St. Mary's University

School of Graduate Studies

THE EFFECT OF USING PRINCE2 FOR IRRIGATION PROJECTS IN ECDSWC, THE CASE OF KURAZ IRRIGATION PROJECT

By

BINIAM BELAY

June 2018

Addis Ababa, Ethiopia

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By

Biniam Belay (SGS/0513/2009A)

A THESIS SUBMITTED TO ST.MARY'S UNIVERSITY, SCHOOL OF GRADUATE STUDIES, COLLEGE OF BUSINESS ADMINISTRATION IN PARTIAL FULFILMENT OF REQUIREMENTS FOR THE AWARDS OF THE DEGREE OF MASTER OF ARTS (MA) IN PROJECT MANAGEMENT

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DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Dr. Dereje Teklemariam. All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for earning any degree.

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ENDORSEMENT

This thesis has been submitted to St. Mary's University for examination with my approval as a university advisor.

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Advisor	Signature
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LIST OF ACRONYMS

ECWC……..Ethiopian Construction Works Corporation

ECDSWC……..……. Ethiopian Construction Design and Supervision Works Corporation

ESC …….....Ethiopian Sugar Corporation

ESISC……..…….Ethiopian Sugar Industry Support Centre Share Company

Ha…….…… Hectar

Km ……...……... Kilo Meter

PMM ……..... Project Management Methodology

PRINCE2…….. Project In Controlled Environment

RBMC……..……. Right Bank Main Canal

SNNPR…….….South Nation Nationality and Peoples Representative

ABSTRACT

This study intends to assess the effect of using PRINCE2 for irrigation projects in Ethiopian Construction Design Supervision Works Corporation, the case of kuraz irrigation project. ECDSWC has been implementing this Project Management Methodology since 2014. The researcher focuses on to fill the gap by finding the positive impact of this methodology. This study adopted descriptive research methodology based on primary and secondary data. A total of 42 key informants were involved in the study. The data was collected online using Survey Monkey website and takes one month to collect. Meanwhile, the biggest challenge was people were not interested to fill the survey in the due time; secondary data like reports also used in the study. In addition, the researcher has reviewed a number of related articles, even though most of them are in IT projects and has learnt its effect in other industries as well. According to the survey result, the project efficiency is significantly increased, organizational benefit is changed, stakeholder's satisfaction was improved and the green light for using PRINCE2 was so big in the future. The findings suggest developing capacity of project team members, engaging more young people in the projects as they easily assimilate technologies, to assess effectiveness regularly and try other project management methodologies as well and old staffs should welcome positive changes and use the opportunity.

Key words: PRINCE2, Irrigation Projects, Project Team, Project Design, Monitoring and Evaluation.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Ethiopia is endowed with large areas of suitable low lands, water resources and conducive climate for sugarcane development. The climate and soil types in the country have both proven to be highly favorable for sugarcane growth and productivity. Various studies of sugar projects conducted by the Ethiopian Sugar Industry Support Centre Share Company (ESISC) have indicated that many of the River basins are suitable for sugar cane plantation (Kaleb and Lemma, 2017).

Sugar Corporation with a vision of executing sugar development activities at a large scale came into existence on October 2010 by the Council of Ministers Regulation No.192/2010 replacing the former Ethiopian Sugar Development Agency (ESC Company Profile, 2017). ESC is currently running seven sugar factories in Ethiopia; some of them are operating with full potential and some are under expansion (ESC, 2011). Recently, the Government of Ethiopia has initiated large sugar Development projects in the country. Kuraz is the largest irrigated sugar development project in Ethiopia. Besides its complexity, kuraz has experienced extremely low performance and has been exposed to corruptions and resource wastage, which eventually lead to get flooded with complaints from different corner.

Currently, ECDSWC, the local Engineering consulting company has started applying PRINCE2 for their project in Kuraz, which is expected to enhance performance of ESC projects; and the researcher of this study is inclined measure the impact observed by using PRINCE2 in Kuraz.

