   - **NO**

4. **Project is less than US $120 million**
   - **YES**
     - Federal government approved it under the central development working party (CDWP) headed by the chairman of the planning commission.
   - **NO**

- **Approved by NEC**

**Time Line**

- **3-4 Weeks**
- **4-6 Months**
The project proposal becomes the project charter after approval and is sent to the executing department which formally accepts the approved project. The project then moves into execution phase.

4.2.2 Executing, Controlling and Monitoring Phase

Once the project is in the execution phase, the departments are required to send another type of document referred to as PC-III (shown in Appendix A). This report includes information about the progress of the project on monthly/quarterly basis. In addition to this, it also includes the information on the funds allocated and utilised. Furthermore any major milestones achieved by the project are also mentioned in this report.

Usually the funds are released by the finance department of organisation A on a quarterly basis to the service sector organisations. Funds released by the finance department during the fiscal year have to be used by the projects in that year or surrendered back to the finance department. Funds allocated for subsequent years are based on the project's fund utilisation history. If a project was unable to utilise more than 50 per cent of its allocated fund for that year, it is unlikely to get more than that requested for the next year, unless it clearly shows that the factors that contributed to the low utilisation have been satisfactorily addressed.

4.2.3 Closing Phase

A close out report is required from the executing departments at the end of the project and this is called as PC-IV (shown in Appendix A). This report includes name of the project, the implementation period (actual and planned), capital cost (actual and planned), quantifiable benefits of the project, financial/economic results based on actual cost, impact of the project on the target group, lessons learned from the project and any suggestions for similar future projects.
For the next five years a document referred to as PC-V is prepared annually that would list the benefits proposed to be obtained by the stakeholders from the project. The detail of this process from PC-I to PC-V is explained in Figure 4.2.

Figure 4.2: PM Practices and Project Life Cycle of Public Sector Projects in Pakistan
The above process is a general phenomenon for all public sector projects undertaken in Pakistan. The next objective is to explore the project management practices individually in all the entities that take part in managing the public sector projects in Pakistan.

4.3 Planning Sector

The planning sector organisations act as regulating bodies for any public sector project that is initiated in Pakistan. Being regulating bodies they are only involved in the approval and monitoring of the project. The two organisations that are selected for the planning sector are the most important organisations in the country. One is a federal level organisation while other is a provincial level organisation. These organisations are also well reputed in public in terms of the services provided to the Nation. The case studies from these organisations are described below:

4.4 Case Study of Organisation A

4.4.1 Description of the Organisation

In 1953, a planning board was established to take care of Pakistan’s economic and development requirements. This board later became the most pivotal entity of the country in terms of development. The organisation A is headed by the Prime Minister of the country and key ministers are member of its policy board. Each year the organisation is involved in reviewing the project proposals from every sector of the economy. These proposals are submitted under the standard format (i.e. PC-I). In 1954, there was a one page report for the preparation of the development projects for public sector. Then in 1974, the government of Pakistan requested the World Bank to help improve its management of projects in public sector organisations. So professionals from Harvard University were consulted on this issue. They suggested various improvements in the public sector project management process. They developed twelve standard format reports for the preparation of projects in different sectors of the economy. In 1995, these
standard format reports were again updated and they increased from twelve to fourteen. In 2005, the organisation A decided to review these standards and a team was formed which simplified these standard reports from fourteen to three. At this time, the country was divided into three broad categories of the infrastructure sector, the social sector and the production sector. Each of these sectors has its own set of standard reports for the management of projects. The Figure 4.3 below illustrates the organisation A’s hierarchical structure.

Figure 4.3: Organisational Structure of Organisation A
In a typical year, the organisation A is involved in about 2000 projects from all over the country and the budget of these projects is about US $5 Billion. As the organisation is acting as a regulating body for the entire public sector project planning in the country therefore it is divided into four main sections: economic, technical, administrative and project wings as shown in the Figure 4.3. The responsibility of these wings varies from appraisal of the project proposals to the monitoring of the projects. For the purpose of this research the participants were selected from organisation A’s project wing. This was done to understand the processes through which the projects progress in organisation A. This process is described below:

4.4.2 Current Project Management Practices and Issues

Identification of the Project

The process of management of projects in the organisation A starts when organisations in service sector identify a project and send it in the form of PC-I to organisation A for evaluation. After the simplification of the PC-I only fifteen questions are to be answered by the service sector organisation in the project proposal. Ten of these questions are pertinent to the scope of the project and the five questions are about the description of the project. Once the project proposal is received, it is judged in the economic and technical wing of organisation A. If the project meets the requirement as prescribed in the PC-I, then it is approved for funds release; otherwise a revised proposal is required from the service sector organisation. This issue is discussed in the next section.

Issues in Planning Process

Poorly Prepared Project Proposals

During this process one of the difficulties that organisation A faces is poorly prepared proposals from the social and the production sectors. This happens due to the lack of the qualified people in the social and the production sector to properly prepare the project
proposal. This places an extra pressure on organisation A: the organisation A has to check the proposal and then has to provide feedback to the service sector organisation. In case of poorly prepared proposals, a revised proposal is required from the service sector organisation. This adds extra time for the approval of the proposal. A revised proposal may take up to a year from its first submission to its final approval. The proposals from the infrastructure sector, however, are somewhat appropriate compared to proposals from production and social sector.

**Design related issues**

The project proposals from the service sector organisations often lack design details or drawings of the project. This frequently happens on small and medium scale projects. In big projects, feasibility studies are done in the form of PC-II so it is not an issue in those projects. This affects the in the preparation of cost estimates for activities. At the moment the cost estimation for most of the project proposals submitted by the service sector organisations are based on loose approximations.

**Preparation of Cash and Work Plan**

Once the proposal is approved, the funds are released. Usually 25 % of the funds are released to the service sector organisation after the proposal is approved. The rest of the funds are released on the basis of cash and work plans. In this process the service sector organisations have to correlate the finances requested with the planned activity. The service sector organisation has to justify their plan to organisation A in order to release funds for the next phase of the project.

The cash and work plans were introduced in the public sector project in the last five years in order to be more transparent. However still it is perceived as a new concept by the service sector organisations and they are facing difficulties in properly preparing the cash and work plans.
Once the funds are released, the project goes into the implementation phase. The organisation A has little to do with this phase. The service sector organisations are responsible for the execution and implementation phase of the project and it is discussed in the next chapter. The organisation A, then externally monitors the progress of the implementation phase of the project according to the plan provided in the PC-I.

**Monitoring of the Project**

In the monitoring process the organisation A has developed in-house monitoring and evaluation software. This software is web based software and the project directors on different projects have the access to this software. It is a requirement for the project directors to input the data in this software every month. The monitoring staff in the organisation A then will analyse the project based on this data on a monthly basis.

The monitoring staff monitors thirty to forty projects across a year. They can directly contact the project directors. The monitoring staff not only do the desk-based monitoring but also go in to the field to physically monitor the project and ask questions about the project from the project directors.

In cases where a project is making a slow progress, then organisation A relocates the funds from the slow moving projects to the fast moving project but not beyond the sector (i.e. the infrastructure sector, the production sector and the social sector). By doing this, the organisation A will ensure that they are not disturbing the overall allocation of Public Sector Development Portfolio (PSDP) for that sector.

After doing the monitoring, the monitoring staff in organisation A prepares reports which are presented at the quarterly review meetings chaired by the deputy chairman of the organisation A. This meeting is attended by the respective members of those divisions. All the monitoring issues pertaining to those divisions are discussed in these meetings. The next section will discuss the issues faced by the organisation A in monitoring the public sector projects.
**Issues in Monitoring Process**

The issues faced by the organisation A in monitoring the public sector projects are as follows:

**Lack of Staff**

The main issue with the monitoring staff is that they are overworked. At the time of this case study the organisation A has only five people to monitor the large number of projects. So it affects the progress of the monitoring staff.

**Misleading Information**

The service sector organisations tend to provide misleading information to organisation A during the monitoring process. The service sector organisations do this in order to satisfy the organisation A criteria to release the funds for the next phase of the project. At the time of the case study the organisation A is trying to create an atmosphere to get the right information from service sector organisations however it is facing considerable difficulties in achieving this task.

**General Issues**

During the case study the participants revealed some interesting issues which although not directly concerns the working of organisation A however they do effect the overall performance of project management in public sector organisations.

**Issue Related With Land Acquisition**

Another important issue which is witnessed by organisation A in the project management process was the land acquisition issues. Most often the service sector organisation starts the project before acquiring the land for the project. So when this occur lot of negotiation was required in the process of acquiring the land. This affects the project in the form of
design changes, cost and time over runs. This also results in the revision of the initial plan of for the project.

Delay in Handing Over Assets After Project Completion

One issue that is being noticed by organisation A is that there is a long process of handing over assets to the concerned party once the project is finished. Because of this long process, the opportunity that is created is being lost as the utility is left un-utilised for that period.

Project Evaluation

When the project is completed, the evaluation of the project is started to find out whether the project has been able to deliver the benefits and the impact which was being claimed in the project proposal. This evaluation is required from the service sector organisations in the form of a report called PC-V. Although this report is in the system for a while, it has been ignored by the service sector organisations.

The next section of the chapter will discuss about the steps undertaken by organisation A to improve the public sector project management in Pakistan.

4.4.3 Steps Undertaken by Organisation A to improve Public Sector PM

Organisation A is trying to improve the project management process in public sector projects of Pakistan. Few of these steps are discussed below:

1. Organisation A had circulated an order in recent years that any project which will be more than US $ 1 million must have an independent project director and all the financial and the administrative powers should be delegated to the project director.
2. It is encouraging different ministries to have their own project management unit (PMU). This PMU must have the monitoring people, planning people, financial people, supervisors, engineers and project directors.

3. It has started a massive training program in the public sector to train the project directors to manage the projects using the new tools and techniques.

4. It has introduced an incentive program for project directors in which firstly they will have market based salaries, secondly the project director will be appointed on a contract basis for the entire life of the project and the project director could not be transferred during the project duration, and thirdly the project director is empowered so that he/she could take the appropriate decision in regard to the project.

Organisation A is making significant efforts towards improving the current project management practices in Pakistan but the initiative that they have taken until now are just the first few steps in the course of a long journey.

4.5 Case Study of Organisation B

4.5.1 Description of the Organisation

This organisation B is a provincial level organisation. It is located in Punjab which is the largest province of Pakistan with respect to population which is nearly over 75 Million (Statistics Division, 2009). The annual public sector development portfolio for Punjab is over US $ 12 Million (Planning and Development Board, 2009). Public sector spending in Punjab has increased consistently in last few years. This increase in spending was pushing the Punjab government capacity to its limits to effectively plan and executes the projects. The provincial level service sector organisations (not in the scope of this study)
usually send PC-I (project proposals) to organisation B depending upon the estimated value of the project. Organisations B either approve the project by itself or send it to organisation A for approval. This process is explained in detail in section 4.2.1. Due to the increase of projects in the provincial level service organisation the organisation B which is responsible for the development of new project in the province has established a new division called Project Management Unit (PMU). This case study focuses on this unit in organisation B. PMU handles project of extreme political importance. The Figure 4.4 below will illustrate the structure of organisation B.

Figure 4.4: Structure of organisation B
The PMU was established in July 2003 to identify the bottlenecks in the development process. The main aim of this organisation was:

- to help different provincial level service organisations in their development processes,
- train them in modern project management practices
- and to improve the overall project outcomes of the public sector in Punjab province.

The PMU is also involved in planning, monitoring, evaluating, reporting the progress of the public sector projects at provincial level. In addition to this the organisation is involved in developing standards for the public sector organisations.

The researcher has undertaken a case study to identify and investigate the practices that PMU has embarked on to improve the project management practices in Punjab’s public sector. The next section will present the findings of the case study.

4.5.2 Current Project Management Practices in Organisation B

Project Management Unit (PMU) comes under organisation B therefore organisation B decides which projects should be planned, monitored and evaluated by the PMU. The projects which have a public and political importance are awarded to the PMU for planning and monitoring purposes. So once the project is awarded to PMU, the staff starts coordinating with the service sector organisation that has initiated the project. The staff of PMU starts helping them in making the project proposal. The project is identified by the provincial level service sector organisation and PMU is involved in helping these service sector organisations in making the proposal. A PC-I (Planning Commission-I) is submitted as a project proposal. This PC-I goes to the Provincial Development Working Party (PDWP) meeting to receive approval (as mention in section 4.2.1). After the project proposal is approved by the PDWP, the funds are released to the service sector organisation,
Development of Project Proposal

After the funds are released the first step is to develop the baseline project plan (because in PC-I no detail plan was provided). For this purpose organisation B organise a meeting with the service sector organisation. The purpose of this meeting is:

- to identify the scope of the project.
- development of work breakdown structure,
- identification and organisation of activities,
- developing a project plan, and
- establishing and identifying critical path.

The cost estimation carries out by the service sector organisation. Once the Critical path has been established and the project plan is finalised the project plan is handed over to the service sector organisation for execution.

Monitoring of Project

After the planning stage the implementation phase of project starts and the PMU start monitoring the progress of the project based on the baseline plan. The monitoring staff of PMU visits the site on monthly basis. The purpose of these visits is to collect data and check the progress of the deliverables. In the monitoring process the organisation B is involved in the time related aspects of project scope. The quality of the project is not the responsibility of the PMU in fact it lies with the service sector organisation.

Technology Employed in Monitoring Process

PMU uses a sophisticated system for the monitoring of the project progress. Primavera project planner software and Earned Value Management (EVM) technique is used to monitor and forecast the progress of the project. A detailed monitoring report is made on monthly basis which contains:
• the observed delay,
• the cause for the delays,
• planned value,
• earned value,
• forecast for the future direction, and
• risk associated with the project.

The responsibility of PMU is to prepare the monitoring report however control action is the responsibility of the related service sector organisation.

Project Close Out and Evaluation

PMU has not much role to play in the project close out however, when the project is finished, PMU prepare an evaluation report. The evaluation report is very important as it has the ability to transfer knowledge to the next projects; however realisation of this report is missing among the public sector organisations.

The interviews conducted highlights the issues that PMU routinely encounters while undertaking the project management activities. These issues are explained in the next section.

4.5.2.1 Issues in Project Planning

Unrealistic Project Time

The service sector organisations often project themselves as efficient while from the inside the same old bureaucratic structure is in place. In doing so, they unrealistically claim to complete the project much earlier than the realistic time. As a result the project can not be completed on time because of these unrealistic claims. For example, a project which will realistically complete in one year will be presented so as to complete in 6
months in order to project them as efficient. In reality it is not possible and when the project cannot be completed, it is considered failed.

**Ignoring Important Stakeholders in the Planning Process**

In the planning process the appropriate stakeholder identification and analysis is not done. So when the project reaches a stage where a certain stakeholder needs to be involved, a lot of confusion and mismanagement results. For example, there may be utilities, electricity lines, fiber optic cables etc that are to be relocated and they belong to another public organisation. However during the planning process that organisation was not identified as a stakeholder as a result when the project reaches to that stage where the utility has to be relocated a lot of confusion and mismanagement happens.

To relocate the utility from one place to another place cost the project in terms of land acquisition, utility relocation etc. This kind of cost estimation does not happen in the costing of the project which in turns increases the cost of the project.

