CAPITAL UNIVERSITY OF SCIENCE AND TECHNOLOGY, ISLAMABAD



Analysis of Project Scope Change Management as a Tool for Project Success in Karachi Thatta Dual Carriageway

by

Muhammad Ali Raza

A research project submitted in partial fulfillment for the degree of Master of Science

in the

Faculty of Management & Social Sciences Department of Management Sciences

2019

Copyright \bigodot 2019 by Muhammad Ali Raza

All rights reserved. No part of this research project may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, by any information storage and retrieval system without the prior written permission of the author. I Would like to dedicate the project to my parents, teachers, and my honorable supervisor Mr. Rizwan Ali Khan who have supported me in every walk of life. Without their efforts I could not achieve the desired goals.



CERTIFICATE OF APPROVAL

Analysis of Project Scope Change Management as a Tool for Project Success in Karachi Thatta Dual Carriageway

by

Muhammad Ali Raza (MPM171007)

RESEARCH PROJECT EXAMINING COMMITTEE

S. No.	Examiner	Name	Organization
(a)	Internal Examiner	Dr. Ansir Ali Rajput	CUST, Islamabad
(b)	Supervisor	Mr. Rizwan Ali Khan	CUST, Islamabad

Mr. Rizwan Ali Khan Project Supervisor April, 2019

Dr. Sajid Bashir Head Dept. of Management Sciences April, 2019 Dr. Arshad Hassan Dean Faculty of Management & Social Sciences April, 2019

Author's Declaration

I, Muhammad Ali Raza hereby state that my MS thesis titled "Analysis of Project Scope Change Management as a Tool for Project Success in Karachi Thatta Dual Carriageway" is my own work and has not been submitted previously by me for taking any degree from Capital University of Science and Technology, Islamabad or anywhere else in the country/abroad.

At any time if my statement is found to be incorrect even after my graduation, the University has the right to withdraw my MS Degree.

(Muhammad Ali Raza)

Registration No: MPM171007

Plagiarism Undertaking

I solemnly declare that research work presented in this project titled "Analysis of Project Scope Change Management as a Tool for Project Success in Karachi Thatta Dual Carriageway" is solely my research work with no significant contribution from any other person. Small contribution/help wherever taken has been dully acknowledged and that complete project report has been written by me.

I understand the zero tolerance policy of the HEC and Capital University of Science and Technology towards plagiarism. Therefore, I as an author of the above titled research project declare that no portion of my project has been plagiarized and any material used as reference is properly referred/cited.

I undertake that if I am found guilty of any formal plagiarism in the above titled research project even after award of MS Degree, the University reserves the right to withdraw/revoke my MS degree and that HEC and the University have the right to publish my name on the HEC/University website on which names of students are placed who submitted plagiarized work.

(Muhammad Ali Raza) Registration No: MPM171007

Acknowledgements

First and foremost, I would like to thank God for having created me and granted me wisdom and friends a combination that has sailed throughout this Master course despite a multiplicity of challenges. The success of this proposal would hardly have been achieved without the help and guidance from individuals and institutions.

I wish to express my sincere gratitude to our supervisors Sir Rizwan Ali Khan for his patience, professional guidance and continuous encouragement, mentoring and support which has enabled me to carry out this research up to this rightful conclusion.

I cordially thank lecturers and management who provided me with theoretical and practical knowledge during my degree course, at the Capital University of Science and Technology Campus.

I would like to extend my thanks to my classmates for supporting me to accomplish my studies; discussion group members please special thanks for the team spirit and encouragement.

I am greatly indebted to my family who unselfishly provided me with support and encouraged me in every way possible.

To you all I wish blessings from God.

(Muhammad Ali Raza) Registration No: MPM171007

Abstract

This study was about to analyze the scope change management as a tool for project success in Karachi Thatta Dual Carriageway. The study covered projects that were implemented in KTDC. The purpose of this study is to find out if the changes in project scope would lead to success of the project in term of delivering quality results. The general objective of this study was to find out the impact of project scope change on the success of the project. The specific objectives of this study are: to determine the causes for scope change; to analyze the effect of adjusting project activities on project success; to analyze the influence of changing project cost, time on product/ service quality derived; and to identify challenges associated with changing the project scope in KTDC projects. This study has reviewed literature available about important of project scope change management; areas that will be affected and need adjustments as well as special management when there is changes in project scope. Those areas are project time/schedule, project cost, project results quality and project team morale. In chapter three, the descriptive research design is identified as the design of this study. This research has found out that when managing a project there are times when project implementers will have to make decision to change the project scope to be able to meet the project objectives. The research found out that changes in project activities provoke the changes in project cost, time and quality of the product/service of the project. The study indicated that when activities are changes without changing project cost or time; it increases the risk of not completing the project on time as well risk of not having enough resources. When the project cost and time are increased, it gives the opportunity to provide quality product by using quality materials/services and using advanced technology. This leads to beneficiaries' satisfaction because of receiving product/service of the good quality.

Contents

Aı	uthor	's Declaration	iv
Pl	agiar	ism Undertaking	v
A	cknov	vledgements	vi
Al	bstra	ct v	ii
Li	st of	Figures	xi
Li	st of	Tables x	ii
Al	bbrev	viations xi	ii
1	Intr	oduction	1
	1.1	Background of the Project	1
	1.2	Introduction of the Project	$\overline{2}$
		1.2.1 Description of the Project	3
		1.2.2 Project Plan	3
		1.2.3 Objectives of EIA	3
	1.3	Critical Reviews and Gaps	4
	1.4	Statement of the Problem	4
	1.5	Objectives of the Study	4
		1.5.1 General Objective	4
		1.5.2 Primary Objective	5
	1.6	Research Questions	5
	1.7	Justification of the Study	5
	1.8	Scope of the Study	6
	1.9	Description of the Project Scope	6
	1.10	Limitations of the Study	6
2	Lite	rature Review	8
	2.1	Introduction	8
	2.2	Theoretical Review	8
		2.2.1 Purpose of Project Scope Management	8

		2.2.2 Project Scope Management	9
			11
		2.2.3.1 Time Management	11
		2.2.3.2 Project Cost	11
		2.2.3.3 Quality Management Plan	11
		2.2.4 Project Organization & Resources	12
		2.2.4.1 Internal Team Structure	12
		2.2.4.2 Project Organization: Major Project Roles & Re- sponsibilities	13
			13
			13
			15
			15
	2.3	Empirical Review	15
	2.4	Critical Review and Gaps	16
	2.5	Conceptual Framework	17
			17
	2.6	Causes of Scope Change	18
	2.7	Determinants of Project Success	18
3			20
	3.1	5	20
	3.2		21
		3.2.1 Work Breakdown Structure of Karachi Thatta Dual Car-	~ 4
	0.0		21
	3.3		23
		0	23
		0	23
			23
		3.3.4 Providing Layer of Asphalt	
	9.4	3.3.5 Marking of Roads	
	3.4		24 24
	2 5	0	24 24
	3.5		24 24
	26	0 *	24 25
	3.6		25 25
	27	\mathbf{O}	25 25
	3.7		25 25
	20	J •	25 26
	3.8		26 26
	2.0	\bigcirc i	26 27
	3.9	0	27 27
	9 10	S .	27
	3.10	Risk Register	28