Kuraz project found in South Omo Zone (Selamago and Gnanegatom Districts), Bench-Maji Zone (Surma and Mieinitshasha Districts) and Keffa Zone (Diecha District) of Southern Nations, Nationalities & Peoples Region at 900-k.m. distance from the capital city. It is a huge project where four sugar factories are found under different levels of construction. Among the total four one will work with 24,000 TCD and is capable of producing 556,000 tons of sugar and 52,324 meter cube ethanol a year while the rest three will work each with 12,000 TCD

and are capable of producing 278,000 tons of sugar and 26,162 meter cube ethanol a year individually. While reaching their maximum crushing capacity, all together will be able to produce 1,339,000 tons of sugar and 130,810 Cubic Meters ethanol annually (wwdse, pre-feasibility study, ESC – Kuraz project, page 55).

The project has two Main Canals that planned to run on the Right and the left Banks of the Omo River. This paper deals about the Right Bank Main Canal (RBMC). The RBMC) runs about 133.7km long from the Diversion Weir on Omo River up to the SC-22 off take. Currently, construction of part of main canal from C0+00 up to C65+451 km, (from kilo meter 00 to 65.451) and intake structures is under construction and its current status 39.4% but it was expected to be completed on 30 Nov 2017 (Kaleb and Lemma, 2017).

C65+451 to C133+781 Main Canal construction is continued from C+00 up to C65+451 of main canal. The desired outcome of the project is 68 km main canal and 52.63 km of interceptor drain. It is required, to deliver water for the secondary canals from 07 to 22; and the specified secondary canals will irrigate 72,435.1 ha of sugarcane, which will use as a row material for three Sugar factories for their sugar development.

Current status of C65+451 to C133+781, Main canal construction project is the followings;

- Lot 2 and lot 4 construction site has handed over on May 2017
- Lot 2 and lot 4 commencement of works issued on 18 May 2017
- Lot three-construction contract signed on July 2017

Due to the multidisciplinary nature of the project and its three different contracts for three lots special interface should be adopted to create synergy among lots, to follow changes, to minimize risk and to enhance opportunities (ECWC, 2017). Therefore, through being knowledge - centric and having experience – driven activity, the concept of use of project management methodologies comes to the table and the corporation has selected PRINCE2.

PRINCE2 is an acronym for Projects in Controlled Environments. It is one of the most traditional process based methods that are being used for effective project management. It is being utilized extensively by the UK government, and it is also recognized to be employed in the private sector both in the UK and on international markets. The PRINCE2 method is in the

public domain, and offers non-proprietorial best practice guidance on project management (Imx, 2018).

The key features of PRINCE2

- It focuses on justification of business
- It defines the organizational structure for the team of project management professionals
- It lays great emphasis on project based planning approach
- It emphasizes on the division of the project into controllable and manageable stages
- It ensures that flexibility can be applied at a level that is being perceived appropriate to the project.

This study will focus on the effectiveness of project management methodologies like those that PRINCE2 in large-scale irrigation projects based on the responses from the survey. The opportunities and challenges of using PRINCE2 will also be reviewed and recommendations will be given on the ways of improving on the use of PRINCE2 in large-scale irrigation projects to ensure that it is effective.

1.2 Statement of the problem

Construction projects have the involvement of many participants including the owner, designer, contractor, and many other professionals from construction-related industries. Each of these participants is involved in implementing quality in construction projects. These participants are both influenced by and depend on each other in addition to "other players" involved in the construction process. Therefore, the construction projects have become more complex and technical, and extensive efforts are required to reduce rework and costs associated with time, materials, and engineering.

Due to previous traditional project management systems; construction part of Main canal from C0+00 up to C65+451 km and intake structures has experienced under performance and its current status 39.4% but, it was expected to be completed on 30 Nov 2017 (ECDSWC Monthly Report). Due to this, it has experienced; (i) Cost overrun Due to design revision, (ii) Time overrun due to Design revision and ambitious plan, (iii) Poor quality due to aggressive plan, and Delay of works on headwork and 0+00 up to 65+451.

Therefore, why all these happened? Will be the driving reason for the study.

Meanwhile, In Ethiopia's extant situation, pastoralists and other people complain about Ethiopia Sugar Corporation performance quality. Therefore, the shortage of sugar and unnecessary resource utilization and procurement of sugar from abroad are directly affecting the taxpayer people, which is the result of underperformance of concerning consultants, contractors and other stockholders. Following this, the corporation has decided to start using project management methodologies for the next reaches and selected PRINCE2.