**4.5.2.2 Issues in Project Monitoring**

Following are the issues that are regularly faced by PMU in project monitoring:

**Contractor Not Following the Project Plan**

PMU faces a significant issue when the project is in the implementation stage. This issue is that the contractors do not follow the approved project plan developed by the PMU in consultation with other related stakeholders. This creates the problem in a sense that the staff at PMU is monitoring the project based on the baseline project agreed by all the parties at the start of the project. So once the monitoring starts and the contractor were following its own plan then it becomes really difficult to monitor the project and to negotiate with the contractor.
Relaxed Attitude of Senior Management to the Problem

Sometimes senior management at higher level of the service sector organisations are required to intervene and make decisions. PMU carries out monitoring on regular basis and then identifies issue with project progress. These issues are communicated to the service sector organisations at various levels. PMU faces this problem routinely that when senior management attention is required on the project their attitude is very relaxed. This lack of attention gives a sort of confidence to the contractor to not improve on his performance.

Adversarial Relationship between Service Sector Organisations and PMU

As PMU is the monitoring authority therefore provincial service sector organisations mostly find it uneasy to work with the PMU. This adversarial relationship results in hiding of important information from PMU. Sometimes misleading information is provided in terms of the false progress of the project.

4.5.2.3 General Issues of Project Management

The interview conducted also revealed various issues which were not related to project management practices of this organisation but they were related to project management practices as a whole. These were the issues that this organisation was not directly involved but has a good knowledge of these being part of the whole process.

Favouritism in Awarding the Contract

The PMU witnessed that favoritism in awarding the contract is very rampant which drastically affects the project implementation. This happens when the contractors are awarded the project without competition mainly because they have contact with some one influential in the department. Usually such contractor lacks the capability to properly do the job which results in project delays.
Contract Awarded in Chunk Creates Coordination Problem

The PMU observed that the provincial service sector organisations don not award a contract to a single general contractor which could then subcontract it to different subcontractors. Instead, they divide the work themselves and award different contracts to various contractors by themselves. While doing so, they get themselves in a trouble of managing and coordinating various contactors. The provincial service sector organisations are not much able to coordinate the contracts properly. This creates problem in a sense that different contractors are working on different phases, if electricity works has to start after the plumbing and the plumbing contractor have not finished the job then the electricity contractor may have to delay his work. This coordination issue among different contractors on the project makes it difficult to follow the project path.

Issue with Contractor Selection Criteria

The PMU noticed that during contractor selection the provincial service sector organisations overlook a very important criterion which is termed as “Bid Capacity” locally. This is a measure of capacity of a contractor to take up another job in addition to current jobs. In other words, to find out that how many dedicated resources a contractor can employ for the new job for which it is bidding. This criterion although is part of standard operating procedure of contractor selection however it is often get ignored.

Overlooking Time Aspect of Project in Contractor Selection

The time aspect of a project is not usually a criterion in contractor selection. The selection is based mainly on lowest cost of the project and quality related aspect of the contractor. The less emphasis on project time / schedule may also lead to some issue in managing the project. A clear explanation of time may ensure that the project is not unnecessary delay and the contractor who has a capacity to finish the work on time is selected.
Problem related with Land Acquisition

PMU also observed a significant issue of land acquisition once the project goes into the implementation. This happens in the case when the project is started by the service sector organisation before the acquisition of land. So once that occur the project is delayed until the land is acquired. The land acquisition is a long process especially in the public sector project and a lot of paper work is involved in this process. Therefore, to achieve any time line that is associated with the project seems improbable after this delay. Interestingly, this issue happens routinely and no learning seems to have happened.

Coordination Problem among Different Public Sector Service Organisations

Another significant problem noticed by the PMU is the lack of coordination among different public sector service organisation. This occurs when the project reaches a stage where another public sector organisation needs to be involved. In this case the project manager has to request the other public sector organisation to carry out that specific task. In this situation the staff of the other organisation usually has a casual attitude towards the project activity and is more concerned with their own priorities and normal routine. If that task is critical for the project then it delays the whole project. There is no proper standard operating procedure for this kind of issue in the public sector organisations of Pakistan.

Cutting Down the Scope of Work

PMU also observed that when the project start to face difficulties owing to poor planning and design, and the finish time of the project starts to look impossible to achieve, the normal practice in the service sector organisations is to cut down the scope of the project or to compromise its quality.
Lack of Maintenance of Projects Histories

The lack of maintenance of history of projects is also noticed as an important issue which can affect the future projects by PMU. The database of projects or archives is helpful to identify issues in the planning stage of a similar project. At the moment there is no defined framework to maintain the project archives. So anything that the project team has learned in the project is lost once the project is finished. There is no such practice to acquire the project teams experience/lessons learned for others for future projects.

Non Completion of Project Benefit Report (PC-V)

Another noteworthy issue is the lack of realisation of benefits achieved after the project. In practice, there is no such practice to present a report after the project completion to list its benefits. Although there is a set of procedure to produce a benefit achieved report for the next five years after the project completion called project benefit achieved report (PC-V). However, this rarely prepared by the service sector organisations.

Informality

PMU constantly witnessed the issue of ‘informality’. Mumba et al (2007) described informality as a mechanism of not following the formal rules and regulations. Informality is quite wide spread in public sector organisations where there are standard operating procedures that are available but oftenly under followed.

Favouritism ingrained in the culture

PMU agreed that favouritism is part of the culture. As a result of that professionalism is often sacrificed which in turn affect the project performance.
Inflated Cost of Low Priced Items in a Project

PMU highlighted a very interesting issue in bidding process which has gone unnoticed for quite long time. More often than not in bidding process, when tender is opened, the item rates of low priced items are over inflated artificially. This is a form of corruption. The bidding party is then pre-selected informally and is informed of such items which have been priced higher than normal. The bidding party then quotes similar price of such items in their bid. As a result of it, the bidding parties’ rates match closely to the bid which helps it to win the bid. Later on the money made through this corruption is shared. This is the practice which has been part of the project for a long time.

The next table section of the chapter will compare the project planning and monitoring approaches of planning sector organisations with the best practices of project management. Project management institutes (PMBOK) best practice framework is taken as a measure for this comparison.

4.6 Comparison of Project Planning and Monitoring Practices

The Table 4.1 below will map the PM knowledge areas with the PM process group in the light of the framework mentioned in the PMI body of Knowledge (PMI BOK). This mapping is evident from the information provided in the interviews and is discussed in the case studies before. The processes that are happening in public sector planning organisation in Pakistan are highlighted in Green. The processes that need improvement are highlighted in brown and the processes which need major improvement or which are not practiced are highlighted in red.
Table 4.1: Comparison of Project Planning and Monitoring Practices

<table>
<thead>
<tr>
<th>Knowledge Areas Processes</th>
<th>Initiating Process Group</th>
<th>Planning Process Group</th>
<th>Monitoring &amp; Controlling Process Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Management Integration</strong></td>
<td>Develop project Charter</td>
<td>Develop Project Management Plan</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Develop Preliminary Project Scope Statement</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Project Scope Management</strong></td>
<td>NA</td>
<td>Scope Planning</td>
<td>Scope Verification</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scope Definition</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Create WBS</td>
<td></td>
</tr>
<tr>
<td><strong>Project Time Management</strong></td>
<td>NA</td>
<td>Activity Definition</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Activity Sequencing</td>
<td></td>
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<td></td>
<td></td>
<td>Activity Resource Estimating</td>
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<td></td>
<td></td>
<td>Activity Duration Estimating</td>
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<td></td>
<td></td>
<td>Schedule Development</td>
<td></td>
</tr>
<tr>
<td><strong>Project Cost Management</strong></td>
<td>NA</td>
<td>Cost Estimating</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cost Budgeting</td>
<td></td>
</tr>
<tr>
<td><strong>Project Quality Management</strong></td>
<td>NA</td>
<td>Quality Planning</td>
<td>Perform Quality Control</td>
</tr>
<tr>
<td><strong>Project Human Resource Management</strong></td>
<td>NA</td>
<td>Human Resource Planning</td>
<td></td>
</tr>
<tr>
<td><strong>Project Communications Management</strong></td>
<td>NA</td>
<td>Communications Planning</td>
<td>Performance Reporting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Manage Stakeholders</td>
</tr>
</tbody>
</table>
The next section of the chapter analyse the case studies in the public sector planning organisation in Pakistan and as a result of the case studies the issues that are identified are placed in the categories of:

- less developed countries,
- public sector organisation,
- culture, and
- project management

The reason behind this step is to identify the different levels of problems associated with public sector project management in a less developed country.
4.7 Discussion

The results of the case studies performed in the public sector planning organisations of Pakistan were informative for the wide variety of input it provided in terms of the project management practices itself, the issues that the organisations faces during these practices and the future opportunities to improve these practices.

These case studies help improve the understanding of how the projects were arrived at the planning sector organisations for evaluation and how it’s been approved for funding. These case were also helpful to understand the monitoring process of public sector projects in Pakistan. It is notable that role of organisation A in these case studies was mostly of a regulating body whereas the role of organisation B tends to be more of a consulting body for the service sector organisations.

Generally the participants in both of the organisation faces problem with the poorly prepared project proposal from the service sector organisations. The reason behind this is perceived to be the lack of qualified people in the service sector organisations. A significant issue that the participants from both of these organisations highlighted was the ignoring of the important stakeholders during the planning and designing stage of the project. This issue seems to be very important in terms of project success as almost all the respondents strongly emphasised on it. Mimba et al. (2007) also highlighted this problem in the public sector organisations in the less developed countries.

In the monitoring process of the project the organisation A tends to use in-house monitoring software whereas the organisation B used advanced project management software called Primavera project planner (P5). The monitoring process in organisation B was comparatively better than organisation A mostly because the number of projects that the monitoring staff of organisation A has to monitor was quite high in numbers than that of the organisation B. The senior management has realised the importance of project management in these organisations and are taking initiatives to improve their project management practices.
During these case studies the issues that are identified by the respondents in the project management process was placed in four broader categories of issues related with project management practices, issues because of the nature of the organisation as a public sector organisation, the issues related because of the Less Developed Country (LDC) and finally the issues or the practices which embed in the profession as a culture. This is done on purpose so as to distinguish between the issues which can be improved by taking an initiative at the organisational level and between the issues which can only be improved by taking a major policy initiative at the political level. Figure 4.5 will show the issues in these four categories.

Figure 4.5: Categorization of Issues in Planning Sector Perspective
4.8 Summary of the Chapter

This aim of this chapter was to identify the project management practices in the public sector planning organisation in Pakistan. Two important organisations were selected as a case for exploration in this sector. These organisations are vital in the context of project approval and funding of the public sector projects. These organisations also act as regulating authorities for any public sector project in Pakistan. The planning, monitoring and closing process of project management in public sectors were explored. As a result, different issues were identified which affects the successful completion of public sector projects in Pakistan.

Subsequently the chapter maps the on going processes with the best practices described in the PMI BOK. It then, describes the barriers and constraints for adopting the best practices of project management in terms of less developed country, culture, public sector organisation and project management. The issues that were identified from the interviews lastly were categorised in these four categorised. The next chapter will discuss the project management practices in the context of the service sector organisations.
Chapter 5: Project Management Practices in Service Sector Context

5.1 Chapter Objective

The purpose of this chapter is to report the results of case studies performed in the service sector of Pakistan. Service Sector is a sector that identifies and involves in the execution, monitoring and closing of the project. This chapter discusses the different case studies from the service sector and analyses the data accordingly.

The approaches by the different organisations in service sector towards managing the project is then presented in a tabular format. In the last section of the chapter the issues that are identified during the case studies are categorised and placed in a table under their respective themes and is accompanied by analysis of project management practices of this sector.

5.2 Service Sector

The rationale for dividing the public sector into three categories of the planning, the service and the consultant sector was to have a detail insight on all the entities involved in the project management process in the public sector of Pakistan. The service sector organisations act as a client in this process. They initiate the project and are the owner of the final product. Therefore, this sector was a major area of interest for the researcher. It was also the main sector from where the projects were identified, planned, executed and closed. Eight organisations are selected in this sector to identify the project management practices. The reason of exploring eight organisations from the service sector was to get a profound look into the public sector organisations in Pakistan. Most of these organisations are a vehicle of economic activity in the country and are vital for public interest. The selection of these organisations was also done according to the size, complexity and the number of project that they execute in a fiscal year. Most of these organisations are well reputed in the public in terms of the services provided to the Nation. The case studies from these organisations are described below:
5.3 Case Study of Organisation A

5.3.1 Description of the Organisation

The object of this case study is the organisation A. This organisation is responsible for the supply of electricity to the entire country. It was established in 1958 and was entrusted with a massive agenda of generation, distribution and transmission of electrical power together with irrigation, water supply, and drainage and flood control. It has an excess of 150,000 employees and a portfolio in excess of $100 B. It owns about 54 % of the country’s total electrical power generation capacity and serves 88 % of all electricity customers of Pakistan (WAPDA, 2009). To cater this massive agenda, every year it was involved in a number of projects. Most of the funding for these projects is largely provided by the government. The organisational structure is typically functional with chairman heading the organisation. As a public sector organisation the chairman is responsible to report to the minister of water and power and to the legislative assembly. This is illustrated in the Figure below:

Figure 5.1: Organisational Structure of Organisation A
5.3.2 Current Project Management Practices

The project management practices that are used to identify, plan, execute and monitor the project in this organisation are as follows:

Project Identification and Approval Process

The most important step in project management is the identification of the project. In organisation A the projects are identified according to the organisation’s short term and long term plans. The short term plans are usually for the next 5 years whereas the long term plans are up to the next 15-20 years. These plans are prepared by conducting the power market survey. The result of this survey identifies the energy requirement of the country for the next 15-20 years. After assessing the energy requirement of the country the report is forwarded to the energy wing of the Government of Pakistan (GOP) which comes under the ministry of water and power. Further the report is forwarded to the organisation A in the planning sector of Pakistan. This report includes different projects proposed by the organisation A, taking in consideration the future energy requirements of the country. As a result of theses proposed projects a committee is formed in the organisation A in the planning sector to identify the feasibility of the projects and to approve and arrange funds for the projects. This committee is the final and the highest authority to approve the project and to arrange for the funds. It’s been chaired by the Prime Minister of the country. Once the funds are allocated in the budget for the organisation A the actual process of project proposal for a specific project is initiated.

The project proposals has to be prepared according to the guidelines and standards defined by organisation A in the planning sector and on a prescribed format called Organisation A in the planning sector I (PC-I). The PC-I has got certain set of procedures which has to be filled by the client department. Some of these procedures which has to be answered includes:

- the scope of work,
- cost estimates,
- internal rate of return,
- benefits proposed,
• Environmental study etc (details about Organisation A in the planning sector Proforma’s and PC-I is discussed in chapter 4).

Most of the times, it takes about 2-3 revision and 3-5 months for the PC-I to be approved and subsequently the funds to be released for the project. However this duration also depends upon the priority and policy of the government. Because the electricity is the most important necessity for the growth of the country therefore the PC-I related with the electricity requirement of the country are usually approved within one month time.

**Project Planning and Execution Process**

Once the funds are released the actual work on the project commences. The funds are provided on a yearly basis and if the organisation were unable to utilise the 100 % funds for that year then the organisation has to submit a justification about not utilising the funds and subsequently the funds to the organisation A in the planning sector. If justified the funds are passed on to the next year otherwise the funds requested for the next years are not released in full. An explanation is required from the organisation to justify its capacity of utilising the funds for the next year. The management practice on projects varies and depends on the ability of the project manager. Once the funds are allocated from the organisation A in the planning sector for a particular project the tendering process is initiated. The tenders are awarded to the lowest bid. It becomes a norm in organisation A to hire the consultant on almost every project. The responsibility of the project manager on the project is to liaison with the consultant and the contractor and to produce the efficient result. The detail plan and design of the project is provided by the consultant after consultation with the project managers of the client organisation which in this case is organisation A. The Work breakdown structures, critical path method and Program Evaluation and Review Technique (PERT) were used as part of managing the project. Most of these techniques were used manually and there was no software used in the organisation for project management.