		3.10.1 Risk Register of Karachi Thatta Dual Carriageway	28
	3.11	Present Estimated Project Duration and/or Estimated Start & End	
		Dates	28
	3.12	Effect of External Events on the Project	29
4	Con	clusion and Recommendations	30
	4.1	Introduction	30
	4.2	Summary	30
	4.3	Recommendations	31
		4.3.1 Project	31
		4.3.2 Donors	31
		4.3.3 Beneficiaries	31
	4.4	Recommendation to Further Studies	31
Bi	ibliog	raphy	33

List of Figures

2.1	Conceptual framework	17
3.1	Work Break Down Structure of Karachi Thatta Dual Carriageway	22
3.2	Gantt Chart 1-14 of Karachi Thatta Dual Carriageway	24
3.3	Gantt Chart 15-28 of Karachi Thatta Dual Carriageway.	24
3.4	Gantt Chart 29-42 of Karachi Thatta Dual Carriageway.	25
3.5	Gantt Chart 43-56 of Karachi Thatta Dual Carriageway.	26
3.6	Resource Shift.	26
3.7	Budget.	27

List of Tables

1.1	Description of the Project
1.2	Description of the Project Scope
2.1	Quality Assurance
2.2	Quality Control
2.3	Internal Team Structure of Project
2.4	Project Organization: Major Project Roles & Responsibilities 13
2.5	Project Team Members
2.6	RACI CHART
2.7	Needs of Equipment
2.8	Training Needs
3.1	Risk Register

Abbreviations

EIA	Environmental Impact Assessment
FWO	Frontier Works Organization
KTDC	Karachi Thatta Dual Carriageway
WBS	Work Break Down Structure

Chapter 1

Introduction

The elements which have been examined in the following chapter are; background, problem statement, objectives, research related questions, significance, limitations, and scope.

1.1 Background of the Project

If any project want to achieve the result it is necessary for them to fulfill the scope first. The basic reason why projects fail is that they cannot control and manage the aspects of project. According to the view point of Harrington & McNellis in (2006) applying the process described in the requirements provides an effective approach to build scope management into projects. The basic success of a project is based on time, budget and scope. The role of stakeholders is very important in project management and they play a very important role in completion of the project. If you want to start up a project it is very necessary for you to define and plan it. After planning the work, you have to work on it. The work must be completed within specific budget and time.

The role of scope is very important in the planning and the estimation phase of the project. According to Fageha & Aibinu point of view if the definition of the project scope is incomplete it may be difficult to implement the project during the project life cycle. If scope of project is described in a better way the project would achieve the outcomes. It is necessary for you that whenever you make changes into your project first of all you have to define it properly and take your stakeholders into confidence. It is defined as scope creep it has been described as the unplanned changes into your project. Risk, cost schedule and quality may have an effect on scope change.

The role of Stakeholders and Beneficiaries are very important in the scope change. The changes in the scope change request must be defined before the project so that the team members can determine what changes they can make according to the required plan and also get approval by the higher authorities. If project scope changes in the mid of project it means more cost, time and risk.

If any project want to achieve the desired demand of the stakeholder they must define and manage the scope properly According to Knapp (2011) point of view the reason of project failure is that they do not define the scope. He adds if the stakeholders expectations are not defined in a right way the project would not be considered successful. It is the unplanned changes in your project scope. Left unhampered, If the scope of a project is not defined in a proper way it may have a negative effect on the resources and may also have a negative effect on schedule. If any project wants to be successful it is necessary to control and manage the scope. These changes may impact on cost, schedule, risk, quality. Project sponsor and the beneficiaries can play a very important role in the scope change.

1.2 Introduction of the Project

The findings are carried out by Environmental Impact Assessment study carried out by Environmental Management Consultants Pakistan and Environmental Impact Assessment Consultants for Proposed Karachi Thatta Dual Carriage Way. The Project is undertaken by Frontier Works Organization project under a concession Project Proposed Agreement. The Concession PPP Agreement was signed on 7 May 2015 between the works and services department, Government of Sindh and Frontier Works Organization between the Chief Minister House Karachi. The commercial Activity Started from May 2016 and ended in the mid of 2018.

1.2.1 Description of the Project

Item	Description
Project Name	Karachi Thatta Dual Carriage Way
Infrastructure	Road Network including Bridges, Toll Plaza
Length	49.5
Bridges	17×2 both sides
Design Speed	Rural Section (100 km/h)
Design Speed	Urban Areas (60 km/h)

TABLE 1.1: Description of the Project.

1.2.2 Project Plan

The Task comprises proposal of a 49.5 km long dual road among Ghaggar Phattak over National Highway to start of Thatta by pass toll plaza. The planned route ROW (Project Microenvironment) passes through the rural sub urban and industrial zones alongside the sector starting from the Textile Institute of Pakistan at Ghaggar Phatak in District Malir and further moving along Dhabeji.

1.2.3 Objectives of EIA

The objectives of EIA is to foresee the potential environment and social problems that would get up out of the proposed development activity and address them in the planning and development stage of the Project. Basic objective of EIA Study is

- Define and manuscript the state of the environment of the project area to establish a starting position in order to assess the impact of implementation of the proposed project.
- To gather and consider existing eco-friendly and collective profile of entire project area and join it in report for future use by client

• To identify national heritage sites archaeological sites and ecologically important areas in the project zone of influence.

1.3 Critical Reviews and Gaps

According to Fageha & Aibinu (2013), it is very important for you to take your stakeholders onboard and define their expectations. According to the study if you take all your stakeholders on board you would never miss any part of the project scope. According to the study definition of project scope must be done during the pre-project planning phase of the change. The study has neglected consideration changes of project scope during the implementation of a project.

1.4 Statement of the Problem

Project Manager can play a very significant role in managing the scope. According to Harrington & McNellis, (2006). The major reasons why projects fail is that they do not define and properly manage the scope. The basic goal of the project manager must not to deliver the project in the required time but to gain the maximum profit generated by the project. Many projects fail due to poor scope management. The basic purpose of the study is to find out how changes in project scope would lead to success of the project in term of bringing good results.