Therefore, the study will try to assess effectiveness and challenges of using PRINCE2 on large scale irrigation construction projects, mainly Kuraz Sugar Development Project (C110+908 to C133+181 Km); by stressing on the six performance parameters Time, Cost, Scope, Quality, Benefit and Risk. Both the project owner and the consultant has observed satisfactorily tangible benefits from the using PRINCE2 but it is not properly investigated until now. However, this study will deeply investigate and quantify benefits obtained and will compare the result with the previous (conventional) method, the researcher believes that not every project management methodology works for every project sometimes "using wrong PMM might give worst result

than using conventional method". Outputs of the study shall be used for the benefit of the company for the next screeches or for other similar projects.

1.3 Research Question

The study endeavors to answer the following key research questions:

- What is the effect of PRINCE2 on project efficiency (C110+908 to C133+181 Km)?
- What are the observed organizational benefits from using PRINCE2?
- What is the over impact of PRINCE2 on the project?
- How is the stakeholder's satisfaction from using PRINCE2?
- What is the future potential of using PRINCE2?

1.4 Objective of the Study

1.4.1 General Objective

The overall aim of this study is to assess the effect of using PRINCE2 for irrigation projects in Ethiopian Construction Design Supervision Works Corporation.

1.4.2 Specific Objective

The study specifically aims to:

- To review project efficiency (C110+908 to C133+181 Km).
- To review organizational benefit of using PRINCE2.
- To explore PRINCE2's impact on the project.
- To investigate stakeholders satisfaction.
- To examine future potential of using PRINCE2.

1.5 Significance of the Study

Since using project management methodologies is a new concept and practice to the company, I could not find any study/publication regarding its effectiveness. This study will provide significant information on project management issues to parties involved in irrigation construction projects. The study could be used as a reference to various activities/components/subsystems at different phases in the life cycle of a project to improve construction processes to conveniently manage projects and make them qualitative, competitive, and economical.

I. New knowledge

The study sheds light on the effect of using PRINCE2 on project performance of irrigation projects.

II. To contribute in solving project implementation problem

The study's findings and recommendations are highly important to management of the company because it draws their attention to some of the points where corrective actions are necessary to enhance the project performance more.

III. Literature and Reference

The research could be used to establish a framework for subsequent studies that can work with data sets that are more comprehensive. Furthermore, it could stimulate further research.

1.6 Scope of the Study

The study focuses on assessing effect of using PRINCE2 for project success. Successful project completion will help the consultant, contractor, client and the country as a whole save resource. However, PRINCE2 is applied only to one of the many projects that the corporation is running. Hence, this study will cover Kuraz Irrigation Development, i.e. Kuraz C110+908 to C133+181 Km Main Canal Construction Project.

The survey has been conducted from 15th April to 15th May 2018. A census consisted of project managers, team leaders, team members, project board members and leaders was used. Questioners has been sent to this group via email.

1.7 Limitation of the Study

The purpose of this study will be limited to assess the effect of using PRINCE2 for irrigation construction projects from the view of key performance parameters like Cost, Time, Quality, Scope, Benefit and Risk. Currently the company is taking different measures to improve the quality of its service; however, this study will not assess these efforts of the company. Meanwhile, the project in focus was the construction of the Right Bank Main Canal (RBMC) stretch between chain-age C110+908 to C133+181 Km that is part of 133.79 km main canal.

1.8 Organization of the Research Report

Structurally, the paper will be composed of five chapters. The first chapter will presents introductory materials, which includes background of the study, problem statement, research objective, research questions, and methodologies, significances of the study and the scope and limitations of the study. The second chapter presents the related literatures reviewed during the desk research phase of the study. The third chapter is about research methodology of the study. With this background, the report presents analysis and interpretation of the data gathered in the fourth chapter. Finally, in the fifth chapter the report concludes with the summary and conclusion of the study and recommendations that are made.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Theoretical Review

In construction industry, managing each resource has a great meaning. Understanding and utilizing tools and techniques of project management is a mandatory and effectively managing time, cost, quality and scope is name of the game in order to maintain the leader position in the industry.