**Project Monitoring Process**

The most important step in monitoring the project, as perceived by the project managers in this organisation was, to conduct frequent meetings with the concerned parties and to
solve the problem on table with the consultation of all the concerned parties. To ensure that the project is on track weekly project reports were required from the contractor. Most of the times frequent meetings and on site visits were used to check the status of the project. Time is considered to be the most important factor for project success in this organisation.

5.3.3 Identification of the Issues that hinders the project success

Some of the constraints and issues that organisation A comes across in managing their projects are discussed below:

Coordination Issues

Coordination among different public sector organisations was the most important constraint was unanimously mentioned by several interview respondents. This usually happens in the land acquisition process on a project. This occurs when the land required for the project somehow falls in the jurisdiction of other public sector organisation. Nearly all the respondents agree that when this occurs the project is delayed because of the lack of communication between the two organisations. There are no standard operating procedures to solve this kind of issue. The only way out from this situation, is the personal contacts of the project manager.

Information and Communication Technology Issues

Another issue in the managing the projects in organisation A is the lack of usage of the information technology. There is no software in the organisation A that can help project managers to manage the projects efficiently. Although the project managers are very capable and because of their vast experience and strong technical knowledge they still manage the project but still no project management software is used. This absence of project management software in the organisation also makes it impossible to forecast the project progress regarding the time and cost.
Issue of Lack of Skilled Project Managers

The lack of skilled managers on some projects and the reluctance to delegate the power from the higher authorities is also seen as a constraint which hinders the success of the project.

Issue of Political Interference

Political interference in the identification and planning of the project also hinders the project success. This happens when some projects are approved because of the political pressure without feasibility. Sometimes it was not only the projects that are approved but also the political pressure to complete them as quickly as possible to get political boast that affects the project. When this happens it was not possible to give proper time to planning of the project in the approval stage. Therefore because of this pressure once the project is approved and planned arbitrarily it affects the project in the execution stage.

Issue of Internal Politics

Internal politics also plays a negative role in some of organisation’s projects. This occurs when the project is awarded on favouritism basis to a less competent project manager. Or in some case when the project is awarded to a project manager having a bad working relation with the higher officials then delaying tactics in fund release is used to delay his project. This internal political scenario hinders the project success.

Issue of Union Politics

Union Politics is another factor that can harm the progress of the project negatively. One example in this context from organisation A is as follows:

‘Recently machinery for telecommunication services is imported from abroad to improve organisation’s information and communication system. This machinery was found broken in the server room after few days. The reason behind this was speculated to be the posting of the union activist
who was not qualified to operate the machinery. Furthermore, no steps could be taken against any person because of the union pressure.”

**Issue of the Lack of Sense of Responsibility**

Most of the respondents perceive that with the passage of time the employees in the organisation feel reluctant to take responsibility. The reason behind this could be the favouritism and unjust promotions of the unqualified persons to the high posts. Political interference in the day to day working of the staff also made them less meticulous towards their duties.

**Issues of Fear of Change**

Fear of change by the higher authorities also plays as a hurdle to implement best practices in the organisation. Although as a public sector employees, the staff do not have a fear to lose the job however delegation of the power seems to be the perceived threat to the higher official in case of the introduction of the new practices in the organisation.

**Issue of Corruption**

The role of corruption in the less developed countries cannot be ruled out especially when the context is public sector projects. This social phenomenon in the less developed countries also plays as a key clot for the efficient progress of the project. It is also found true in the context of managing the projects in this organisation.

In conclusion, although the organisation A is among the best public sector organisation in Pakistan in context of managing and implementing the projects, but from the research study it’s clear that there were a lot of improvement that are still needed to efficiently manage the projects.
5.4 Case Study of Organisation B

5.4.1 Description of the Organisation

Organisation B was the largest telecommunication service provider in Pakistan. It has the largest infrastructure of telecommunication and it also act as a service provider to the other private sector telecommunication organisations. It has an excess of 50,000 employees and a portfolio in excess of $ 50 B. This organisation was involved in a range of project to develop the telecommunication infrastructure of the country. For the past eight years Pakistan has seen a tremendous growth in the telecommunication sector. Organisation B has played an important part in this growth. Usually the project in this organisation range from $ 1 million to $ 2 million US.

5.4.2 Current Project Management Practices

The project management practices that are used to identify, plan, execute and monitor the project in this organisation are as follows:

Project Identification and Approval Process

Projects are being selected in the Board of Director meetings. The projects are proposed on the basis of demand from the network or from the consumer point of view. However, in few cases the projects were also undertaken because of the political pressure but usually the failure rate of these projects are very high. In addition, there are projects which has to be performed because of a new technology in the market, the organisation has to adopt that technology to keep in pace with the market and to enhance the efficiency of the network.

Once the project is approved the next step is to provide funds for that project. Generally the funds are approved from chairman to the appropriate general manager. The highest authority for the approval of funds is the Board of Director and they do not have any limits in approving the funds for any project. The organisation B is a profitable organisation and generates its own funds therefore there is no involvement of organisation A in the planning sector (i.e. no preparation of PC-I to acquire funds as described in chapter 4) in
acquiring funds and hence does not face the difficulties associated with that process. Usually it takes about 2-3 months to approve the project for funding in this organisation.

**Project Planning and Monitoring Process**

Once the project is approved for funding and the funds are released the actual progress on the project commences. There is an automated system of project management in the organisation. It is an in-house software recently introduced in the organisation. Due to this software the efficiency of the project cycle in the organisation has increased, e.g. the procurement cycle before the introduction of the software took about 90 days but after its introduction the procurement cycle was reduced to 40 days. Gantt charts and WBS are now used frequently on the projects. However, because the software was new and the training was not properly performed to familiarise the use of software therefore the project managers were facing some problem with this software. A project monitoring cell is present in the organisation which looks after the tracking of the project performance. Usually Gantt charts, work breakdown structures and the network diagrams were used to track the activity progress on a project. A fortnightly report was prepared on the progress of the project and circulated to the higher authorities. Once the project is finished a project closure report is prepared and propagate to the higher authorities. This report was sometimes used in the planning stage of the similar project. With the new competition in the market the success rate of the projects has increased drastically in the organisation.

**5.4.3 Identification of the Issues that hinders the project success**

Organisation B has revolutionised the Pakistani public sector in terms of revenue generation however still there are practices in its project management processes which if given consideration can sustain its profitability and improve its project management process. Some of these practices are as follows:

**Issues of Political involvement in the decision making processes**

Political involvement in the decision making process was a hurdle for the project success in a sense that most of this involvement happens without taking in consideration the feasibility of the project. Because of this negligence most of the project which are
undertaken due to the political pressure resulted in a failure. This failure most of time was in the context of cost overheads and time elapsed.

**Issue of Lack of involvement of middle managers in decision making process**

There is an unwillingness from the higher management to involve the middle management in the decision making process. The middle manages are merely propagating the orders received from the higher authorities. This sometime creates problem for the middle managers to defend and to implement decision on the subordinate staff.

**Issues of Job security**

At the time of this case study, the management of the organisation was changed. The new management started implementing their vision and a down sizing was occurring in the organisation to improve its efficiency. Because of this downsizing the employees were in fear of their jobs. This creates an unhealthy atmosphere in the organisation and most of the workers were not taking much interest in their job.

**Issue of coordination within and outside the organisation**

Sometimes, when in a certain project phase the coordination of other public sector organisation is required, the unwillingness of other public sector organisation in this situation becomes a major hurdle in the progress of that project. The improved coordination between these departments can drastically increase the performance of the project.

**Issues of Lack of Stakeholder Participation in the Planning Process**

Most of the respondents perceive that there is no proper way to ensure the satisfaction of the stakeholders. Furthermore they argue that there is no process of identifying the stakeholders of the project in the planning process. This negatively affects the project success.
In conclusion, although organisation B has brought a tremendous growth to the country yet there are factor that if given serious consideration can improve the project management practices of the organisation.

5.5 Case Study of Organisation C

5.5.1 Description of the Organisation

The organisation C was established in 1991 to oversee the planning, development, operation, repair and maintenance of the national highways and the strategic roads of the country. In Pakistan, the road maintenance is maintained by different agencies. These agencies exist at the district level, the provincial level and the federal level. The roads that come under the federal level fall under the authority of this organisation to plan and operate. In addition to this, the corridor management also comes under the authority of this organisation. Everyday the staff of this organisation was busy in various different projects of strategic importance to the country. The organisation structure of this organisation is depicted in the Figure 5.2 below.

Figure 5.2: Organisational Structure of Organisation C
5.5.2 Current Project Management Practices

The project management practices that are used to identify, plan, execute and monitor the project in this organisation are as follows:

**Project Identification and Approval Process**

The projects are selected on the basis of strategic importance for the country and on the basis of commercial viability for the organisation. To initiate the project, a project proposal is prepared by the planning wing of this organisation on a prescribed format of PC-I. After the project is identified and the proposal (PC-I) is made, the proposal is forwarded to the organisation A in the planning sector for approval and funding. Generally in PC-I, the estimation of cost, manpower, and time is given. The detail process of this approval of project and funding is given in Chapter 4. This is a long and cumbersome process, which in case of this organisation, this process of approval and funding of project may take up to a year.

**Project Planning and Execution Process**

In some mega projects, a feasibility study is also required in the form of PC-II. The projects which are above $1 million US require a feasibility study. Usually, it’s been done by the officials of organisation A in the planning sector with the help of officials from the planning wing of this organisation.

Once the project is approved, the funds are released to the finance department of the organisation on quarterly basis. Once the funds reach to the finance department of the organisation, the project physically started. The phase of implementation of the project starts with the bidding and selection process of contractor and consultant. A detail job description is announced in the newspaper for the contractors and the consultants to make a bid. The procurement and contract administration department in the organisation performs the contractor and consultant selection process. Usually, the consultant is selected with the recommendation of planning department of this organisation to the procurement and contract administration department, and contractor is selected with the
recommendation of construction department to the procurement and contract administration department of this organisation.

After the contractor and consultant are selected, the consultant provides a detailed project plan to the project director by using Primavera project planner software. The project director was mostly from the organisation C.

**Project Monitoring Process**

After the plan is received from the consultant and the contractor is hired, the role of organisation C turns to monitor the progress of the contractor and the consultant on the project. It's the responsibility of the contractor and consultant to provide the monthly progress report of the project to the project director of the organisation. In addition to these progress reports, the project director also performs on-site visits to check the progress of the project. In conclusion, monitoring is performed through the consultant report, the contractor report, on actual plan, and by on-site visits.

Once the project is completed, a project completion report is submitted by the contractor and consultant to the organisation. In addition to this, from the past two years, the officials from the organisation A in the planning sector of Pakistan have instructed the organisation to provide them the benefits achieved report once the project is finished.

**5.5.3 Issues in Current Project Management Practices**

In managing the projects, the organisation C faces some issues which are as follows:

**Issue of Favouritism in funding the Project**

In project financing, the organisational politics of favouritism play a role. This happens when the official in finance department have good relationship with the project manager of some project. The fund may be released to that person even if there are other more suitable projects which needs funds. This issue may delay other projects.
Issue of Centralised Power Structure

Another issue which hinders the project progress is the centralised decision making. The delegation of decision power to the project directors is very limited in this organisation.

Issue of “Mian Sahab” Culture

The issue that is pertinent to improvement of project management in organisation C is the change of “Mian sahab” culture. “Mian sahab” culture means that in organisation C, most of the contractor has the old system of unified power structure. So whenever an issue arises on a project the project is stuck unless and until the “Mian sahib” (i.e. the owner of the contracting company) orders to take further action on that issue to resolve it. This delays the project.

Issue of Conflict between the consultant and contractor

The conflict between consultant and contractor arises when on some project the consultant tries to exceed its power and advises an activity to the contractor which is out of the scope of the contract. This situation most of the time creates a damaging atmosphere for the project. Sometimes this led to the stoppage of work by the contractor on the project and delays the project.

Issue of Political Influence

The political influence can also affect the planning of the project. An example of this is: there is a project of construction of a highway that will link two big cities. The highway is a basic means of transportation and it perceives to bring prosperity to the area through which it passes. Therefore once the officials in planning department of the organisation C send the design and proposal in the form of PC-I to the organisation A in the planning sector of Pakistan there may be chance of change in the project design from the organisation A in the planning sector. Most of the times, these changes are influenced by the political pressure. When this happens, the proposal (PC-I) is revised. This revision may take an additional six months time. These six months with the addition of a normal time of approval (which is a year) delays the perceived benefits of the project.
Issues in Planning

Inconsistency is an issue in planning as well in organisation C. For example for the mega projects in organisation C there is a proper feasibility study and detail design that is required before the start of a project. However for the smaller and the medium size projects, no such feasibility study is performed. This issue creates problem in smaller and medium size projects once the project starts. Any project which is above $ 1 million US is considered to be a mega project in organisation C.

Lack of attention to the stakeholders in planning stage

Lack of attention to the stakeholders in the planning stage also creates problem for the successful implementation of the project. Some of these problems are given below:

a) Land Acquisition Problem

No proper participation of stakeholders in the planning stage of the project creates problem once the project is initiated. For a road project there should be land available on which the road has to be constructed. This process is called land acquisition. In organisation C there is no proper planning of land acquisition before the project actually starts. An example of this is: project of a road construction is started and it reaches a stage where some portion of a land is not properly planned in the planning stage to acquire, when this happens the work on the project stops. Most of the time, this happens because the officials in planning department did not visit the physical location of the project. The land acquisition in public sector is a lengthy process and it significantly delays the project.

b) Utility Relocation Problem or Coordination Issue

Utility relocation is another problem in the implementation stage of the project. Once any utility of the government sector department comes in the way of the project it creates coordination problem with that department. For Example if there is some high voltage electricity pole in the way of the construction of a road and it has to be moved then there will be negotiation with the electricity organisation for its relocation. That department has
its own rules and regulations and they take this activity as a routine job even though it’s on a critical path of the project. This delays the project. So lack of proper stakeholder identification and planning can have drastic effect on project success.

**Issue of Lack of Staff for Monitoring**

Once the project is in the implementation stage the officials of organisation C monitor its progress. This monitoring is based on the reports from consultant and contractors because of the lack of supervisory staff in the organisation. The issue in this process is that sometime the consultant and contractors try to hide the facts about the project progress.

**Issue of Lack of Skilled Contractors**

One of the most important issues is the lack of skilled contractor. Most of the contractors working on the projects of organisation C are not very skilled. This is a national problem in the industry that most of the small and medium size contractors company are not equipped with the new techniques of managing the projects. In addition they lack the use of software for planning, designing and scheduling purposes. Furthermore these companies also lack the skilled managers which can take appropriate decisions on the projects.

**Issue between the departmental plan, contractor plan and the consultant plan**

The lack of capacity in the contractor also creates problem in reading the plan from the consultants. Normally the consultant gives a detail plan on primavera project planner to the contractor. Whereas, the contractor lack the ability to read that plan, so, once the project starts the contractor is working on his own plan. Therefore the time and the effort of the consultant in planning the detail plan is being wasted because the contractors lack the ability to read those plans. This also creates problem once the consultant starts monitoring the project progress on the plan provided by him to the contractor.
Issue of Lack of attention given to the previous data in planning

There is lack of attention given to the previous data once the officials in the planning department plan and design the project. There is also no data management system used in the organisation. This creates problem in most of the projects.