1.5 Objectives of the Study

1.5.1 General Objective

The objective of the study is to analyze project scope change management as a tool for project success.

1.5.2 Primary Objective

The specific objectives of the study are:

- 1. To reduce the traffic Congestion
- 2. Economical for the People
- 3. To provide easiness to Passengers
- 4. Passengers who would travel through the carriageway will be security proof

1.6 Research Questions

This research intended to revolve the following questions:

- 1. Reasons after project scope change in KTDC?
- 2. What is the impact of changing project activities in project execution of KTDC Projects
- 3. Impact of changing the early project cost and time on the quality of product/service derived?
- 4. Challenges accounted when managing schedule change in KTDC projects?

1.7 Justification of the Study

The main agenda of the project is to provide easy travelling for the residents as this project would help the residents in a lot of ways like they can reach their schools in less time. The conjunction of traffic would be reduced. It would be economical for the public.

1.8 Scope of the Study

The detailed scope of work comprises Designing, Financing ,Construction and Operation and maintenance of Project facilities.

1.9 Description of the Project Scope

The description of the project scope is provided in Table 1.2.

1.10 Limitations of the Study

The major issue which the researcher is facing is the availability of data. Some employees who worked in the chosen project and who have experienced the whole process of scope management may not be still working in it.

TABLE 1.2: Description	of the Project Scope.
------------------------	-----------------------

S. No.	Description	Sort	Scope of work	
1	Project Road	Main Road	49.5 km and 4 Lane dual carriage way including bridges and culverts	
	I Toject Road	Service Road	3.65 width is to provided on both sides of the main carriageway in urban areas	
2	Interchange		No Interchange	
		Bridges	34 Bridges	
3	Structure	Drainage Culverts	59 Culverts	
		Utlity Culverts and Pipes	Utility Culverts shall be provided by is, Utility Companies	
4	Drainage		The utility drainage system is drainage and Properly designed drainage of surface run-off	
5	Traffic Signs		Temporary and Permanent Traffic and Construction signs	
6	Road Marking		Thermoplastic road markings for lane marking edge strips, strips and curbs	
7	Traffic Safety Measures		About 3m meters wide raised median is provided between both carriage- way with edge curbs	
8	Road Illuminations		Illumination with super high mast pole to be provided in urban areas	
		Operational Facilities	To be provided	
9	Landscaping	Service Areas	No need due to closely spaced urban areas	
3		Maintainance Yards	To be provided	
		Signs and Marketing	Internal signs and markings should be provided	

Chapter 2

Literature Review

2.1 Introduction

The chapter includes theoretical review, literature review, critical review, summary and gaps that the study intends to fill.

2.2 Theoretical Review

According to (Koskla; 2000 and Richardson; 2010), the foundation of project management is made up of two basic theories which is the theory of project and the theory of management. Complexity Theory which is described by Curlee and Gordon (2011) Complexity theory that project have different type of parts and every part has a system. According to complexity theory most of the people get unhappy with the new changes because they have to start the work from zero. In project life cycle most of the team members are concerned about the project that how the project would end hoe can we complete its cost within the required budget.

2.2.1 Purpose of Project Scope Management

The basic agenda for the scope management is to ensure that it includes all the process required to complete the project completely. Scope management must be applied throughout the life of the project. According to the point of view of (Hill, 2010) if you want to make any sort of changes you have to take approval from the customers and without the approval of customers these changes would not be implemented.

According to Harrington & McNellis (2006) scope changes are expected in project life cycle. There must be some sort of clear procedures to approve the changes in the project so that it may not cause any sort of difficulty.

The stakeholders and the Project sponsers can make changes into the project scope. According to Richman (2006) project scope management includes all of the procedures that are required to complete the project successfully, He added the project scope management includes planning of scope, definition of scope, creation of a work break down structure, verification of scope, and control of the scope.

2.2.2 Project Scope Management

The identification of a project scope is very important here you get the information how you start your project, what are the processes and activities that you would do for ending up your project and how you meet the expectations of the stakeholders. Project scope basically defines that what things must be added into your project and what things must be removed as the project is completed. According to Schwalbe (2010) view scope discusses the work involved in producing the products of the project and the processes. Project scope management comprises the process in which you define and control which type of work must be included or not included into the project. Project team and stakeholders are on the same page on what products would be used by the project team. Scope management avoid confronted projects with every increasing scope and disorderly requirements list.

If you want to control and process the project scope, Schwalbe (2010) has proposed five main processes that should be considered. Those processes are:

1. Collecting requirements

It includes how you define and document the project features.

2. Defining scope

It includes reviewing permission of responsibility, requirement of reports, and ranked process advantages for make an extension announcement including more data as basics are created and change demands are admitted.

3. Creating the work break down structure (WBS)

The project is divided in the form of a hierarchy. The major hierarchical parts include WBS, WBS Baseline, Scope Baseline and documents of project.

4. Verifying scope

Changes are made according to the requirement of the project sponsor and the project deliverable.

5. Controlling scope

Means how changes can be made to your project scope in project life cycle. The changes in a project scope influence the ability of a team in terms of time and cost.

It must be sure for the project manager to make sure what must be included in the project work Heldman (2011) argues in project scope management you must first of all observe what things to include in your project or not. This includes project management plan, project scope statement, work breakdown structure (WBS), WBS dictionary. Schwalbe (2014) adds in his arguments that project managers can never be succeeded if they do not define their requirements first .According to scholars point of view Scope changes happen in projects and they do not affect the projects. Hill (2010) has proposed control features which are

- 1. Change control responsibilities
- 2. Authority of change control
- 3. Plan management control

2.2.3 Knowledge Area in Project Scope Management

2.2.3.1 Time Management

It is the Activity Definition, Sequencing, Resource estimation and Resource duration of activities. It is a very important knowledge area because it is used to keep the activities on track and monitor those activities which are completed on time.

2.2.3.2 Project Cost

It involves the cost and budget of project activities. To estimate the cost and Resources Monitoring that the cost does not exceed the required budget. Richman (2006) supports this idea in project cost the activities must be completed within the required budget.

2.2.3.3 Quality Management Plan

Quality Assurance

Monitoring	Proper standard of activities	The Karachi Thatta Dual carriageway clients do the proper audits	Inspector of Consultant
Evaluation	Standards should meet past Project activities	Monetoring Team have to visit on site	Engineers of consultants
Evaluation		Monetoring team do analysis and assess project evaluation	GM of Consultant

TABLE 2.1: Quality Assurance.