Reviewing the literature supporting these project management methodologies, it is clear that methodologies have been created to specifically address the needs of certain industries, whether information technology, construction, financial, or governmental. The common denominator for all project management methodologies regardless of the industry is that a thorough analysis of the necessary output, product, service, or system is identified in the beginning stages of the project; below are some of the benefits of using PRINCE2 (Faiq Mohammed Sarhan Al-Zwainy, Et al, 2014).

I. Clear agreement on the project objectives;
II. Ease of handling and distribution of project reports;
III. Easy to review the project, according to its objectives;
IV. The transparency in project management practices;
V. Success in project risk management;
VI. Handling the problems, and the complexities of the project;
VII. Easy to measure completion percentage, and to improve control and command of the project;
VIII. Regulating the inventories of stakeholders in various phases of the project;
IX. Measurement of accomplishment against plans;
X. Improved estimating probability for future planning; and
XI. Knowing when objectives cannot be met or will be exceeded.

2.1.1 Introduction about PRINCE2

PRINCE2 (PROJECT IN CONTROLLED ENVIRONMENT) is a process-based method, which focuses on a business case, which describes the rationale and business justification for

the project. Just as mentioned above PRINCE2 is also said to be applicable to any size or type of project (Hewagamage and Hewagamage, 2011).

Hewagamage and Hewagamage (2011) highlighted some of the weaknesses of PRINCE2 as not focusing on engineering practices in general, being difficult to interpret the terminology and approach with respect to practices in the engineering, not having proper approach in guiding the project and not supporting human resource and procurement management.

(Ghoshet al.2012; Kruger and Rudman, 2013)explained PRINCE2 as being made up of 4 elements which are, 7 Principles(guiding obligations and good practices determining whether the project is being managed using PRINCE2), 7 Themes (aspects to be addressed continually throughout the project), 7 Processes(steps in the project) and Tailoring (project environment). This was done to suit the specific needs of the project. The 7 Processes are in-turn divided into 40 Activities. (Turley, 2010) gives an insight into the seven principles, 7 themes, 7-processes and tailoring each of which is briefly explained in the paragraphs that follow.

2.1.2 The seven Principle of PRINCE2.

The seven principles look at the good project characteristics or best practices and are highlighted below: If any of these are missing, it is not considered a PRINCE2 project.

1. Continued business justification – all projects should have a business case or continued business justification. This includes reasons why the project should be done as well as costs, benefits and time scales.

2. Learn from experience–Even though this principle acknowledges that projects are unique, it encourages the PRINCE 2 project team to learn from past projects to help avoid or minimize risks.

3. Defined roles and responsibilities–ThePRINCE2project team members should know what needs to be done and by which human resource. These roles should be clearly defined and agreed on.

4. Manage by stages– Projects are broken down into manageable tasks, which are known as stages in PRINCE2. Planning, monitoring and controlling are done on a stage-by-stage basis.

A review of the previous stage is done and a decision is made on whether to move on to the next one or not.

5. Manage by exception – This principle focuses on execution of the previous stage. If there are, any issues in that, stage it raises a notification to the above management layer.

6. Focus on products– A detailed product description is given and this guides the project as well as builds correct expectations and delivers the stated products.

7. Tailor to suit the project environment –Whether it be a small project or large one, PRINCE 2 aims to tailor the project to suit that environment.

2.1.3 The seven themes of PRINCE2

The 7 themes focus on the items that must be continually addressed and are highlighted below:

1. Business Case–business reasons for carrying out the project.

2. Organization – people involved, sponsors, person responsible for the business case, user and supplier representatives, roles and responsibilities involved, project manager.

3. Quality–level of product quality, checks to bed one to ensure product quality is met.

4. Plans – how the project product will be created, steps involved, levels of quality to be attained, costs involved, detail required for each plan, people involved from the organization, timelines.

5. Risk–risks involved, what to do if they happen, how to identify analyze and document the risks, how they can be mitigated, how to manage and monitor risks throughout the project.