Issue of Planning without knowing the site condition

Another mistake that happens in the planning stage is that officials in the planning department plan the project without physically going to the site. For example in one of the project in organisation C, there is a flyover that has to be built but the pass way that’s been given in the design is much smaller than what it should be. So when this happens during the implementation stage of the project the project stops to get approval of this design change.

Issue of Post Project Reviews

There is no process of conducting a post project review once the project is finished. Because of this lack of post project reviews the officials in organisation C are missing the opportunity to learn positive lessons from the projects.

Issue of risk planning and management

There is also a lack of proper risk planning and management in managing the projects. This is explained as follows: in a construction of a bridge project on a river, the planning department envisage that it should be build as near as the existing bridge so that there should be less drilling work for the pilling. In the implementation stage the soil investigation started, the stratum that was received was very different then what was received in the planning. The pilling depth given by the planning department is 60 m which has to be 70 m. In addition, once the boring started the team stuck with difficulties of hitting boulder, these boulder were dropped there when the railway department have build their bridge adjacent to the road bridge. Sometimes rail track hits in the boring process. In the planning stage no consideration was given to this kind of risk, so when its happens it was left for the project manager to manage it.
5.6 Case Study of Organisation D

5.6.1 Description of the Organisation

The organisation D was established in 1953 to promote the cause of science and technology in the country. The 21-member Council is the policy making body of the organisation D with Chairman of the organisation heading the council. Although the organisation was a research sector organisation, the structure of the organisation is purely functional. The organisation has an excess of 600 scientists and an excess of 1500 technical and administrative staff. The organisation is involved in a range of research related projects having strategically important to the country. The organisational structure of the organisation is illustrated in the Figure 5.3 below.

![Organisational Structure of Organisation D](image_url)
5.6.2 Current Project Management Practices

The project management practices that are used to identify, plan, execute and monitor the project in this organisation are as follows:

**Project Identification and Approval Process**

The projects are selected on the basis of demand from the Industrial sector of Pakistan. This organisation is responsible for the development of standards related to the industrial materials and to calibrate these standards internationally with other such organisations. The size of the projects varies and it depends upon the funds allocated in the budget for the fiscal year for this sector. Ironically the funds allocated for the research sector are very low and from the past history is nearly invisible. Once the project is selected to obtain funds from the government, the organisation has to prepare the PC-I. And then accordingly this PC-I will take its procedure till approved (explained in chapter 4). Before the start of the project a formal meeting is held between the stakeholders of the project for their inputs about the project.

**Project Planning and Execution Process**

In managing the projects the organisation uses an in-house project management methodology. No international project management methodologies are followed by the organisation. The project management methodology varies based on the skills of the project manager in the organisation. Since its establishment, very few projects have been done by this organisation and usually the project is managed the project manager informally. There is no software of project management in the organisation to manage the projects and to help the project managers.

**Project Monitoring Process**

The monitoring process of the project is not the responsibility of the organisation. The ministry of production and development generally oversees the monitoring of the project. However, regular meetings were held during the project execution stage to discuss about the progress of the project.
Example of Projects Performed by the Organisation

The following are the two examples of the major projects that was performed in the organisation. These examples present a brief insight of how the projects were managed in the organisation. These are as follows:

- The first example is the establishment of the standard testing laboratory in Pakistan for different commodities. The project was approved in 1979 for execution and it the stipulated time for completion was 2 years. However, the project actually took 4 years because of the lack of skilled persons and it was still perceived as a successful project in the organisation.

- The second example is about capacity building project for the organisation. The project proposal was submitted to the Departmental Divisional Working Party (DDWP, for explanation refer to chapter 4 ) in April 2003 which had referred it to the Central Development Working Part (CDWP) for funding. From there on the project has been revised 17 times and is being approved recently on 30th April 2007. Due to this delay the project cost is perceived to be increased by $.2 million US.

From the research study in this organisation the constraints that are identified in managing the projects are as follows:

**Lack of Funds**
There are not enough funds provided by the government to this organisation to perform any projects.

**Existing Administrative System**
The existing administrative system is also perceived to be a hurdle for any improvement in the organisation by the respondents.

**Capacity of the organisation**
The organisation also lacks the capacity to implement projects and since its establishment in 1953 is involved in few projects.
5.7 Case Study of Organisation E

5.7.1 Description of the Organisation

The organisation E was established in 1964 within the ministry of natural resources. It was brought under the control of ministry of science and technology in 1970 and was renamed. The organisation E was responsible to conduct, organise, coordinate and promote research in all aspects of water resources in the country, so as to optimally use the available land and water resources, and to help achieve sustainability in the agricultural sector. The overall decision-making body of the organisation E is its board of governors, technical and executive committees assist the board in its operation. The federal minister and secretary of ministry of science and technology are the president and vice president of the board respectively. Chairman of the organisation E is the chief executive of the council and also acts as a secretary to the board of governors. The organisational structure of the organisation is shown in the Figure 5.4 below.

Figure 5.4: Organisational Setup of Organisation E
5.7.2 Current Project Management Practices

The project management practices that are used to identify, plan, execute and monitor the project in this organisation are as follows:

**Project Identification and Approval Process**

The projects in this organisation were selected in the department development working party meetings which were headed by the secretary of science and technology and experts on water resources. In these meetings the demand was identified and the initiation for the proposal was carried out. The projects related for the identification and the enhancement of the water resources capability were carried out in this organisation. Pure drinking water resource centres establishment were the major kind of projects carried out in this organisation. The ministry of science and technology heads various departments, and usually the funds are the major factor for any development processes, a meeting is held around once, in 6 months or in a year in central development working party (explain in section 4.1 of chapter 4) and quarterly on department development working party basis to approve the appropriate projects for funding.

**Project Planning and Execution Process**

Usually when a need is identify for a project, a proposal is prepared on the predefined structure as given by the organisation A in the planning sector (i.e. PC-1) and then it follows the same procedure as described in chapter 4. After the approval of PC-I the cash is transferred to the finance department of the organisation on yearly basis. From there on the finance department releases the funds to the project on quarterly basis and a quarterly cash plan is developed. This cash plan has to be approved from the project manager. If the amount specified in the cash plan is not used in that quarter then officially you have to surrender that amount. But usually the project manager shows it as the committed amount and get around in the department level. But if on a project the amount released from the organisation A in the planning sector is not being used then the project manager have to explain the organisation A in the planning sector that why the amount was not used to get the funding for the 2\textsuperscript{nd} year of the project.
The project management methodology is internal based and the project manager has to send the project reports according to the standard operating procedures defined by the organisation A in the planning sector. In managing the project the project manager look out for the activities which would delay the project and Gantt chart and activity diagram are the common tools that are used in this process. These tools are paper based and no software is used in this process.

**Project Monitoring Process**

Internal monitoring is there to ensure that the project was on track. Sometimes on site visits were being conducted to monitor the project but they were not that frequent due to lack of resources. The project manager has to send the progress monitoring report to the executives on quarterly basis. The project completed within cost was perceived as successful. Time was usually ignored in this context.

**Issues in Project Management Practices**

The constraints in managing the projects are the day to day orders from the senior management and which have to be given the precedence over the project activities. In general the government departments who are the stakeholders in the project produce the most nuisances in the project. The coordination between different departments was based on personal contacts and no written procedures are there to solve these problems. Though there was pre project meeting with the stakeholders. But generally that does not work. Generally, the trainings were conducted for the skill development of the staff on regular basis but favouritism was there in the selection process. Therefore, no impact has been seen as yet for these trainings in the improvement of the skills of the particular staff. The fear of change in the existing administrative system was also a hurdle in the progress of the project management processes.
5.8 Case Study of Organisation F

5.8.1 Description of the Organisation

The organisation F has been established by the government of Pakistan for the purpose that, indigenous universities can become world class centres for research, education and development. It was in the year 2002 that government realised the shortage of skilled professionals in the country and passed an ordinance to establish this organisation to build the knowledge base for the country. The organisation has done this by developing institutional facilities, introducing new disciplines in cutting-edge technologies and by investing in human resource development. There were around 700 projects that the organisation F was governing with 100 to 200 new projects every year. The organisation structure of the organisation is illustrated in the Figure 5.5 below:

![Organisational Structure of Organisation F](image)

Figure 5.5: Organisational Structure of Organisation F

5.8.2 Current Project Management Practices

The project management practices that are used to identify, plan, execute and monitor the project in this organisation are as follows:
Project Selection / Initiation

Generally there are three types of projects happening in a particular university and these projects are categorised based on the sponsoring agency for example projects sponsored by the organisation F, project sponsored by provincial government and the projects funded by the vice chancellor from the funding generated by the university itself. In the case of the projects funded by the organisation F the Universities usually propose the project to the organisation F. This proposal is developed in the form of a document called PC-1 which is a standard proposal form for public sector organisations in Pakistan developed by the organisation A in the planning sector of Pakistan. This form is developed by the planning and development division of the university. The detail about this form is presented in chapter 4. After the PC-1 is received by the organisation F it is scrutinized by a technical review committee of the organisation. If the committee sees some deficiencies in the PC-1 it is sent back to the university with the proposed amendments. After the technical appraisal the pre-department divisional working party meeting takes place and the university is given an opportunity to further elaborate and justify their proposal. If it is approved then the proposal is forwarded to the department development working party meeting. The department development working party meeting is chaired by the chairman of the organisation F. The department development working party has the provision to sanction a project of up to $ 1 million US. If department development working party approves the proposal the funds are allocated. If the project is worth more than $ 1 million US then the project proposal (PC-1) is sent to the central development working party which is a working party at the federal level (refer Chapter 4). It has representatives from all ministries. In this case the organisation F will represent the university in the central development working party meeting and has to defend the proposal on behalf of the university. If the project is not approved in the central development working party on the basis of the availability of funds then the university has to surrender the project or to wait for the next year public sector development program, which is the budget allocated for the public sector development projects.
Project Planning and Executing

The project planning and execution lies with the universities. The university has its own project implementation capabilities. Its capacity to execute the proposed project is ensured by the organisation F during the project approval process described above.

The planning and development division of the university has the responsibility to plan and design the new project. When the project proposal is approved following the above process, the funds are released to the finance department of the university. The finance department gives the green signal to the planning and development division to go ahead. The planning and development division calls for the tender after getting the detail design and architectural design. The university carries out pre-qualification of the contractors. These pre-qualified contractors are divided into different classes based on their capacity and competency. The contractor having an A class means that there is no limit for that contractor to bid for the project. The tender is awarded to the contractor with the lowest bid. Sometimes contractors refuse to accept the project. In that case it has to surrender its deposit which is usually 2% of the project and the contractor is also blacklisted. The tender is then awarded to the 2nd lowest bidder. After the contract is awarded the university takes on the role of monitoring and controlling.

Project Monitoring and Controlling

The project is primarily monitored and controlled by the university. It is also monitored and controlled by the organisation F. For this reason the executing university has to send the progress of the project to the organisation F on quarterly basis. The monitoring team is formed by the vice chancellor. This team comprises of the university professors and the project director of the planning and development division. The responsibility of this team is to monitor the contractor and send the quarterly report about the project to organisation F highlighting the targets achieved in that time period. The contractor has to submit a monthly report on the progress of the work to the planning and development division of the university.
Closing the Project

The funds keep the project going. Once all the funds are utilised, the project is closed down. This would mean that if project has not completely finished yet but fund are no more available, it will be closed down. This would also mean if project is completed under budget, the remaining funds would still be utilised until they are exhausted. The reason being the perception in the public sector organisation of project’s success is the utilisation of funds. If the funds are not be fully utilised this would in a way show inefficiency on the part of the organisation. This is an interesting criterion as it supersedes the general success criteria of project as measured through cost, time and quality triangle. The ability of using the funds completely by the university makes it a good candidate for future funding.

5.8.3 Issues in the Project Management Practices

A number of issues can be identified in the above mentioned process. These issues can be further divided with respect to organisation F and the University.

Some of the issues identified from university point of view are listed below:

- Late release of funds from the sponsor agency
- Shortage of skilled staff in developing PC-1 (Organisation A in the planning sector 1)
- Change of scope during the execution of the project
- Time delays on the part of the contractor
- Delays in the approval process / A lot of unnecessary paper work has to be done to approve a project
- There is no written policy in selecting the project team members / and the most important step in government sector is to retain a team member on a project once it started and there is no such policy there
- Lack of capacity to implement the big projects
- Bureaucratic culture in the organisations
Projects are managed without any proper methodology and usually it depends on the project manager skills how he will deal with that project so if a project manager is capable then project will perform better otherwise it is a failure and nobody is responsible for that.

The issues identified from the organisation F’s point of view are as follows:

- Political pressure to start a project without identifying its feasibility
- Too much work for small team to manage
- Lack of knowledge to use new tools and techniques to manage project
- Lack of importance to the planning (Although planning and development should be considered as a critical point of success in the project management which is at the moment has the negligible importance in the organisation)
- Lack of skilled staff
- Short time planning or the planning is done in a hustle. There should be a proper planning for the next 5 years whereas at present when the budget is approved planning and development department gets a full blow and pressure to come up with the performance.
- Political pressure problem for example as a federal sector organisation the organisation F have to take care of the needs for all the provinces and usually have to give the projects to all the four provinces even if any province lack in the capacity to develop that project and usually this steps result in a lot of failed project. The projects have to be given to the small province only because people don’t feel that they are not been given the development funds and usually that executing authority doesn’t have the capacity to execute that project. This problem should be solved so that only the capable universities can get the funds which can be utilised in efficient manner.
- Pre-project studies are carried out arbitrarily.
- No system of recording the previous projects data and the lessons learned on those projects.
- Another major issue is the political instability and lack of consistency in the countries policies.
5.9 Case Study of Organisation G

5.9.1 Description of the Organisation

The Organisation G was set up by the Government of Punjab as an autonomous body with the mission to develop IT as a major sphere of economic activity, and promote its use in the public and private sectors to increase efficiency and competitiveness. It was involved in the creation and implementation of e-government policies at the provincial level. A part from this it was entrusted with the capacity building of the government sector particular in the field of IT. The organisation is involved in the transformation of government sector department’s infrastructure with the best in class IT services. The organisation structure of the organisation is illustrated in the Figure 5.6 below:

![Organisational Structure of Organisation G](image)

Figure 5.6: Organisational Structure of Organisation G
5.9.2 Current Project Management Practices

The project management practices that are used to identify, plan, execute and monitor the project in this organisation are as follows:

Project Selection / Initiation

The projects which were selected in organisation G were related to I.T facilitation in the province. Majority of these projects were government funded projects. The organisation G was also exploring the prospects of private funding from the national and international donor agencies. Usually the projects were selected by the Planning and Development division of the province and were handed over to the organisation F for implementation. The chairman of the organisation is a member of the board of planning and development division where the projects were selected. The size of the projects varies but usually it ranges between 20 – 50 Million $ US. The funding mechanism is the same as in any Public Sector Organisation (PSO) and follows the procedure of submission of PC-I. (The detailed process was mentioned in chapter 4).