Quality Control

Deliverable Name / Description	Metric (Attribute that will be measured)	Physical or Performance Quality Standard
Bridges	Square meter	Good
Traffic Sign	Square meter	Good
Road	Square Meter	Good
Culverts	Square meter	Good standards should be met

TABLE 2.2: Quality Control.

2.2.4 Project Organization & Resources

2.2.4.1 Internal Team Structure

Persons Assosciated with Project	Responsibilities
Project Director	Review Reports
Deputy Project Manager	Reports to Project director about Project Activities
Project Manager	He is the overall incharge of the project from planning to Execu- tion
Assistant Project Manager	The duty of the assistant project manager is to assist project man- ager
Site Supervisor and Site Engineer	Their duty is to give advice in the construction of projects

TABLE 2.3: Internal Team Structure of Project.

2.2.4.2 Project Organization: Major Project Roles & Responsibilities

Major Role / Function	Major Responsibilities	Name and Title
Syed Nadeem Arif		Project Director
Saquib Ejaz Hussain		Project Manager
Mirza Arshad Ali Beg		Senior Environmentalist

TABLE 2.4: Project Organization: Major Project Roles & Responsibilities.

2.2.4.3 Project Team Members: External Interfaces

	External Organization / Entity	
Team Member	for which Team Member	
Name and Title	is the Primary Interface /	
	Liaison	
	Responsible for direction of project,	
	planning and definition scope.	
Project Director	Responsible to held meeting.	
	Responsible for view of the project cost.	
	Check and balance of project.	
	Develop the Budget.	

TABLE 2.5 :	Project	Team	Members.
---------------	---------	------	----------

2.2.4.4 RACI Chart

RACI Chart is an abbreviation of Responsible accountable consulted and informed. It is basically used to define the roles and responsibilities of a project.

R stands for Responsible, A stands for Accountable, C stands for consulted, I Stands for informed.

RACI Chart of Karachi Thatta Dual Carriageway

Area of Focus	Project Director	Project Manager	Deputy Project Manager	Assistant Manager
To Define The Project purpose	R	A	С	Ι
To Define The	R	A	С	Ι
Project scope To Define the	А	С	R	С
Project deliverables To Define Stakeholder matrix	A	С	R	С
To Define Implementation approach	A	С	R	С
To Define Risk and issues	A	I	R	С
To Define Project modules	R	I	А	С
To Define Reporting modules	R	I	С	A
To Define Configuration modules	R	С	А	С
User login	R	Ι	А	Ι
User rights	R	Ι	А	С

TABLE 2.6: RACI CHART.

2.2.4.5 Equipment Needs

Equipment Needs of Karachi Thatta Dual Carriageway

Equipment	Needs
Dumpers	Used to carry load
Rammer	Used for breaking rock
Bulldozer	Used to push sand

TABLE 2.7 :	Needs	of I	Equipment
---------------	-------	------	-----------

2.2.4.6 Training

Training Needs of Karachi Thatta Dual Carriageway

TABLE 2.8 :	Training	Needs.
---------------	----------	--------

Skills	Training
Leadership Training	Training of leadership must be given to Employees
Union Training	Unions must be treated in proper way
Safety Training	Safety training must be given to employees
Primavera Training	Training of the primavera software must be given to Employees

2.3 Empirical Review

Ahsan & Gunawan (2010) have analyzed cost and schedule performance of international projects. They have examined that the main reason for poor project outcome are unusual cost change and late experience in projects.

Changes often reflect the uncertainties that occur during the early stages of the project (Assaf & Al-Hejji, 2006 cited by Fageha & Aibinu (2013). According to the study changes are made on the demand of stakeholders expectations. Therefore, having a well-defined project during the pre-project planning stage is crucial for successful project execution and for achieving a satisfactory project outcome. And

this cannot be done without involving all stakeholders in defining the project from early phases. It is irrational to get stakeholders' opinions about the project outcome after the completion, when their involvement is limited. Incomplete project definition can occur when the input of one or more stakeholder is intentionally or unintentionally omitted.

Failure to consider and clarify stakeholders' expectations and concerns at early stage in the project can result in extraordinary risks being ignored and may lead to difficulties in running the project, and hence poor performance (Atkinson, Crawford & Ward 2006). In most of the construction projects project scope plays a very crucial role in enhancing the expectations of stakeholders (Heywood & Smith, 2006).

The study done by Pretorius Steyn and Jordaan (2012) explained that there is direct relation between scope, time, cost and quality management and the project outcome and concluded that project success is useful to exclusive environments and contexts. According to the study the view of customers can play a very important role in the success of a project.

The above studies have emphasis on difference issues that are to be causes of project failure such as corruption, inadequate skills or lack of professionalism, inadequate planning or design and management problems among others. Many of these studies did not look at the scope as a factor that contributes to project success or failure.

2.4 Critical Review and Gaps

According to Fageha & Aibinu (2013), The role of stakeholder participation is very important into the project and it is very important to take each and every stakeholder point of view. The project scope must be defined in a proper way each stakeholder's must be given equal opportunity so there voice should not be missed. According to the study the definition of planning must be done before the planning phase of project .The study did not consider the changes of project scope. If any project wants to be successful it is obligatory for them to control and manage scope. These changes may impact on cost, risk quality and the schedule.

2.5 Conceptual Framework

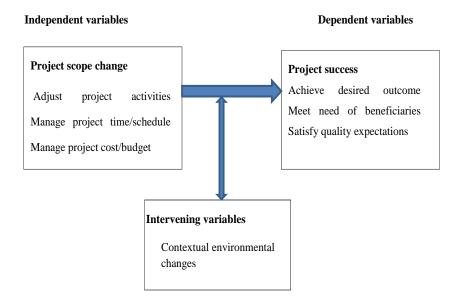


FIGURE 2.1: Conceptual framework.

2.5.1 Interpretation of Variables

Adjust project activities: Activities of Project must be changed according to the time.

Manage project time means that the project must have a proper start and finish time.

The project team has to complete the project within the allocated time frame.

Manage project cost means that the project team have to manage up the project within the allocated cost if the cost is exceeding it may not be considered a successful project.

Meeting the time and budget of the project will not have value if the project that not produce the expected quality of outcome which satisfies the need of the beneficiaries. A project work to response to the identified need among the beneficiaries; if this does not happen, then the project cannot be considered as a success.

2.6 Causes of Scope Change

- 1. External Events: The stakeholder often reshape the project due to the new rules due to the environment changes.
- 2. Error to define Project: If any of the thing is missed into the project you have to define the scope again.
- 3. Error to define Product Scope: These are basically the errors which are in your project scope that how you can apply any specific procedure to change the scope of your project.
- 4. Value added change Sometimes we get a better way of improving the things to improve the quality of work.
- 5. Implement contingency plan If any sort of risk occurs and you respond to the risk it may have changes on the overall scope of your project.
- 6. Beneficiaries observe the changes of outcomes and wants.