6. Change–how changes should be controlled, tools to be used.

7. Progress– how will project be controlled, when will reporting be done, is the project still viable.

2.1.4 The seven processes of PRINCE2

The 7 processes address the activities and the individuals they are allocated to. PRINCE2 divides a project into a number of management stages, which are driven by a sequence of seven

processes, or smaller activities (Kruger and Rudman, 2013). The activities are briefly explained below:

1. Starting up A Project All the prerequisites for initiating the project, including justification for the project and the requirements, are checked to see if they are in place.

2. Directing a Project this includes monitoring through the use of reports, controlling of decision points done by the managerial decision-makers also referred to as the project board.

3. Initiating a Project Initiating a project involves planning and costing the projects and reviewing the business case. This is done to provide the baseline for decision-making.

4. Controlling a Stage Controlling a stage are activities done to control, react to events and report project proceedings.

5. Managing Product Delivery The team manager is responsible for this process and this is where work packages are executed, planned products are created and work is done.

6. Managing a Stage Boundary–Reporting of the current stage is done in this process plus planning for the next stage.

7. Closing a Project –A number of activities are done here to prepare the project for closure.

Tailoring is how the project manager applies the best practices of PRINCE2 to the environment.

2.2 Empirical review

The previous studies provide a basis for further research on the application of different project management approaches and methodologies, where further research could build on an idea of creating a unique methodology for the project, based on different project management approaches. In that way, it is possible to create project management methodologies that have a high possibility of customization for projects. The following is the most important studies that have been obtained through the tracking and research in books and online libraries and some universities.

The study aimed to know the impact of the application of project management methodology on the performance of projects, the study also focused on the academic and training programs for

project management. The study was conducted by the survey among both academics and practitioners of project management on the appropriate structure of the methodology that reduces the likelihood of project failure, and the question was: Did the project management methodology improve the effectiveness of project performance? This study found that the use of project management methodology increased the chance of success of the project by a large margin increased as the value-added of the organization due to the use of project management methodology. The study recommended an increase in academic and training programs, especially for project managers and the teamwork on the project (Rozenes, 2011).

The study aimed to clarify the reality of using project management methodology and its relationship to construction projects in Saudi Arabia, because of its great importance in providing solutions that can help in organizing this large sector so as to ensure the implementation of projects on the basis of unified and clear procedures. The study included data collected through a questionnaire, which was designed to sample from the engineering offices and contracting companies as a tool to measure the study hypothesis. The study found statistically significant for each of ; the absence of the availability of scientific and administrative leaders, the absence of the role of project management office, in addition to the absence of awareness of the importance of project management as a competitive advantage over non successful implementation of project management methodology in constructional projects. The study recommended the need to develop scientific and practical methodologies and adopting a professional organizing approach and using global best practices in project management and using accurate indicators (technical and financial) to measure the level of the quality of the projects (Yousef, 2012).

The aim of this study is investigation the impact of the application of project management methodologies in Iraqi construction sector. The importance of this study as new add for the fields of knowledge, it can be benefit for researchers in academic field and engineers in the practical field. The questionnaire form was designed by following a simple method, because the questionnaire as an important source of acquiring field information and data. The Iraqi Ministry of Construction and Housing and Public Municipalities was selected as a study population. The questionnaire content three axes. The first axis: (Personal data and information), The second axis :(assess the application of Project Management Methodology in Iraqi construction sector), and The third axis: (The reasons for the lack of application of international methodologies in the Iraqi project management), one of important of result this study is the main reason for the absence of a project management methodology in the company is lack of conviction and lack of

interest of top management in project management methodology. Twenty-five variables or reasons, which effect on the PMM, are presented. The highest ranked factor variables for factors influencing is V19 with relative importance (RI) of 77% first (1st), V1 was ranked second (2nd) with RI of 75%, V20was ranked third (3rd) with RI of 72% and others variables have relative importance from 60-69% (Very Important) (Al-Zwainy et al, 2016).

The Standish Group put the selection and use of a project methodology as one of the top ten contributing factors to project failure (The Standish Group, 2010). The report states that project methodologies have provided improvement to project success (35%), in contrast to the rate of failure (19%) and challenged project performance (46%). The conclusion is that closer attention should be given to the correct choice and application of the methodology and tools. Cooper (2007) observed that many companies are mismanaging projects because they are using tools and techniques that are not appropriate for the project type or apply financial selection criteria that are not appropriate for the project type.