Project Management Process

The organisation follows the project management institute (North America) based methodology (i.e. PM BOK) and is supported by the chairman of the organisation. A part from this Primavera P-V is used for planning and monitoring process. The detail steps of the project management process in the organisation in terms of project once it’s approved for funding are as follows:

a) Scope Statement

The first step is to establish the scope statement with respect to the project.

b) Charter

Once the project is approved for funding the project proposal becomes the project charter.
c) **Stakeholder Meetings**

Stakeholder meetings were done before the start of the project. In these meetings all the potential stakeholders were invited and a formal presentation was given to them about the project. Once the project is in the execution stage the stakeholder were also informed about the progress of the project with regular meetings and with monthly progress reports.

d) **Team Building**

Team building was done once the project is approved. Usually the staffs required for the project was available in the organisation but if in any case the organisation lacks the ability for the skilled staff the position were advertised in the newspapers. The responsibility and the mode of communication were identified in the team building process.

e) **Detail project plan**

A detail project plan was made with the inputs from the technical staff. Activities were identified and resources were estimated against them. This project plan was act as a guide line in the contractor selection process.

g) **Tender is called**

Once the detail project plan is established the tenders were called for the project. The bidding process for the project happened and project were awarded on the basis of quality and cost. International contractors were also involved in the bidding process. The contracts were awarded on lump Sum basis so as to avoid the inflation and other such bottlenecks.

**Monitoring and Controlling**

Earned value management technique is used in the monitoring process. Primavera P-V is used as software in this process. It is very effective in monitoring and forecasting variations. A part from this, the monitoring reports were submitted to the organisation by
the contractor on weekly basis and if there was any issue then that issue was discussed in the weekly review meeting with the managers and was sorted out right there. Meetings, monthly progress reports and other communication tools like emails, fax and telephone were used for the smooth functioning of the project activities.

5.9.3 Issues in Project Management Practices

Even the most efficient process has some issues associated with it. Although the organisation G was a best in class organisation in Pakistani public sector in terms of managing the projects but still it has issues associated with managing the project. The issues associated with the project management process of organisation G are as follows:

- There was a growing concern shown by the respondents that the local contractor lacked the capacity to carry out the mega projects. They were not familiar with the new techniques in the business and therefore lagging behind the rest of the world.
- The second issue that were identified by the respondents were the bottlenecks and the lengthy procedure of project approval because of the government sector organisation.
- Shortage of qualified engineers in the local market was another constrain identified by the respondents.

5.10 Case Study of Organisation H

5.10.1 Description of the Organisation

Organisation H is the state owned Railway Company. It comes under the authority of ministry of railways. The organisation is divided into four directorate's namely administrative directorate, technical directorate, planning directorate, and finance directorate. The organisation has approximately 85000 employess. It carries around 65 million passengers annually and operates about 228 trains daily. A part from this it’s also involved in the freight transportation throughout the country. The structure of the organisation is typically functional with chairman heading the organisation.
5.10.2 Current Project Management Practices

The project management practices that are used to identify, plan, execute and monitor the project in this organisation are as follows:

Project Identification and Approval Process

The PM process in the organisation starts with the identification of the project. Usually the survey branch does a survey and identifies the need for a new project. After the identification of the project a feasibility study was undertaken by the survey branch. If in the result of the feasibility study indicates the rate of return on the project exceeds 12% then the project was proposed to the higher authorities for funding. The size of the project varies in the organisation but usually it exceeds $ 10 million US. The funding mechanism is to prepare the project proposal in the form of PC-1 and then send it to the ministry in the organisation A in the planning sector. Then from there based on the amount basis the sanctioning was done by the competent authority (the process of PC-I approval based on amount was described in chapter 4).

Project Planning and Execution Process

In general, the organisation does not undertake the mega project without the expertise of the foreign consultants and donor agencies. The process of hiring the foreign consultants was done once the project is identified. The tender was advertised and the concerned parties bid for that tender. Once the tender was awarded which was based on low cost and expertise the project was physically started. The project director was appointed from the organisation and in most cases the project director has delegated the full responsibility and powers from the organisation. Once the project started the execution lies with the contractor where as the duty of the project director now is to coordinate with the contractor and consultants and the smooth running of the project activities.
**Project Monitoring Process**

The internal monitoring was done by the organisation but usually the organisation A in the planning sector also monitor the project progress physically and financially through its monitoring teams.

**5.10.3 Issues in the Project Management Practices**

The constraint for a successful project starts with the identification of the project. These constraints were:

- the lack of skilled man power,
- lack of equipment,
- lack of funds etc.

For the smooth running of the project and to finish it in time the project was dependent on the finances any delay in the finances delays the project and increase the cost due to inflation. This was usually the case of the projects happening in the organisation. A part from this there was a vast gap of skilled labour related to the railways in the market and sometimes it becomes the major constraint. It was hard to find any consultant in the market for rail projects.

From the above mentioned specific problems associated with the organisation there was other general problem in the organisation which was associated because of its public sector structure. This was the lack of coordination between the public sector organisations. Due to this lack of coordination and lack of policy, any issue in a project between the public sector organisations becomes the major hurdle for project on time completion. Usually no trainings are performed in the organisation and the job training was the only training through which the employs learn. There was also a gap of skilled manpower and the organisation was in dire need of it. There was no benefit achieved report prepared once the project was finished. No project history was maintained although the project completion report was a mandatory process. The communication of orders was via papers and via phone. There was no use of electronic data management system.
in the project. No software of PM was used in managing the project and it was usually the personal experience instead of any tools that were used once an issue was occurred on the project. Interference of political personalities and over employed staff was also a major constraint. The other main problem is the capacity of the organisation to implement the projects. For example, sometime the organisation proposed very ideal projects but when the project proposal gets approval, the organisation lacks the required capacity to implement them.

The lack of funding or delay in a funding was a problem in way that once a scheme is approved for about $ 50 million US and these funds has to be distributed in 5 years then the government should provide $ 5 million in each year but practically this does not happen. In addition, when the procurement is required in a project, the project manager needs a lump sum amount for this process. This is required because most of the equipment or material has to be to procure from abroad. This can take about 3-6 months but it delays considerably because the funds are granted from the government on quarterly basis. Furthermore, if the organisation cannot spend the required amount in the year it has to surrender that amount and once the funds are surrendered, to retake them from the government was a very cumbersome process.

The two recent projects performed by the organisation were as follows:

- First one was the laying of track between the Mirpurkhas (Pak.) to MonaBao (India) this project was completed within the stipulated time which was very rare in the public sector organisation especially in less developed country although the cost has increase. The major reason behind this on time completion was the project political importance. The issue that occur in the project was that it requires rails which were not available at time of the project. However, as the government wants the project to be completed on time therefore the organisation completes it with less specs rails. So once the inauguration was done the rails have to be removed and the rails with required specs lay again. This made the cost over runs in billions.

- The other project was the rehabilitation of the track which was the ongoing project. Some three years has lapsed since this project has started and a year is left as of
actual planning but there was a general opinion that it will take longer and the cost will also increase. This delay was due to the capacity problem of the organisation.

Mismanagement from the higher authorities was also the reason of the organisation poor performance. An example related to the mismanagement is discussed below:

The organisation H had five sleepers factory at the time of independence. At that time the sleepers were made from wood and it was too expensive. Therefore, the organisation decided to replace those wooden sleepers with the concrete sleepers. Out of these five sleeper factories one of them was in Shaheenabad Sargodha Pakistan. During the late 90’s due to the paucity of the funds in the government and in the organisation the four sleeper’s factories were closed. In Shaheenabad there are some 200 regular employees and usually when the factory is in full working condition the factory may hire addition 300 employees on contract basis. So during the period of 90’s the factory was closed but those 200 employees were getting the full pay with allowances while doing no work and staying at home. During this period they were also getting the overtime allowance which makes about $0.1 million per year.

The organisation was used to be a profit earning organisation. But due to the introduction of labour union the organisation working is affected negatively. People took negative advantage of labour union. Instead of fighting for their rights they made the union as a mafia and stop performing their duties with responsibility. Mismanagement and lack of funding from the government was also a problem in the organisation. Replacing the old style management with the new style and adopting the best practices of project management can turn the affairs of the organisation again as a profit earning organisation.

The next section of the chapter will map the results of the case studies performed in the service sector to the knowledge areas of project management as described in PMI BOK as best practices. This is illustrated in the section below.
5.11 Knowledge Areas Mapping with PM Process Groups

The PMI Institute divides the PM into nine knowledge areas which spans across the five phases of the project life cycle. In the case studies above mostly the discussion will be about the phases of the project life cycle. Now the objective here was to map those five cycles from the case studies into the nine knowledge areas so as to clearly identify the picture of project management process in the service sector. For illustration purposes the practices which happens effectively in the service sector organisations was coloured as green, the practices which were there but needs improvement were coloured as brown and lastly the practices which needs major improvement were coloured as red. This is described in the Table below.

Table 5.1: Comparison of Project Management Processes

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The processes which are not listed above in the knowledge areas were done so intentionally because they do not fall in the scope of the service sector organisations. They may fall in the scope of the planning sector or consultant sector organisations. The detail table will be presented in chapter 8 in which all the processes where listed as it was in the PMI BOK.

Legend: Green ---- Represents processes effectively practiced in the public sector organisations
Brown ---- Represents processes that need improvement
Red ---- Represents processes that need major improvement

The next section of the chapter analyse the case studies in the public sector service organisation in Pakistan and as a result of the case studies the issues that are identified are placed in the categories of:

- less developed countries,
- public sector organisation,
- culture, and
- project management

The reason behind this step is to identify the different levels of problems associated with public sector project management in a less developed country.
5.12 Discussion

The results of the case studies performed in the public sector service organisations of Pakistan were informative in terms of the identification of the project, the process of preparing the project proposal, the implementation stage of the project, the internal monitoring and the closing stage of the project.

These case studies help improve the understanding of how the projects get approved from the planning sector organisation and how the service sector organisations identify the project and what kind of measure the service sector organisations take to prepare the project proposal. These cases were also helpful to understand the monitoring and closing process of public sector projects in Pakistan. It is notable that in terms of project management capabilities there was a significant variation among the service sector organisations. Organisation A, and B were quite mature in terms of their project management practices. Organisation C, E, F and G are working hard to improve their project management processes. In terms of project maturity they were comparatively new organisations than organisation A and B, and working hard to standardise their project management processes. Organisation D and H, although were quite established (Old) organisations but in terms of managing the projects they were quite weak. One of the reasons that participants from these organisations perceived for this was the lack of skilled people in the market, the bloated size of organisations and the mismanagement from the senior management. These problems were also highlighted by Youker (1992), Hauque (2003); Cassel and Janovsky (1998) in their research on the less developed countries with poor performing organisations.

In General, the participants from these organisations faces problem with coordinating between different contractors and public sector organisations, lack of skilled contractors and the land acquisition problem. Spittler and McCracken (1996) highlighted the importance of coordination during the project life cycle and term it a vital process for project success. The land acquisition problem in managing the project is seemed to be the most significant and interesting issue discovered by this research in the public sector organisations and mostly all the participants from these organisations discussed about the issue.

In the monitoring process of the project the participants complained that the relaxed attitude of the senior management or the lack of attention by them to the monitoring
report makes it difficult to enforce a strong monitoring mechanism. Most of the organisations in the service sector monitor the project manually (paper based) without using any software. The exception is organisation G which uses primavera project planner (P5) for the monitoring process.

During these case studies it was established from the interviews that the closing of the project done by service sector is ingrained by informality. Where, informality is described as the practice where the staff tends to ignore the organisation procedure. This informality takes place when the staff in these organisations has to prepare the project close out report (PC-IV) and the project benefit achieved report (PC-V). Most of the times the staff in these organisations tries to get away without preparing these reports. Although PC-IV was produced in most of the projects however PC-V was ignored most of the time.

The respondents from these organisations identify a lot of interesting and significant issues in the project management process of the service sector organisations in Pakistan. These issues was placed in four broader categories of issues related with project management practices, issues because of the nature of the organisation as a public sector organisation, the issues related because of the Less Developed Country (LDC) and finally the issues or the practices which embed in the profession as a culture. This is done on purpose so as to distinguish between the issues which can be improved by taking an initiative at the organisational level and between the issues which can only be improved by taking a major policy initiative at the political level. Figure 5.7 in the next page will show the issues in these four categories.
Figure 5.7: Categorisation of Issues in Service Sector Perspectives
5.13 Summary of the Chapter

The chapter has discussed the project management process in Pakistani public sector organisation from the point of view of the service sector organisations. The chapter is divided into eight case studies from the renowned public sector organisations. Each case study explores the PM process in these organisations.

Subsequently the chapter maps the on going processes with the best practices described in the PMI BOK. It goes on describing the barriers and constraints for adopting the best practices of project management in terms of less developed country, culture, public sector organisation and project management. The issues that were identified from the interviews lastly were categorised in these four categorised.

The next chapter will discuss the project management practices in Pakistani public sector organisation in the context of consultant sector organisations.
Chapter 6: Project Management Practices in the Consultant and Contractor Sector Context

6.1 Chapter Objective

The purpose of this chapter is to report on the results of a case study on PM practices performed in consultant sector organisations. The consultant and contractor sector organisations are involved mostly in the execution of the project. The chapter discusses the involvement of the consultant organisation in different stages of the project life cycle and analyses the data accordingly. The approach by the consultant and contractor sector organisations in managing the project is then presented in a tabular format. In the last section of the chapter, the issues that are identified are categorized and placed under their respective theme in a table.

6.2 Consultant & Contractor Sector

Mostly all the projects that are carried out in the public sector in Pakistan involves the consultant and contractor organisations. Therefore one best in class organisation is selected for purpose of this research. The selection of this organisation is also supported by its vast involvement in the government sector projects, sometimes as a consultant and sometimes as a contractor. Before discussing the current PM process in the organisation, the researcher firstly will discuss the background of the organisation to identify its immense expertise in different fields.
6.3 Description of the Organisation

The organisation in study is one of the best in class consultant and contractor organisation in Pakistan. The organisation is established in 1973 by the Government of Pakistan. The organisation is well reputed and is ranked amongst the worlds top 200 consulting organisations. The vision of the creation of this organisation is to create a talented pool of engineers in the country and to replace the foreign consultants. The organisation is established as a semi-government organisation, so as to remove the bottleneck associated with public sector organisations. The project portfolio of the organisation is US $ 15.8 billion. The organisation has a Board of Directors which manages the organisation affairs. The Board of Directors consists of chairman, managing director and seven other directors. Vice president assists the managing director for the day-to-day functions of the organisation followed by different division’s heads. There is also a project management division in the organisation which oversees the management of projects assisted by different technical departments. The organisation offers a broad spectrum of consulting services. These services ranges from initiation phase of the project to post project phase. The organisation has expertise in the field of construction, mechanical, Geographical Information Systems (GIS) and Information Technology (IT). To provide this kind of expertise the organisation has highly qualified and experienced professionals. At present, the organisation has strength of 2465 employees. Most of the times, the organisation acts as a consultant organisation and is hired for the planning and monitoring of the project. However, in some cases the organisation also act as a contractors and bids for the project. The organisational structure of the organisation is illustrated below in the Figure 6.1.
Figure 6.1: Organisational Structure
6.4 Current Project Management Practices

The project management process in the consultant and contractor sector organisation is as follows:

Identification of the Project

The process of managing the projects starts with the identification of the project. Because the organisation is the consultant organisation therefore it’s the responsibility of the business development division to get the information of any new project in the government sector and then propagate that information to the appropriate division. Once the information is received by the concerned division, it will check it with its available capacity. If the division is ready to take that project then it gives a positive signal to the business development division to bid for the project. The business development division bid for the project by looking at the type and volume of the project. Usually the projects on which the organisation perceives to get about 10% profit or in some instances up to 5% profit, the organisation accepts those projects. In addition to this the scope of the project should be aligned with the organisation policy. In general the organisation mostly involved in doing mega projects in Pakistan. The funding of the project depends on the contract with the client organisation.