2.7 Determinants of Project Success

According to Ginger and Pervaiz (2002) Project success factors are divided into two categories

- 1. Those who deal people
- 2. Those who deal things

Factors which deal with things include cost management, scope management, risk management policies and change management. The factors which deal with people are feelings, priorities and perceptions .According to Harrington & McNellis (2006)

The biggest reason in the failure of project is to define the project scope. Stake holders must understand the project scope to support project implementation. They have also argued that if you want to implement the process in the proper direction you have to take the support from all the stakeholders of the project which are the project team, project sponsor. According to the view point of Judges and Miller (2005), they have identified four factors in 1970s that can play factors in the success of a project which are implementation, time, cost and systems for delivery. In the era of 1980s and 1990s more importance was given to quality and critical success factors. The view of stakeholders became more popular.

Chapter 3

Research Methodology

3.1 Project Success Criteria

The project success criteria are follows:

- It get completed on time, budget and within its scope: The project must be completed within the time budget and scope.
- It get operational and people get benefit from it: People get benefit from the project and it would be economical for the public.
- It operate according to its plan:
 It must operate according to the required plan.
- Road safety get improved:
 The safety of roads also gets improved.
- Decrease in death rate:

There will be no more accidents which would result in less death rate.

- Make traffic safety: The condition of roads might also get safe.
- Guide travelers in a positive way: It is used to educate the travelers and guide them in a positive way.

• Repetitive checkup:

There must be regular checkups that are the things going up in a proper way or not.

• Attention to roadside safety:

There must be some sort of messages to the people related to the road safety.

The project scope includes construction of additional carriageway with wide median between existing and additional carriageways improvement and recovery of existing highways and new bridges and culverts.

3.2 Work Breakdown Structure

3.2.1 Work Breakdown Structure of Karachi Thatta Dual Carriageway

A work break down structure is basically an overall hierarchy of your project from top deliverables to sub level deliverables. The diagram here shows the work breakdown structure of KTDC.

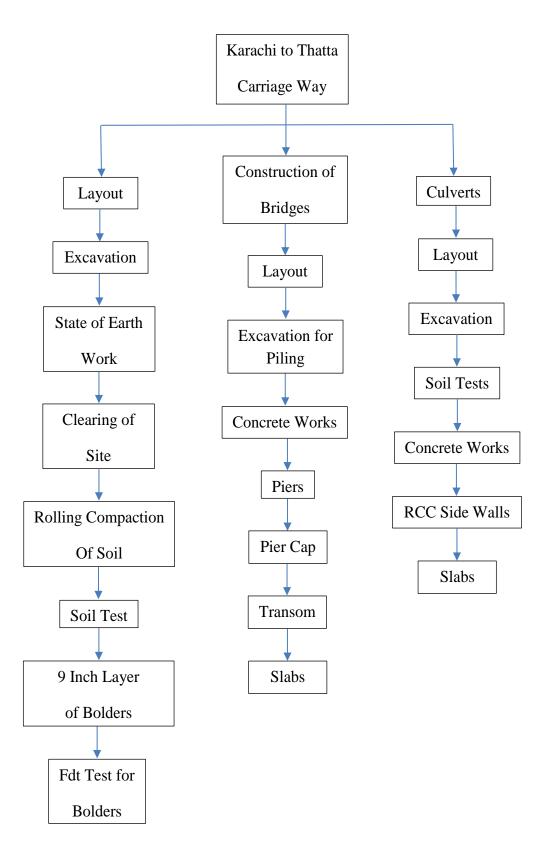


FIGURE 3.1: Work Break Down Structure of Karachi Thatta Dual Carriageway.

3.3 Activities

The activities in the project are

3.3.1 Soil Testing

It plays a very important role in any construction projects. It is also used to check the structure of roads like the content of moisture, gravity. It is used in checking the particles of the soil.

3.3.2 Providing Layer of Bolder

These are the big rocks which are used after the soil testing.

3.3.3 Tests for Bolder

It is used to check the specimens of different rocks.

3.3.4 Providing Layer of Asphalt

Providing layers of Asphalt are a black carpet which is used in the construction of roads to make the quality better.

3.3.5 Marking of Roads

It is used to convey any sort of advice related to parking or how much speed you have to maintain or we have go to highway side it is used to tell about different areas.

Activities involved in the project are enlisted and verified.

3.4 Activities With Gantt Chart 1-14

3.4.1 Karachi Thatta Dual Carriageway Gantt Chart

The diagram shows the activities in the Gantt Chart from 1 to 14.

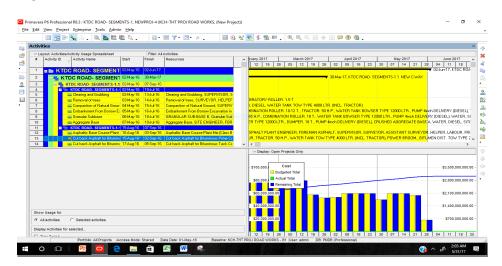


FIGURE 3.2: Gantt Chart 1-14 of Karachi Thatta Dual Carriageway.

3.5 Activities and Gantt Chart 15-28

3.5.1 Karachi Thatta Dual Carriageway Gantt Chart

The diagram shows the activities in the Gantt Chart from 15 to 28.

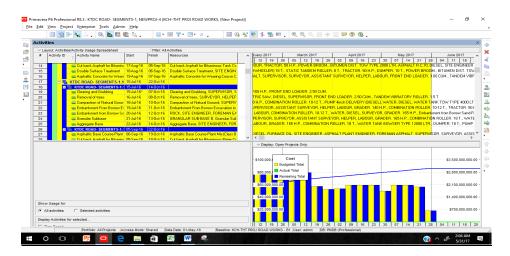


FIGURE 3.3: Gantt Chart 15-28 of Karachi Thatta Dual Carriageway.

3.6 Activities and Gantt Chart 29-42

3.6.1 Karachi Thatta Dual Carriageway Gantt Chart

The diagram shows the activities in the Gantt Chart from 29-42.

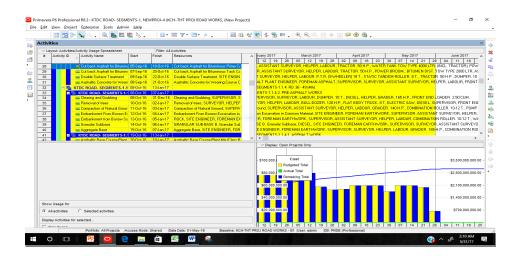
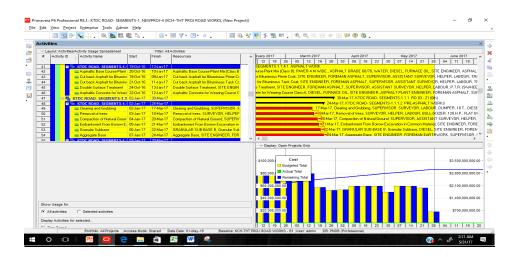


FIGURE 3.4: Gantt Chart 29-42 of Karachi Thatta Dual Carriageway.

3.7 Activities and Gantt Chart 43-56

3.7.1 Karachi Thatta Dual Carriageway Gantt Chart

The diagram shows the activities in the Gantt Chart from 43-56.



sources					
ctivities Resour	rces Project E	quenses			
✓ Display: Current F					
Resource ID		Resource Name	Units/Time Unit of Measure	Price / Unit4	^
R-11 CSR.1001	Labor Labor	SITE ENGINEER SITE ENGINEER	80/d 80/d	\$301.19/h \$301.19/h	
CSR 1001		ASPHALT PLANT ENGINEER	80/d 24/d		
CSR.1012	Labor Labor	FOREMAN ASPHALT	32/d	\$301.19/h \$148.98/h	
CSR.1011	Labor	FOREMAN EARTHWORK	120/d	\$140.00/h \$132.36/h	
CSR 1012	Labor	SUPERVISOR	176/d	\$132.30/h \$99.30/h	
CSR.1022	Labor	SURVEYOR	64/d	\$132.36/h	
CSR 1023	Labor	ASSISTANT SURVEYOR	120/d	\$89.38/h	
CSR.1041	Labor	HELPER	320/d	\$44.69/h	
CSR.1051	Labor	LABOUR	976/d Full-sc	reen Snip \$44.69/h	
CSR.3001	Nonlabor	BULL-DOZER: 200 H.P.	8/d	1,427.88/h	
CSR.3002	Nonlabor	BULL-DOZER. 120 H.P.	16/d	1,295.68/h	
CSR.3003	Nonlabor	BULL-DOZER. 90 H.P.	8/d	\$971.75/h	
CSR.3004	Nonlabor	FRONT END LOADER. 3.00 CUM.	24/d	\$927.50/h	
CSR.3005	Nonlabor	FRONT END LOADER. 2.50 CUM.	16/d	\$812.36/h	
CSR.3006	Nonlabor	FRONT END LOADER. 1.50 CUM.	16/d	\$643.68/h	
CSR.3007	Nonlabor	GRADER. 165 H.P.	60/d	1,322.11/h	
to nep anno	Moolahoe	COADED 140 U D	60.4	1 110 F0/k	
General Codes Det	tails Units & Prices	Roles Notes			
Resource Notes					
					~
					V
Modify	Print 6	Conv			
Modify	🗧 Print 🛛 🖬	🗅 Сору			

FIGURE 3.5: Gantt Chart 43-56 of Karachi Thatta Dual Carriageway.

3.8 Resource Shifts

3.8.1 Resource Shift of Karachi Thatta Dual Carriageway

C Resource Shifts									
Display: Global Resource Shifts		Close							
Shift Name									
Shift 1	÷	Add							
3-shift Operations									
	×	Delete							
		Modify							
	•	Help							

FIGURE 3.6: Resource Shift.

3.9 Budget

The overall cost of the Project is 3804 billion which include the different source of equipment the tractors the dumpers and you have to pay to the overall team.

3.9.1 Budget of Karachi Thatta Dual Carriageway

me	Tools	WBS.p	odf	OBS.pdf	activit	y.pdf ×					?	Sig
ć	ન વ		۲ 🕁 💈 ۱	8 🕨 🖑 (⊃ ⊕ 90.5	* 🛃		9	Q			
ſ	KCH-THT PR	OJ ROAD WORKS		Classi	c Schedule Layout				29-Dec-16 14:57	^	Export PDF	^
					,							
Ī			Predecessors	Successors	Budgeted Expense Cost	Budgeted Material Cost	Budgeted Total Cost	Actual Material Cost	Actual Labor Actual Cost		Adobe Export PDF	6
ł					\$0.00	\$2,707,275,689.57	3.010.758.412.34	\$0.00	50.00 \$0.00		Convert PDF Files to W	/ord
						\$1.654,145.998.03		\$0.00	\$0.00 \$0.00		or Excel Online	
					\$0.00		\$105,480,466,75	\$0.00	\$0.00 \$0.00			
					\$0.00			50.00	S0.00 S0.00		Select PDF File	
	VEYOR HELP	R LABOUR GRADE	1070	10010	\$0.00		\$11,319,608,33	\$0.00	\$0.00 \$0.00		activity.pdf	×
- 1		GRADER, 165 H.P., F	10/0	1010, 101	\$0.00	\$175.241.38	\$317,290.02	\$0.00	\$0.00 \$0.00			
- E		DER. 140 H.P., COMB	1010	1050	\$0.00		\$395,172.49	\$0.00	\$0.00 \$0.00		Convert to	
		VORK. SUPERVISOR.	1020	1070	\$0.00	\$16.894.523.67	\$19,198,391,79	\$0.00	\$0.00 \$0.00		Convert to	
	N EARTHWOP	K. SUPERVISOR, SU	1050	1080	\$0.00	\$11,323,914,99	\$12,214,573,02	\$0.00	\$0.00 \$0.00		Microsoft Word (*.do	ocx) 🗸
1	BODY TRUCK	8 T, ELECTRIC SAW,	1000	1020	\$0.00	\$307,944.00	\$632,790.99	\$0.00	\$0.00 \$0.00			
					\$0.00	\$55,350,000.94	\$61,402,640.11	\$0.00	\$0.00 \$0.00		Document Language:	
	V70, WATER, E	NESEL, FURNACE OII	10010	10020	\$0.00	\$31,646,480.73	\$35,509,480.22	\$0.00	\$0.00 \$0.00		English (U.S.) Change	
G	INEER, ASPHA	LT PLANT ENGINEEF	10030		\$0.00	\$19,094,626.95	\$21,100,653.74	\$0.00	\$0.00 \$0.00			
- 1	, SUPERVISOF	R, ASSISTANT SURVE	1080	10000, 10	\$0.00	\$1,857,617.90	\$1,921,468.86	\$0.00	\$0.00 \$0.00			
1	SUPERVISOR	ASSISTANT SURVEY	10000	10030	\$0.00	\$750,590.78	\$775,400.77	\$0.00	\$0.00 \$0.00			
- 4	ASSISTANT S	JRVEYOR, HELPER, I	10020	10040	\$0.00	\$2,000,684.59	\$2,095,636.51	\$0.00	\$0.00 \$0.00			
					\$0.00		\$641,919,648.23	\$0.00	\$0.00 \$0.00		Convert	
					\$0.00	\$363,695,958.40	\$399,770,432.21	\$0.00	\$0.00 \$0.00			
		ER, LABOUR, GRADE	10230	10880	\$0.00	\$53,249,023.09	\$56,597,876.46	\$0.00	\$0.00 \$0.00			
		GRADER. 165 H.P., F	1000	10170, 10	\$0.00	\$1,877,390.56	\$3,399,052.21	\$0.00	\$0.00 \$0.00		Create PDF	~
		DER. 140 H.P., COMB	10170	10210	\$0.00	\$1,515,093.92	\$2,129,457.80	\$0.00	\$0.00 \$0.00			
		VORK, SUPERVISOR,	10180	10220	\$0.00			\$0.00	\$0.00 \$0.00			
		IK, SUPERVISOR, SU	10220	10240	\$0.00	\$65,948,075.60		\$0.00	\$0.00 \$0.00		Store and share fil	
		8 T, ELECTRIC SAW,	10160	10180	\$0.00		\$632,790.99	\$0.00	\$0.00 \$0.00		Document Cl	oud
- \$	URVEYOR, HE	LPER, LABOUR, CON	10210	10230	\$0.00	\$78,114,275.01	\$81,007,373.28 \$242,149,216.03	\$0.00 \$0.00	\$0.00 \$0.00 \$0.00 \$0.00		Learn More	