Planning of the Project

In planning stage, the project manager prepares the plan and the General Manager provides the approval. There is a paper based documentation system available and mostly before the start of the project and in planning phase, the staff get help from the past project data. With the introduction of the IT in the organisation, there is an improvement in the organisation processes. On the project the General Manager divides the staff into groups/teams with project manager as the head of the groups and teams. Microsoft project and primavera is used by different project managers for managing the project. The existing staff is used on the projects and if a need is identified the organisation advertises the position and then selects the appropriate candidate.
Stakeholder meetings are held before the start of the project and during the projects. Usually these meetings are held among the client organisation, the contractor organisation and the consultant organisation.

**Execution of the Project**

In project execution, the project is contracted to the sub contractors. In the execution phase variation orders are the norm; this happens due to certain government regulations or due to some seasonal constraints (rain, flood etc) and when it happens the contractor gets the required amount. Sometimes the contractor also get surcharge for the variation orders. In cases where the organisation in study acts as a consultant organisation then late payment is used as a weapon to improve the contractor progress. The contractor is penalised whenever the scope is compromised without the consent of the client organisation. However, this happens only on few cases and most of the time the contractor has a genuine reason for the delay. Most of the times the reason for these delays, are the existing government regulations.

**Monitoring of the Project**

The organisation has its own in house monitoring system. Whenever a problem identifies on a project it is usually resolved with discussion with the concerned parties. Weekly meetings are held with the contractor in case the organisation is involved as a consultant organisation and with client in case the organisation is involved as a contractor organisation.

Most of the respondents believe that organisations 80 % projects are successful if the time is taken out of consideration. Most of them believe that less significance of time on project in public sector is a global trend. Furthermore, they perceive that time may be a priority in some public projects but mostly it’s the least considered factor for project success. In addition, the organisation performs regular trainings in the field of project management to develop the skills of its staff. In contrast with other organisations explored
in this research the PM practices of this organisation are quite effective. The organisation is also quite mature in terms of managing the projects.

6.5 Issues associated with current project management practices

The issues associated with the organisation PM process are described as follows:

- Late approval of funds from the client side is an issue. This affects the project in a sense that to start the work on the project the project manager has to allocate funds to the contractor. In most of the projects the late release of funds from the client side affects the project activities.
- There is no process of capturing the knowledge or experienced gained from the project. There is no lessons learned report or a meeting happens in the organisation once the project is finished.
- No electronic data management system available in the organisation to take help from the previous projects.
- There is no proper Project Management Office (PMO) in the organisation
- The decision power of the project manager is limited.
- The delegation of power to the middle managers is not happening in the organisation.
- In most cases favoritism is shown instead of professionalism in appointing a new staff or promoting a staff. This has affected the performance of the organisation.

The next step is to map the results of the case study done in the consultant and contractor sector across to the knowledge areas of project management as described in PMI BOK as best practices. This is shown in the table below.
6.6 Knowledge Areas Mapping with PM Process Groups

The consultant sector organisation is only concerned with the planning, execution, monitoring and controlling phase of the project therefore the initiation and closing phase is not mentioned in the table. In addition, the procurement is the responsibility of the client organisation therefore it’s also not mentioned in the table.

Table 6.1: Comparison of Project Management Processes

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<tr>
<th>Knowledge Areas Processes</th>
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<th>Executing Process Group</th>
<th>Monitoring &amp; Controlling Process Group</th>
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<td>Project Management Integration</td>
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**Legend:**
- **Green** ----- Represents processes effectively practiced
- **Brown** ----- Represents processes which needs improvement
- **Red** ----- Represents processes which needs major improvement

The next section of the chapter categorises the issues identified by the research under their respective category.
6.7 Categorization of Issues in Consultant and Contractor Sector Perspective

The issues identified from the case study are presented under the themes of project management, culture, less developed country and public sector. This is shown in the Figure below:

Figure 6.1: Categorization of Issues in Consultant and Contractor Sector Perspective
6.8 Summary of the Chapter

The chapter has discussed the project management process in Pakistani public sector organisation from the point of view of the consultant sector organisations. One best in class organisation is selected as a case for this section of the research. The chapter starts with an explanation of the organisational background and history followed by defining the current project management process and practices in the organisation.

Subsequently the chapter maps the ongoing processes and practices with the best practices described in the PMI BOK. It then describes the barriers and constraints for adopting the best practices of project management in terms of less developed country, culture, public sector organisation and project management. The issues that are identified from the interviews are categorized in these four categorized and depicted graphically.

The next chapter will compare the project management practices in different sector of the economy i.e. (the planning sector, the service sector and the consultant sector).
Chapter 7: Comparison of PM Practices among the three sectors and against the best practices

7.1 Chapter Objective

This chapter begins with the comparison of project management practices among the three sectors of the economy (the planning sector, the service sector and the consultant and contractor sector).

This is followed by the comparison of project management practices against the best practices mentioned in the Project Management Body of Knowledge (PMBOK). In the last section of the chapter, the maturity level of project management in the public sector projects of Pakistan is mentioned.

7.2 Comparison of PM Practices among the three sectors

The previous three chapters summarises the project management practices in different sectors of the Pakistani public sector (i.e. Planning, service and consultant & contractor sector). It is clear from these chapters that the planning sector is better than the other in a manner that the leadership has realized the strategic importance of revamping the current project management practices. The introduction of new software for monitoring the project progress is also helping to improve the performance of PM practices in planning sector. Whereas some of the organisations in the service sectors are pretty good in managing the projects and some are still in the initial stages of understanding the process of managing the projects.
7.3 Comparison of PM practices against the best practices

After comparing the PM practices among the three sectors of the economy and presenting the general picture of the economy the next phase is to compare these practices with the best practices. The public sector in Pakistan follows the PMBOK from North America therefore for this purpose the PMI’s best practices were used in the comparison. This comparison is group against the five phases of project life cycle.

7.3.1 Initiation Phase

The processes that are carried out in the initiation phase of the projects starts with the development of the project charter. The process of the development of project charter does happen in the public sector projects of Pakistan. The next process is to develop the preliminary scope statement which is also being done in the public sector project of Pakistan. Therefore the processes in the initiation phase of the project do followed in Pakistan.

7.3.2 Planning Phase

The planning phase of the project lacks attention to detail in Pakistan and therefore the project gets stuck once it goes from planning to execution phase. This lack of attention starts in scope planning, where scope of the project is not clearly mentioned. The activity duration estimation is inconsistent and no techniques (or past data) are used in estimating the activity duration. The activity resource estimating is also not properly followed in the planning phase of the project. Cost estimating and cost budgeting is followed in the planning phase but usually done on loose approximations or experience of the project manager as no past project data is available. A part from these processes the process of risk management planning is missing in the planning phase of the projects. As a result of this the risk identification, risk analysis and risk response is missing in the planning stage. This affects the project once the project is in the execution phase. The Quality planning and human resource planning is somewhat done in the planning stage in the public sector.
project in Pakistan. But the communication planning is missing in the project and as a result the stakeholders are not properly identified at the planning stage of the project. The planning phase is the core of any project; therefore to reduce the deficits in this phase can improve the efficiency of the public sector projects of Pakistan.

7.3.3 Execution Phase

Once the project is in the execution phase the process that are required to be done involves management of the project activities so that the project is completed on time, cost and schedule, perform quality assurance and information distribution. Most of these processes are followed in the public sector projects of Pakistan but because of the lack of new techniques and knowledge in the middle level consultant & contractor firms the project efficiency is often compromised.

7.3.4 Monitoring & Controlling Phase

Once the project is in the execution phase the most important thing is to monitor the progress of the project to update it against the goals envisages in the planning stage. This phase of the project involves the processes of scope verification & control, cost control, risk monitoring & control, stakeholder management, performance reporting etc. In Pakistani public sector projects the performance reporting happens quarterly or after every one month on a small scale project. Cost control does happen but there is little significance given to scope verification and control. As proper risk identification and management plan is missing in the planning phase therefore risk monitoring and control does happens but needs improvement.

7.3.5 Closing Phase

In the closing phase of the project a formal close report is being prepared by the execution department and submitted to the planning department for the closure of the
project. No reports on lessons learned or benefits achieved after the project are being prepared in the public sector projects of Pakistan although there is a process to prepare these reports but this is not being followed at the moment.

The table 7.1 below will highlight the practices in the five phases of the project life cycle.

Table 7.1: Comparison of Project Management Practices

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The next section of the chapter will discuss the maturity level of the project management processes in Pakistani public sector organisations.
7.4 Maturity Level

Paulk et al (1991) discussed about the maturity of the process and divides it into five stage model called as Capability Maturity Model (CMM). According to this maturity table the project management process the Pakistani public sector falls under the competency level 2 where processes still depends on individuals and there is minimum guidance available. The Project success is still unpredictable, and cost and schedule fluctuations persist throughout the projects. There is no integration of databases, although schedule information is generally abundant. Although some of the organisations in planning and service sectors are progressing towards level 3 , in general the competency level of the Pakistani Public sector organisations towards managing the projects is at level 2 according to this research. The table 7.2 below illustrates the five stage maturity model.

Table 7.2: Process Maturity Model (Source: Paulk et al, 1991)

<table>
<thead>
<tr>
<th>Competence level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 = Optimized</td>
<td>Continual improvement of process</td>
</tr>
<tr>
<td></td>
<td>Continual collection of data to identify</td>
</tr>
<tr>
<td></td>
<td>Analysis of defects for prevention</td>
</tr>
<tr>
<td>4 = Managed</td>
<td>Process is quantitatively measured</td>
</tr>
<tr>
<td></td>
<td>Minimum of metrics for quality and productivity exist</td>
</tr>
<tr>
<td></td>
<td>Collection of process experiences</td>
</tr>
<tr>
<td>3 = Defined</td>
<td>Process defined and institutionalized</td>
</tr>
<tr>
<td></td>
<td>Process groups defined</td>
</tr>
<tr>
<td>2 = Repeatable</td>
<td>Process depends on individuals</td>
</tr>
<tr>
<td></td>
<td>Minimum of process controlling/guidance exists</td>
</tr>
<tr>
<td></td>
<td>Highly risky in case of new changes</td>
</tr>
<tr>
<td>1= Initial</td>
<td>Ad hoc process, not formalized</td>
</tr>
<tr>
<td></td>
<td>No adequate guidance</td>
</tr>
<tr>
<td></td>
<td>No consistency in product delivery</td>
</tr>
</tbody>
</table>
7.5 Chapter Summary

This chapter discussed about the comparison of the project management practices among the three sectors of the economy. It highlights that the planning sector is better than the other two sectors in terms of managing the projects. The planning sector is introducing new tools and has a vision to revamp its current processes and practices.

Subsequently the chapter consolidates and compares the project management practices in Pakistan with the best practices given by the PMI BOK. This comparison of the practices is divided into the five phases of the project life cycle. The last section of the chapter discusses about the maturity of the project management practices in Pakistani public sector organisation. The next chapter will conclude the thesis and will describe the recommendations, future directions and contribution made by this research to the body of knowledge.
Chapter 8: Contribution to Knowledge, Future Directions, Recommendation and Conclusion

8.1 Chapter Objective

This chapter starts with the discussion about the findings of this research thesis. The findings are discussed against the research objectives envisaged at the start of the research. Subsequently the chapter discusses about the recommendations proposed by this research, followed by the contribution of knowledge and the limitations of this research. Lastly, the chapter proposes the recommendations for future research.

8.2 Main Research Findings

The main foundation behind this research is that although the project management literature discusses the importance of project management techniques for managing the projects but it does not show how project management is carried out in less developed countries and how these techniques effects the projects in the less developed countries.

This has led to the following main research objectives:

1) Investigate the issues related to the public sector development projects in a less developed country
2) Investigate the current practices of funding of public sector projects in a less developed country
3) Investigate the current practices of selection and governance of the projects within a less developed country’s public sector
4) Compare the current practices of managing the project in a less developed country’s public sector with the best practices provided by PMI in the PMBOK
8.2.1 Research Objective 1: “Investigate the issues related to the public sector development projects in Pakistan “

This research objective is answered by having a detail study of the practices which are listed in chapters 4, 5 & 6. The following table list the issues which arouse in the public sector development projects.

<table>
<thead>
<tr>
<th>Phases</th>
<th>Issues Faced in a Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation</td>
<td>PM Issues</td>
</tr>
<tr>
<td></td>
<td>Lack of proper costing</td>
</tr>
<tr>
<td></td>
<td>Lack of detail design</td>
</tr>
<tr>
<td></td>
<td>Lack of proper activity</td>
</tr>
<tr>
<td></td>
<td>duration estimation</td>
</tr>
<tr>
<td></td>
<td>Cultural Issues</td>
</tr>
<tr>
<td></td>
<td>Unrealistic claims to</td>
</tr>
<tr>
<td></td>
<td>please boss</td>
</tr>
<tr>
<td></td>
<td>Issues related to LDCs</td>
</tr>
<tr>
<td></td>
<td>Political involvement \ pressure in selecting the project</td>
</tr>
<tr>
<td></td>
<td>Lack of funds</td>
</tr>
<tr>
<td></td>
<td>PSOs Issues</td>
</tr>
<tr>
<td></td>
<td>Lengthy approval procedures</td>
</tr>
<tr>
<td></td>
<td>Bureaucratic Culture</td>
</tr>
<tr>
<td></td>
<td>Lot of unnecessary work</td>
</tr>
<tr>
<td></td>
<td>for project approval</td>
</tr>
<tr>
<td>Planning</td>
<td>Lack of Stakeholder</td>
</tr>
<tr>
<td></td>
<td>Participation</td>
</tr>
<tr>
<td></td>
<td>Lack of risk identification and management</td>
</tr>
<tr>
<td></td>
<td>Lack of quality management Planning</td>
</tr>
<tr>
<td></td>
<td>Lack of communication management planning</td>
</tr>
<tr>
<td>Execution</td>
<td>Contractor not following</td>
</tr>
<tr>
<td></td>
<td>the plan</td>
</tr>
<tr>
<td></td>
<td>Existing administrative system</td>
</tr>
<tr>
<td></td>
<td>Lack of involvement of middle managers in decision making process</td>
</tr>
<tr>
<td></td>
<td>Lack of feasibility study on medium to small scale projects</td>
</tr>
<tr>
<td></td>
<td>Lack of skilled staff</td>
</tr>
<tr>
<td></td>
<td>No written policy in</td>
</tr>
<tr>
<td></td>
<td>Selecting project team</td>
</tr>
<tr>
<td></td>
<td>members</td>
</tr>
<tr>
<td></td>
<td>Issues related to LDCs</td>
</tr>
<tr>
<td></td>
<td>Lack of funds</td>
</tr>
<tr>
<td></td>
<td>PSOs Issues</td>
</tr>
<tr>
<td></td>
<td>Lack of capacity in the organisation to implement the project</td>
</tr>
<tr>
<td></td>
<td>Capacity issue with</td>
</tr>
<tr>
<td></td>
<td>contractors</td>
</tr>
<tr>
<td></td>
<td>Lack of equipment &amp;</td>
</tr>
<tr>
<td></td>
<td>resources</td>
</tr>
<tr>
<td></td>
<td>Lack of data management</td>
</tr>
<tr>
<td></td>
<td>Lack of attention to the</td>
</tr>
<tr>
<td></td>
<td>details by the higher</td>
</tr>
<tr>
<td></td>
<td>authorities</td>
</tr>
<tr>
<td></td>
<td>Favouritism /Likism</td>
</tr>
<tr>
<td></td>
<td>instead of professionalism</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Attempt to provide wrong</td>
</tr>
<tr>
<td></td>
<td>information</td>
</tr>
<tr>
<td></td>
<td>No Electronic Data</td>
</tr>
<tr>
<td></td>
<td>Management system</td>
</tr>
<tr>
<td></td>
<td>Lack of following the SOPs</td>
</tr>
<tr>
<td></td>
<td>Lack of accountability</td>
</tr>
<tr>
<td></td>
<td>Corruption</td>
</tr>
<tr>
<td>Closing</td>
<td>No lessons learned report</td>
</tr>
<tr>
<td></td>
<td>No benefit achieved report after project completion</td>
</tr>
</tbody>
</table>

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8.2.2 Research Objective 2: “Investigate the current practices of funding of public sector projects in Pakistan”

The following figure answer the above research question and present the funding process of the public sector projects in Pakistan.

- **Project up to USD $1 million**
  - If Federal Level organisation
    - **Yes**: Approved by the provincial development working party (PDWP) headed by the chairman of the planning and development department
    - **No**: Project is greater than USD $1 M but less than USD $10 M
  - If Provincial Level organisation
    - **Yes**: Approved by the provincial development working party (PDWP) headed by the chairman of the planning and development department
    - **No**: Project is less than USD $120 million
  - Federal government approved it under the central development working party (CDWP) headed by the chairman of the planning commission.

- **NO**: Approved by NEC

- **3-4 Weeks**
- **4-6 Months**
8.2.3 Research Objective 3: “Investigate the current practices of selection and governance of the projects within Pakistani public sector”

How the projects are selected and how they are governed in Pakistani public sector organisation is depicted in the following figure.
8.2.4 Research Objective 4: “Compare the current practices of managing the project in Pakistani public sector with the best practices provided by PMI in the PMBOK.”

Comparison of the current project management practice in the Pakistani Public sector with the best practices are listed in the following table. The table is taken from the PMBOK of the North American Project Management Institute. The findings also suggest that most of the systems are there in place but because of the lack of implementation they are not producing efficient results.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Management Integration</td>
<td>Develop project Charter</td>
<td>Develop Project Management Plan</td>
<td>Direct and Manage Project Execution</td>
<td>Monitor and Control Project Work Integrated Change Control</td>
<td>Close Project</td>
</tr>
<tr>
<td>Project Scope Management</td>
<td>Scope Planning</td>
<td>Create WBS</td>
<td></td>
<td>Scope Verification Scope Control</td>
<td></td>
</tr>
<tr>
<td>Project Time Management</td>
<td>Activity Definition</td>
<td>Activity Sequencing</td>
<td>Activity Resource Estimating</td>
<td>Schedule Development</td>
<td>Schedule Control</td>
</tr>
<tr>
<td>Project Cost Management</td>
<td>Cost Estimating</td>
<td>Cost Budgeting</td>
<td></td>
<td>Cost Control</td>
<td></td>
</tr>
<tr>
<td>Project Quality Management</td>
<td>Quality Planning</td>
<td>Perform Quality Assurance</td>
<td>Perform Quality Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Human Resource Management</td>
<td>Human Resource Planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Communications Management</td>
<td>Communications Planning</td>
<td>Information Distribution</td>
<td>Performance Reporting Manage Stakeholders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Procurement Management</td>
<td>Plan Purchase and Acquisitions Plan Contracting</td>
<td>Request Seller Responses Select Sellers</td>
<td>Contract Administration Contract Closure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**  
Green ---- Represents process practiced effectively in Pakistani public sector organisations  
Brown ---- Represents process which needs improvement  
Red ---- Represents processes that are not happening or needs major improvement
8.3 Recommendations

The following recommendations are proposed as a result of this research. The recommendations are specific to the sector and also general for the public sector projects.

Planning Sector Recommendations (Short term strategies)

- Detail Design should be provided in the project proposal (PC-I)
- Proper Cost Estimation should be done in the PC-I
- Activity Duration and estimation should be provided in the PC-I

Service Sector Recommendations (Short term strategies)

- Identification of Stakeholders in the planning stage (i.e. Coordination between different public sector organisations)
- A detail methodology should be devised before the start of the project
- Project Manager should be empowered
- Project manager should not be transferred once the project is started
- Computerized the monitoring process
- A lessons learned report should be developed

Consultant & Contractor Sector Recommendations (Short term strategies)

- Introduce risk management
- An establishment of a dedicated Project Management Office (PMO)

Long Term Strategies

- Facilitate the skilled manpower
• Enhance the leadership capability of the project managers by education and training
• Delays because of political pressures should be reduced.
• Pre-defined standard operating procedures should be developed for the acquisition of land and for the coordinating among different government sector organisations.
• Start of a Government Initiative to increase awareness of new project management techniques

8.4 Contribution to the Knowledge

This research has given a detailed insight on how the projects are managed in:
• a less developed country
• Public Sector of a less developed country, taking Pakistan as an example

As a result of this research four different types of constraints are identified which are associated with projects in the less developed countries (LDCs). Any policy and planning organisation should consider these constraints before the start of the project and deal each of them on individual basis. These constraints are categorized as PM constraints (i.e. the constraints related with the project management process), cultural constraints (i.e. the constraints ingrained in the professional field because of the norms), LDC constraint (i.e. the constraints because the country is less developed) and the public sector organisational constraints. This categorisation is helpful because in a project constraints like the PM Constraint or sector organisational constraints can be taken care but the cultural constraints and the LDC constraints cannot be fixed on a single project. So the best way is to have knowledge about them to integrate them in your planning process.

• This research may claim to be the first doctoral study of its type in LDCs context.
• This research has resulted in the enhancement of knowledge of project management techniques in a less developed country and may contribute or help
the donor agencies to understand the management practices in less developed countries.

- This research may also be helpful in developing the PM standards for public sector in the less developed countries.

### 8.5 Limitation of the Research

The limitations associated with this research are listed below:

- This Research is limited to a single country
- Comparison of the project management practices in a less developed country is done with the PMI best practices instead of the public sector in a developed country
- The research is focused only on the public sector projects

### 8.6 Future Directions

Undertaking this research has opened many venues for further research initiatives which are presented below:

- This research may have opened the doors for researchers to explore the project management practices in the public sector of any other less developing country to validate the research

- Researchers can also investigate the project management practices in the private sector of a less developed country to have an overall picture of the management practices in less developed country.

- Researchers can also research on short term and long term strategies for the public sector organisations to reach the higher maturity level in project management
Reference


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Appendix: PC- Forms

GOVERNMENT OF PAKISTAN
PLANNING COMMISSION

PC-1 FORM

1. Name of the project

2. Location

3. Authorities responsible for:
   i. Sponsoring
   ii. Execution
   iii. Operation and maintenance
   iv. Concerned federal ministry

4. Plan provision

5. Project objectives and its relationship with sector objectives

6. Description, justification, technical parameters and technology transfer aspects
   (enclose feasibility study for projects costing Rs. 300 million and above)

7. Capital cost estimates

8. Annual operating and maintenance cost after completion of the project

9. Demand and supply analysis

10. Financial plan and mode of financing

11. Project benefits and analysis
   i) Financial
   ii) Economic
   iii) Social benefits with indicators
   iv) Employment generation (direct and indirect)
   v) Environmental impact
   vi) Impact of delays on project cost and viability

12. Implementation schedule

13. Management structure and manpower requirements including specialized skills during construction and operational phases
14. Additional projects/decisions required to maximize socio-economic benefits from the proposed project

15. Certified that the project proposal has been prepared on the basis of instructions provided by the Planning Commission for the preparation of PC-I for Infrastructure sector projects.

Prepared by _______________________
Name, Designation & Phone #

Checked by _______________________
Name, Designation & Phone #

Approved by _______________________
Name, Designation & Phone #

GOVERNMENT OF PAKISTAN
PLANNING COMMISSION

Instructions to Fill-in PC-I Proforma

1. Name of the Project
   Indicate name of the project.

2. Location
   • Provide name of the district/province.
   • Attach a map of the area, clearly indicating the project location.

3. Authorities responsible for
   Indicate name of the agency responsible for sponsoring, execution, operation and maintenance. For provincial projects, name of the concerned federal ministry be provided.

4. (a) Plan provision
   • If the project is included in the medium term/five year plan, specify actual allocation.
   • If not included in the current plan, what warrants its inclusion and how is it now proposed to be accommodated.
   • If the project is proposed to be financed out of block provision, indicate:

<table>
<thead>
<tr>
<th>Total block provision</th>
<th>Amount already committed</th>
<th>Amount proposed for this project</th>
<th>Balance available</th>
</tr>
</thead>
</table>

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5. **Project Objectives**

- The objectives of the sector/sub sector as indicated in the medium term/five year plan be reproduced. Indicate objectives of the project and develop a linkage between the proposed project and sectoral objectives.
- In case of revised Projects, indicate objectives of the project if different from original PC-I.

6. **Description and Justification of Project (enclose feasibility study for projects costing Rs.300 million & above.)**

- Describe the project and indicate existing facilities in the area and justify the establishment of the Project.
- Provide technical parameters i.e. input and output of the project. Also discuss technological aspect of the project.
- Provide details of civil works, equipment, machinery and other physical facilities required for the project.
- Indicate governance issues of the sector relevant to the project and strategy to resolve them.

**Transport & Communication**

- Provide technical parameters i.e. selected design features and capacity of the proposed facilities along with alternates available.
- For roads, provide information regarding land width, geometric and pavement design including formation width, pavement width.
- Land classification for bridges and culverts.
- Thickness/width of road way on bridges and culverts.
- Design speed, traffic capacity of road in terms of passenger car units per day.
- Saving in distance for diverted traffic. Average daily traffic of motor vehicles by category as well as the car units be provided.
- In case of improvement within the urban areas, separate traffic counts within that area should be given. Brief information regarding traffic and pavement width etc. in adjoining sections should also be given.
- For bridges provide location, total length of bridge, number of spans with length of each span, width roadway and footpath, type of sub and superstructure and load classification.
Telecommunication

- Mention alternate means of providing the same facilities (for example microwaves verses optic fiber cable, underground cable versus overhead cable etc.) and the cost of each of the alternatives means.

Information Technology

- Provide Hardware specification
- Attach Networking/LAN diagram
- Software requirements
- Availability of services (DSL, Dial-ups, wireless)

Energy (Fuel & Power)

Fuel
- Detailed description of major equipments, items and structure.
- Provide basis of design of the project.
- Indicate alternate technology alongwith the selected one with justification.
- For exploration projects give details of previously work undertaken.

Power
- Give detailed description of major equipment and structure.
- For Hydroelectric projects: Give information regarding geological investigations, flow duration curve, water storage, estimated monthly kilowatt hours generation under minimum and average flow conditions and the flow conditions assumed in the project and operational regime i.e. base load or peak load plant. Rainfall record, stream flow calculation, hydrograph and other available water data alongwith siltation problems be provided.
- For thermal projects: Give information on sources and availability of cooling water and fuel, calorific value, heat rate price (with custom duties and taxes shown separately) and disposal of ash and effluents.
- Give a comprehensive, comparison of available technology and rationale/criteria for selection of specified technology.
- Provide analysis of adopted technology with respect to existing system.
- Indicate whether maintenance facilities are available. If not, provide details/plans for maintenance facilities.
- For transmission and distribution system: Basis of design voltage drop allowance system stability, reliability, operating voltage, policy regarding reserves, design and material to be used for supporting structure, average span length and conductor size, type of spacing.
- Load flow studies for the year in which plant is proposed to be commissioned and five years thereafter.
- For sub-stations and switching stations: Give location and purpose of each station KVA voltage, type and structure, number of circuits, type of transformers and major circuit breakers.
- Load conditions of the existing facilities, in case of extention facilities.
- In case of new projects, loading conditions of sub stations be provided.
Housing, government buildings & town planning

- Provide alternate designs and proposed design features of the project, keeping in view the income levels, family size of the population to be served along with weather conditions etc.
- Mention the nature and size of land available and indicate whether the design ensures the most economical use of space.
- Indicate whether the project is in consonance with the master plan of the city.
- Town Planning and covered area parameters/spaces standards applied in determining land and flood area requirements.
- Specifications of the civil works.

Irrigation, drainage and flood control

- Provide project areas characteristics in terms of population, climate, geology, soil, irrigation, ground water, drainage and agriculture (crops, yields etc.)
- For multipurpose projects, provide basis of allocation of costs between different purposes.
- Engineering projects be supported by technical background data and each distinct segment of the project be described separately.

7. Capital cost estimates

- Indicate date of estimation of Project cost.
- Basis of determining the capital cost be provided. It includes market survey, schedule rates, estimation on the basis of previous work done etc.
- Provide year-wise estimation of physical activities as per following:

<table>
<thead>
<tr>
<th>Items</th>
<th>Unit</th>
<th>Year-I</th>
<th>Year-II</th>
<th>Year-III</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Phasing of capital cost be worked out on the basis of each item of work as stated above and provide as per following:

<table>
<thead>
<tr>
<th>Year-wise/component-wise financial phasing (Million Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>A.</td>
</tr>
</tbody>
</table>
In case of revised projects, provide

- History of project approval, year-wise PSDP allocation, releases and expenditure.
- Item-wise, year-wise actual expenditure and Physical progress.
- Justification for revision of PC-I and variation in scope of project if applicable.
- Item-wise comparison of revised cost with the approved cost and give reasons for variation.
- Exchange rate used to work out FEC in the original and revised PC-I’s.

8. Annual Operating Cost

Item-wise annual operating cost based on proposed capacity utilization be worked out for 5 years and sources of its financing.

9. Demand and supply analysis

- Existing capacity of services and its supply/demand
- Projected demand for 10 years.
- Capacity of the projects being implemented in public/private sector.
- Supply – demand gap.
- Designed capacity and output of the proposed project.

10. Financial Plan

Sources of financing

(a) Equity:

Indicate the amount of equity to be financed from each source

- Sponsors own resources
- Federal government
- Provincial government
- DFI’s/banks
- General public
- Foreign equity
- NGO’s/beneficiaries
• Others

b) Debt

Indicate the local & foreign debt, interest rate, grace period and repayment period for each loan separately. The loan repayment schedule be also annexed.

c) Grants along with sources

d) Weighted cost of capital

11. Benefits of the project and analysis

• Financial: Income to the Project alongwith assumptions
• Economic: Benefit to the economy alongwith assumptions
• Social: Benefits with indicators
• Environmental: Environmental impact assessment negative/positive

Financial/Economic Analysis (with assumptions)

• Financial analysis
  • Quantifiable output of the project
  • Profit and loss account and Cash Flow statement
  • Net present value (NPV) and Benefit Cost Ratio
  • Internal financial rate of return (IFRR)
  • Unit cost analysis
  • Break even Point (BEP)
  • Payback period
  • Return on equity (ROE)

• Economic analysis
  • Provide taxes & duties separately in the capital and operating cost
  • Net present value (NPV) and benefit cost ratio (BCR)
  • Internal economic rate of Return (IERR)

• Employment analysis
  • Employment generation (direct and indirect)
- Sensitivity analysis
  - Impact of delays on project cost and viability

12. Implementation Schedule

- Indicate starting and completion date of the project
- Item-wise/year-wise implementation schedule in line chart correlated with the phasing of physical activities.