me Tools	WBS.p	df	OBS.pdf	activity	r.pdf ×					? 5	ign
ቀ 🖶 🛛		1 (1)	* k @ e	90.5	* - 6		Ø	0			
	VETON, TIELPEN, T	10010	10/00	30.00	40,100,100.20	40,302,017.30	30.00	a0.00 a0.00]			
				\$0.00	\$468,588,083.15	\$518,726,699.27	\$0.00	\$0.00 \$0.00	^		
				\$0.00	\$274,577,375.02	\$303,689,111.07	\$0.00	\$0.00 \$0.00		Export PDF	
RVEYOR, HELPER	, LABOUR, GRADE	10340	10930	\$0.00	\$46,859,140.61	\$49,806,145.56	\$0.00	\$0.00 \$0.00			
ESEL, HELPER, G	RADER. 165 H.P., F	10160	10280, 10	\$0.00	\$1,916,773.74	\$3,470,367.07	\$0.00	\$0.00 \$0.00			
LABOUR, GRADE	R. 140 H.P., COMB	10280	10320	\$0.00	\$1,322,406.18	\$1,858,639.04	\$0.00	\$0.00 \$0.00		Adobe Export PDF	Ch
EMAN EARTHWO	RK, SUPERVISOR,	10290	10330	\$0.00	\$131,033,430.25	\$148,902,045.48	\$0.00	\$0.00 \$0.00		Adobe Export PDF	-0
AN EARTHWORK,	SUPERVISOR, SU	10330	10350	\$0.00	\$58,438,491.31	\$63,034,779.40	\$0.00	\$0.00 \$0.00		Convert PDF Files to Word	
BODY TRUCK, 8	, ELECTRIC SAW,	10270	10290	\$0.00	\$307,944.00	\$632,790.99	\$0.00	\$0.00 \$0.00		or Excel Online	
SURVEYOR, HELP	ER, LABOUR, CON	10320	10340	\$0.00	\$34,699,188.93	\$35,984,343.52	\$0.00	\$0.00 \$0.00			
				\$0.00	\$194,010,708.13	\$215,037,588.20	\$0.00	\$0.00 \$0.00		Select PDF File	
0/70, WATER, DIE	SEL, FURNACE OII	10930	10940	\$0.00	\$110,614,463.67	\$124,116,537.16	\$0.00	\$0.00 \$0.00			~
GINEER, ASPHALT	PLANT ENGINEEF	10940	10950	\$0.00	\$64,624,574.29	\$71,413,528.20	\$0.00	\$0.00 \$0.00		activity.pdf	×
T, SUPERVISOR,	SSISTANT SURVE	10350, 10880	10920	\$0.00	\$8,205,841.01	\$8,487,817.31	\$0.00	\$0.00 \$0.00			
SUPERVISOR, AS	SISTANT SURVEY	10920	10960	\$0.00	\$3,301,210.93	\$3,410,333.48	\$0.00	\$0.00 \$0.00		Convert to	
ASSISTANT SUR	VEYOR, HELPER, I	10960	10810	\$0.00	\$7,264,618.23	\$7,609,372.06	\$0.00	\$0.00 \$0.00			
				\$0.00	\$508,399,650.37	\$562,646,641.16	\$0.00	\$0.00 \$0.00		Microsoft Word (*.docx)	~
				\$0.00	\$249,137,160.72	\$275,310,497.28	\$0.00	\$0.00 \$0.00	•		
RVEYOR, HELPER	, LABOUR, GRADE	10120	10830	\$0.00	\$63,898,821.63	\$67,917,442.30	\$0.00	\$0.00 \$0.00		Document Language:	
ESEL, HELPER, G	RADER. 165 H.P., F	10270	10060, 10	\$0.00	\$1,158,202.20	\$2,096,954.15	\$0.00	\$0.00 \$0.00		English (U.S.) Change	
LABOUR, GRADE	R. 140 H.P., COMB	10060	10100	\$0.00	\$1,794,999.79	\$2,522,861.44	\$0.00	\$0.00 \$0.00			
EMAN EARTHWO	RK, SUPERVISOR,	10070	10120	\$0.00	\$101,367,137.45	\$115,190,267.10	\$0.00	\$0.00 \$0.00			
AN EARTHWORK,	SUPERVISOR, SU	10100	10130	\$0.00	\$80,610,055.65	\$86,950,181.29	\$0.00	\$0.00 \$0.00			
BODY TRUCK, 8	F, ELECTRIC SAW,	10050	10070	\$0.00	\$307,944.00	\$632,790.99	\$0.00	\$0.00 \$0.00			
				\$0.00	\$259,262,489.65	\$287,336,143.88	\$0.00	\$0.00 \$0.00		Convert	
0/70, WATER, DIE	SEL, FURNACE OII	10830	10840	\$0.00	\$147,776,400.19	\$165,814,576.50	\$0.00	\$0.00 \$0.00			
GINEER, ASPHALT	PLANT ENGINEEF	10840	10850	\$0.00	\$86,050,299.65	\$95,090,029.45	\$0.00	\$0.00 \$0.00			
T, SUPERVISOR,	SSISTANT SURVE	10130	10820	\$0.00	\$11,192,704.61	\$11,577,336.53	\$0.00	\$0.00 \$0.00		Create PDF	\sim
SUPERVISOR, AS	SISTANT SURVEY	10820	10860	\$0.00	\$4,501,461.27	\$4,650,265.75	\$0.00	\$0.00 \$0.00			
ASSISTANT SUR	VEYOR, HELPER, I	10860	10590	\$0.00	\$9,741,623.92	\$10,203,935.64	\$0.00	\$0.00 \$0.00			
				\$0.00	\$1,053,129,691.54	(1,181,984,956.9)	\$0.00	\$0.00 \$0.00		Store and share files in Document Cloud	the
				\$0.00	\$317,532,199.57	\$355,955,836.70	\$0.00	\$0.00 \$0.00		Document Cloud	
				\$0.00	\$99,052,486.46	\$113,806,620.67	\$0.00	\$0.00 \$0.00		Learn More	
RVEYOR, HELPER	LABOUR, GRADE	10670	11080	\$0.00	\$71.644.133.48	\$76,149,854,36	\$0.00	\$0.00 \$0.00	~		

FIGURE 3.7: Budget.

3.10 Risk Register

Risk Register means that you keep a register or make a word or excel file and keep all the risks in mind to keep the backup plan of the risks like disaster political issues financial risks.

3.10.1 Risk Register of Karachi Thatta Dual Carriageway

S. No.	Category	Risk Name	Description	Triggers	Potential Responses	Probabilty
1	Natural disaster	1	It's a natural disaster which no body can handle it.	No	Avoid	Less
2	Strategic	3	Lack of technical expertise in staff	Yes	Mitigate	High
3	Compliance	4	Acceptance of unrealistic deadlines		Transfer	High
4	Finance	2	Underestimation of Budget		Mitigate	Less
6	Operational	5	Scope creep		Transfer	Extremely high
7	Compliance	6	Vendor can't supply the supplies		Transfer	Extremely high
8	Operational	6	Slow working strategy		Mitigate	Extremely high

TABLE 3.1: Risk Register.

3.11 Present Estimated Project Duration and/or Estimated Start & End Dates

Project duration is 2 years. Its start date is May 2016 and end date is May 2018. Some important points in any project that may get affect by the project change management process.

Scope of Project: Change in Project will make change in scope.

Cost of Project: Changes in the project will make changes in the cost as we can say work cost will increase.

Project Team: The team must be changed according to the requirements of the project.

Roles of the team members: If the team is changed so different roles are assigned to new team members according to the requirements.

3.12 Effect of External Events on the Project

There are many external events which effect the project just like most project gets affected by the locations if you are working on any project sometimes the surrounding does not allow you. These are sometimes the social factors or the political scenario of the country or the technological these all factors have a very vast impact on your project. The most important factor which has to be kept in mind are those factors which we take fore-granted like weekends, audits. Most of the religious events effect on the project. These all factors have a delay on project. Sometimes the environmental conditions effect on the project just like climate change, earthquake, wind factors.

Chapter 4

Conclusion and Recommendations

4.1 Introduction

The chapter presents the findings of the research objectives. The chapter suggests that what things can be improved in the process of project scope management.

4.2 Summary

The agenda of the project is to determine the root cause of the project. The reason for scope changes are due to the new regulations into the project. Beneficiaries are the main reason for change in scope. Scope change happen due to the error in defining the scope, and whenever it must be seen it must be corrected at each and every cost implementation there could be signs demonstrating that characterized extension does not prompt the accomplishment of the task goals; at that point the undertaking degree change will be proposed, examined to check whether it will give a superior route to the accomplishment of the venture targets and changes will be made.

The above research has concluded on the study that in project management a time comes when you have to make changes according to the scope. Even though the project has to meet its objectives but there are times when implementer will see that meeting the project objectives without making any changes in project activities is impossible.

4.3 Recommendations

The recommendations of the study are divided into three categories:

4.3.1 Project

Whenever you are working on any project it is very important to take the beneficiaries into confidence.

4.3.2 Donors

Keeping in view the environmental factors in mind you have to think that what can be done if these factors change. It is necessary for you to do project evaluation before managing the project scope.

4.3.3 Beneficiaries

It is very important for you to communicate with your project team. Beneficiaries must ensure their participation to know if the project is going in right direction or not.

4.4 Recommendation to Further Studies

- 1. Analyze the undesirable result of scope change on the accomplishment of a project.
- 2. Manage the initial scope of the project to increase the achievement of project outcome.

- 3. Effect of beneficiaries involvement can lead up to better project results.
- 4. If you take any decision of your project it is very important for you to do evaluation.

Bibliography

- Ahsan, K., & Gunawan, I. (2010). Analysis of cost and schedule performance of international development projects. *International Journal of Project Man*agement, 28(1), pp. 68-78.
- Atkinson, R., Crawford, L., & Ward, S. (2006). Fundamental uncertainties in projects and the scope of project management. International Journal of Project Management, 24(8), pp. 687-698.
- Curlee, W., & Gordon, R.L. (2011). Complexity theory and project management. New Jersey: John Wiley & Sons, Inc.
- Fageha, M.K., & Aibinu, A.A. (2013). Managing project scope definition to improve stakeholders' participation and enhance project outcome. Journal of Procedia-Social and Behavioral Sciences, 74, pp. 154–164. Retrieved on 15 February 2015 from www.sciencedirect.com.
- Harrington, H.J., & McNellis, T. (2006). Project management excellence: The art of excelling in project management. Washington DC: Paton Press LLC.
- Heywood, C., & Smith, J. (2006). Integrating stakeholders during community FM's early project phases. International Journal of Management, 24(7/8), pp. 300-313.
- Hill, G.M. (2010). The complete project management methodology and toolkit.New York: Taylor & Francis Group.
- Judge. P., & Muller, A. (2005). Transformational and transactional leadership: A meta-analytic test of their relative validity. *Journal of Applied Psychology*, No. 89, pp. 755-768.

- Knapp, D. (2011). A guide to customer service skills for the service desk professional. Boston: Cengage Learning.
- Pretorius, S., Steyn, H., & Jordaan, J.C. (2012). Project management maturity and project management success in the engineering and construction industries in Southern Africa South African. *Journal of Industrial Engineering*, 23(3), pp. 79-86.
- Richman, L. (2006). *Improving your project management skills*. New York: American Management Association.
- Richardson, G.L. (2010). Project management theory and practice. New York: Taylor & Francis groups. LLC.
- Schwalbe, K. (2010). Information Technology Project. Mexico: Cengage Learning.