13. Management Structure and Manpower Requirements

- Administrative arrangements for implementation of project.
- The manpower requirements by skills during execution and operation of the project be provided.
- The job description, qualification, experience, age and salary of each post be provided.

14. Additional projects/decisions required

- Indicate additional projects/decisions required to optimize the investment being undertaken on the project

15. Certificate

- The name, designation and Phone # of the officer responsible for preparing and checking be provided. It may also be confirmed that PC-I has been prepared as per guidelines issued by the Planning Commission for the preparation of PC-I for Infrastructure Sector projects.
- The PC-I alongwith certificate must be signed by the Principal Accounting Officer to ensure its ownership.
GOVERNMENT OF PAKISTAN
PLANNING COMMISSION

**PC-II FORM**

PROFORMA FOR DEVELOPMENT PROJECTS
(SURVEY AND FEASIBILITY STUDIES)

1) Name by which survey/feasibility will be identified

2) Administrative authorities responsible for
   
   i) Sponsoring
   
   ii) Execution

3) Details of survey/feasibility study
   
   i. General description and justification
   
   ii. Implementation period
   
   iii. Year wise estimated cost
   
   iv. Manpower requirements
   
   v. Financial plan

4) Expected outcome of the survey feasibility study and details of projects likely to be submitted after the survey.

Prepared by _______________________
Name, Designation & Phone #

Checked by _______________________
Name, Designation & Phone #

Approved by _______________________
Name, Designation & Phone #
GOVERNMENT OF PAKISTAN
PLANNING COMMISSION

Instructions to fill in PC-II Proforma

1. **Name of the Project**
   
   Please indicate the name by which survey/feasibility study will be undertaken.

2. **Administrative authority**
   
   Indicate name of the agency responsible for sponsoring and execution of the project.

3. **Details of survey/feasibility study**
   
   - Provide a general description of the aims, objectives and coverage of the survey/feasibility Study.
   - Provide justification for undertaking the survey/feasibility Study. Indicate whether previous studies in the field have been undertaken. If so, provide details.
   - Indicate duration of study and proposed months of commencement and completion of the study.
   - Provide item-wise/year-wise capital cost estimate of the study broken down between local and foreign exchange.
   - Indicate date on which cost estimates were prepared and the basis of these estimates.
   - Sources of financing the capital cost be provided
   - Indicate requirements separately for local and foreign personnel i.e. professional, technical, administrative, clerical, skilled, unskilled, others alongwith their terms of reference.
   - Indicate the period of contract of both the local and foreign consultants alongwith qualifications, experience and the terms of their appointment.

4. **Expected outcome**
   
   - Indicate the expected outcome of the survey/feasibility study in quantifiable terms. It may also be indicated whether any project will be prepared after the survey.

PC-III (a) Form
(Revised – 2005)

Government of Pakistan
Planning Commission
Implementation of Development Projects
(Physical Targets based on PSDP allocation)
1. Name of the Project:

(Million Rs)

2. Approved Capital Cost:

(Million Rs)

3. Expenditure up to the end of last Financial Year:

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Accrued</th>
<th>Total</th>
</tr>
</thead>
</table>

4. PSDP allocations for the Current year:

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Local</th>
<th>FEC</th>
</tr>
</thead>
</table>

5. Annual Work Plan:

As per PC-I

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Quantities</th>
<th>Achievements upto the end of last year</th>
<th>Target for current year</th>
</tr>
</thead>
</table>

6. Quarterly work plan based on annual work plan:

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>1st Quarter</th>
<th>2nd Quarter</th>
<th>3rd Quarter</th>
<th>4th Quarter</th>
</tr>
</thead>
</table>

7. Cash Plan:

<table>
<thead>
<tr>
<th>1st Quarter</th>
<th>2nd Quarter</th>
<th>3rd Quarter</th>
<th>4th Quarter</th>
</tr>
</thead>
</table>

8. Output indicators:

To be determined by project director on the basis of indicators given in the PC-I.
Government of Pakistan
Planning Commission

Instructions to fill-in PC-III (a) Proforma

1. Name of the Project:
   Indicate name of the project.

2. Approved capital cost:
   Provide approved capital cost by the competent forum.

3. Expenditure upto the end of last financial year:
   Provide the actual and accrued expenditure upto end of last financial year.

4. PSDP allocations for the current year:
   Provide allocations for the project as shown in the PSDP/ADP.

5. Annual Work Plan:
   - Provide scope of work as indicated in the PC-I by major items of work.
   - Actual physical achievements upto the end of last financial year against the scope of work indicated in PC-I.
   - Physical targets for the year be determined on the basis of activity chart/work plan to be prepared each year on the basis of PSDP allocations.
   (Blank activity chart/work plan for major items of works enclosed).

6. Quarterly Work Plan:
   The quarterly work plan be prepared on the basis of annual work plan.

7. Cash Plan:
   Indicate the finances required to achieve the quarterly work plan targets as indicated at 6 above.

8. Output indicators:
   A number of projects start yielding results during its implementation. In such projects the recurring cost is capitalized and the project start yielding results during its implementation. Indicate quantifiable outcome of the projects for the current year.

The Proforma alongwith activity chart/work plan has to be furnished by 1st July of each financial year.
1. Name of project: 

2. Financial Status 
   - PSDP allocations for the Current year 
   - Current quarter requirements as per cash plan 
   - Releases during the month 
   - Expenditure during the month 

3. Physical Status 
   Physical achievements during the month under report

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
4. **Output Indicators**

5. **Issues/Bottlenecks in Projects Implementation**

(Revised 2005)

Government of Pakistan
Planning Commission

**Instructions to fill-in PC-III(B) Proforma**

1. **Name of the Project:**
   Indicate name of the project.

2. **Financial status:**
   - Indicate PSDP allocations for the current year and quarter.
   - According to latest instructions of ministry of finance, AGPR has been directed to release PSDP allocations in the 1st week of each quarter. However in practice, variations in releases are expected. The executing agency may therefore provide released amount during the month under report.
   - Provide actual expenditure incurred on the project during the month under report.

3. **Physical status:**
   - Provide actual physical achievements during the month against targets for the quarter.

4. **Output indicators:**
   - Provide the output of the project during the month under report against the output targets.

5. **Issues/Bottlenecks:**
   - Indicate the major issues responsible for delay in implementation of Project at policy and operational level.

The PC-III (B) be furnished by 5th day of each month reflecting the progress of the project during the last reporting month..
1. Name of the Project:

2. Implementation period:
   a) As per PC-I:
      
      Commencement          Completion
      
      As per actual:
      
3. Capital cost:
   
   Planned    Actual
   
   (Million Rs)

4. PC-I phasing/allocations, releases & expenditure:
   
<table>
<thead>
<tr>
<th>Year</th>
<th>Phasing as per PC-I</th>
<th>PSDP allocations</th>
<th>Releases</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>4.</td>
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</table>
   

5. Item-wise physical targets and achievements:

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>PC-I estimates</th>
<th>Actual achievements</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
6. **Item-wise planned & actual expenditure:**

<table>
<thead>
<tr>
<th>Item</th>
<th>PC-I estimates</th>
<th>Actual expenditure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Local</td>
<td>FEC</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Local</td>
<td>FEC</td>
</tr>
</tbody>
</table>

7. **Quantifiable benefits of the Project:**

   a) Financial
   b) Economic
   c) Social
   d) Employment generated

8. **Financial/Economic results based on actual cost:**

   a) **Financial**

      - Net present worth
      - Benefit cost ratio
      - Internal financial rate of return
      - Unit cost analysis

   b) **Economic**

      - Net present worth
      - Benefit cost ratio
      - Internal economic rate of return

   *For Social Sectors: Provide only unit cost analysis*

9. Whether the Project has been implemented as per approved scope of the project. If not provide details justification of variation.

10. Impact of the Project on target group:

11. **Lessons learned in:**

    a) Project identification
    b) Project preparation
    c) Project approval
    d) Project financing
e) Project implementation

12. Suggestions for planning & implementation of similar projects:

(Revised 2005)

Government of Pakistan
Planning Commission

Instructions to fill in PC-IV Proforma

1. Name of the project:
   Indicate name of the project.

2. Implementation period:
   Indicate planned, commencement and completion date along with actual ones.

3. Capital cost:
   Provide capital cost of the project as approved by the competent forum and actual expenditure incurred on the project till preparation of PC-IV.

4. PC-I phasing, allocations, releases & expenditure:
   a. Provide PC-I phasing as per approved PC-I.
   b. PSDP allocations as reflected in PSDP/ADP.
   c. Year-wise releases made to the project.
   d. Year-wise actual expenditure incurred on the project.

5. Item-wise physical targets and achievements:
   a) Provide item-wise quantifiable physical targets as given in the approved PC-I.
   b) Actual physical achievements against physical targets be provided.

6. Item-wise planned and actual expenditure:
a) Provide item-wise allocations as per approved PC-1.
   b) Item-wise actual expenditure incurred on the project be provided.

7. **Quantifiable benefits of the project:**
   a. Provide quantifiable financial benefits of the project alongwith assumptions/parameters.
   b. Quantifiable benefits to the economy alongwith assumptions/parameters.
   c. Social benefits to target group alongwith indicators.
   d. Planned and actual employment generated by category

8. **Financial/Economic results based on actual cost:**
   a) Undertake financial, unit cost and economic analysis based on actual capital and recurring cost. The benefits of the project may also be calculated on prevailing prices and output.
   b) In case of social sector projects, unit cost analysis may only be provided.

9. **Project implementation:**
   a) Indicate whether project has been implemented as per approved cost, scope and time. In case of variation, reasons be provided.

10. **Project impact:**
    a) Provide impact of the project on the target group/area.

11. **Lessons learned:**
    a) Provide lesson’s learned during identification, preparation, approval, financing and implementation of the project.

12. **Suggestions:**
    a) Suggestions for planning & implementation of similar nature of projects, keeping in view the lessons learned in project implementation.
1. Name of the Project:

2. Objectives & scope of project as per approved PC-I and state as to what extent the objectives have been met:

3. Planned and actual recurring cost of the project, with details:

4. Planned & actual manpower employed:

5. Planned and actual physical output of the project:

6. Planned and actual income of the project:

7. Planned and actual benefits to the economy:

8. Planned and actual social benefits:

9. Planned and actual cost per unit produced/sold:

10. Marketing mechanism:

11. Arrangement for maintenance of building & equipment.

12. Whether output targets as envisaged in the PC-I have been achieved. If not, provide reasons:

13. Lessons learned during the year in:
   - Operation
   - Maintenance
   - Marketing
   - Management

14. Any change in project management during the year:

15. Suggestions to improve projects performance:
Instructions to fill in PC-V Proforma

1. Name of the Project:
   Indicate name of the project.

2. Objective & scope of the project:
   Indicate objectives and scope of the project as stated in the approved PC-I. It may also be indicated that up to what extent the objectives of the project have been met.

3. Planned & actual recurring cost:
   Provide planned (as per PC-I) and actual recurring cost of the project along with details for the financial year under report.

4. Planned & actual manpower employed:
   Provide category-wise details of manpower actually employed for the operation of the project as compared to proposed in the PC-I.

5. Planned & actual physical output:
   Provide output of the project as given in the PC-I for the year under report and compare it with actual output of the project.

6. Planned & actual income of the project:
   Provide income of the project as indicated in the PC-I for the year under report along with assumptions and compare it with the actuals for the year.

7. Benefits to the economy:
   Provide quantifiable planned & actual benefits to the economy for the year under report.

8. Planned & actual social benefits:
   Provide social benefits to the target group as given in the PC-I, compare with the year under report and state to what extent the social benefits have been achieved.
9. **Planned & actual cost per unit produced/sold:**

   Provide cost per unit produced and sold at the weighted cost of capital of the project.

10. **Market mechanism:**

    Indicate how the output of the project is being marketed. In case it differs from the PC-I, the details may be provided.

11. **Maintenance of building & equipment:**

    Provide arrangements made for the maintenance of building & equipment during the last financial year. It may also be indicated whether annual maintenance of building & equipment was carried out in the last financial year.

12. **Output targets:**

    Indicate whether output targets as given in the PC-I for the year under report have been met. In case of variation, give reasons.

13. **Lessons learned:**

    Provide lessons learned during the year under report
    
    i. Operation
    ii. Marketing
    iii. Management.

14. **Change in project management:**

    In case of any change in the senior management of the project, the details alongwith justification be provided.

15. **Suggestions to improve project performance:**

    Based on the experience gained during last financial year, suggest measures to improve the projects performance.
**Description of all the PC-Forms in a Table**

<table>
<thead>
<tr>
<th>PC-I (Project Proposal)</th>
<th>PC-II (Feasibility Study)</th>
<th>PC-III (Annual Target and Progress Reporting)</th>
<th>PC-IV (Project Completion Report)</th>
<th>PC-V (Annual Performance Report after Completion of Project)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of the Project</td>
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</tr>
<tr>
<td>Location</td>
<td>ResponsibleAuthorities</td>
<td>Approved Capital cost</td>
<td>Implementation Period</td>
<td>State to What extent the stated objectives have been met</td>
</tr>
<tr>
<td>Responsible Authorities</td>
<td>General Description and Justification</td>
<td>Expenditure up to the end of last financial year</td>
<td>As per plan As per actual</td>
<td>Planned and Actual Recurring cost</td>
</tr>
<tr>
<td>Plan Provision</td>
<td>Implementation Period</td>
<td>PSDP Allocation for the Current Year</td>
<td>Capital Cost</td>
<td>Planned and actual manpower employed</td>
</tr>
<tr>
<td>Description and Justification</td>
<td>Year Wise Estimated Cost</td>
<td>Annual Work Plan</td>
<td>Planned and Actual Expenditures</td>
<td>Planned and actual physical outcome of the project</td>
</tr>
<tr>
<td>Relationship of the Project with the sector objectives</td>
<td>Manpower Requirements</td>
<td>Quarterly Work Plan based on Annual Work Plan</td>
<td>Physical targets and Achievements</td>
<td>Planned and actual income of the project</td>
</tr>
<tr>
<td>Capital Cost Estimates</td>
<td>Financial Plan</td>
<td>Cash Plan</td>
<td>Quantifiable benefits of the Project</td>
<td>Planned and actual benefits to the economy</td>
</tr>
<tr>
<td>Annual operating and maintenance cost</td>
<td>Expected Outcome of the Study</td>
<td>Output Indicators/Physical Status</td>
<td>Financial /Economic cost analysis based on actual cost</td>
<td>Planned and actual social benefits</td>
</tr>
<tr>
<td>Demand and Supply Analysis</td>
<td></td>
<td>Issues / Bottlenecks in the project implementation</td>
<td>Justification for Variation in Scope (if occurred)</td>
<td>Planned and actual cost per unit produced/sold</td>
</tr>
<tr>
<td>Financial Plan and mode of financing</td>
<td></td>
<td></td>
<td>Impact of the project on target group</td>
<td>Marketing Mechanism</td>
</tr>
<tr>
<td>Project Benefit Analysis</td>
<td></td>
<td></td>
<td>Lessons Learned</td>
<td>Arrangement for maintenance of</td>
</tr>
<tr>
<td>Implementation Schedule</td>
<td></td>
<td></td>
<td>Suggestion for</td>
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<tr>
<td>Management Structure and Manpower Requirement</td>
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<tr>
<td>planning and implementation of similar projects</td>
<td>building &amp; Equipment</td>
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<tr>
<td>Whether output targets proposed are achieved</td>
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<tr>
<td>Lessons learned during the year of maintenance</td>
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<td>Any change in project management during the year</td>
<td>Suggestions to improve project performance</td>
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