Several researchers (Fortune & White, 2006; Shenhar, Tishler, Dvir, Lipovetsky, & Lechler, 2002) show that it is not just using a methodology that leads to project success; it is the experience of using a project methodology and the ability to tailor to the context of a project that is linked to project success.

Many organizations have responded to low project success rates by requesting the project management associations to develop benchmarks and new models to help improve project management to achieve increased project success rates. These requests resulted in the introduction of maturity models such as OPM3® maturity model from PMI, Prince23 maturity model (P2MM) and the Portfolio, Program and Project Maturity Model (P3M3) from the UK government agency Office of Government Commerce (OGC). Other maturity models have also emerged with reduced scope typically in a Knowledge Area domain, for example, Risk Management Maturity Model, Earned Value Maturity Model (Stratton, 2006).

The expectation on the use of maturity models is to see long-term improvements in project success rates. Research has shown, to the contrary, limited long-term benefits, resulting from the application of maturity models within organizations (Judgev & Thomas, 2002), except when project methodologies are implemented within certain organizational cultures (Yazici, 2009).

Research on project methodologies is mainly focused on whether project methodologies should be standardized (Milosevic, Inman, & Ozbay, 2001; Milosevic & Patanakul, 2005), or tailored to the project environment (Lechler & Geraldi, 2013; Payne & Turner, 1999; Pinto & Mantel, 1990). Lehtonen and Martinsuo (2006) sum up the research dilemma by stating, "The confusion in research results is reflected also in companies' swing between standardized and tailored systems, and between formal and chaotic methodologies."

Fitzgerald, Russo, and Stolterman noted that the most successful project methodologies are those developed for the industry/ organization, which are aligned to the context factors (2002). Research on success factors topics such as leadership competency profiles (Müller & Turner, 2010), stakeholder management (Turner & Müller, 2004) and HR management (Belout & Gauvreau, 2004), take into consideration project context which may or may not be reflected or used in the respective project methodologies. There is a research gap on the impact of individual elements of the applied project methodology on project success and if the project environment moderates this relationship (Joslin, R. & Müller, R. 2014).

Project Success

To achieve a common understanding of what is project success, it needs to be defined in terms of success criteria (Müller & Turner, 2007b). Success criteria are the measures used to judge on the success or failure of a project; these are dependent variable that measure success, Morris and Hough (1987) cited by Müller & Jugdev, (2012).

To achieve project success, success factors need to be in place across the project life cycle (Pinto & Prescott, 1988). Neither Prince2 nor A Guide to the Project Management Body of Knowledge (PMBOK®Guide)—(Fifth Edition) (PMI Publishing Division, 2013) define the term success factors, but both standards make use of the term.

The following definition of project success factors will be used in this study:

Project success factors are elements of a project, which, when influenced, increase the likelihood of success; these are the independent variables that make success more likely (Turner, 1999).

Project success criteria are the measures used to judge on the success or failure of a project; these are the dependent variables that measure success (Morris & Hough, 1988).

These definitions for project success factors and project success criteria will be used in the interviews as well as the quantitative research to ensure a common understanding of terminology.

2.3 Conceptual and Theoretical Framework

Conceptual framework

After completing the literature review, a framework was developed. The framework is shown in figure 2.1.The framework shows three main components, which are, Project Success Factor (PRINCE2), Project Success and Project Success Criteria.

The following dependent and independent variables was used in the study: since the study does not have any hypothesis (but problem statement), the researcher would use the term "component" instead of variable.

- Project success factors (PMM, PRINCE2) are elements of a project, which, when influenced, increase the likelihood of success; these are the independent variables that make success more likely (Turner, 1999).
- Project success criteria (TIME, COST, QUALITY, SCOPE, BENEFIT and RISK) are the measures used to judge on the success or failure of a project; these are the dependent variables that measure success (Morris & Hough, 1988).

Conceptual framework is update from (Robert Joslin a,1, Ralf Müller b, p1382, 2014)

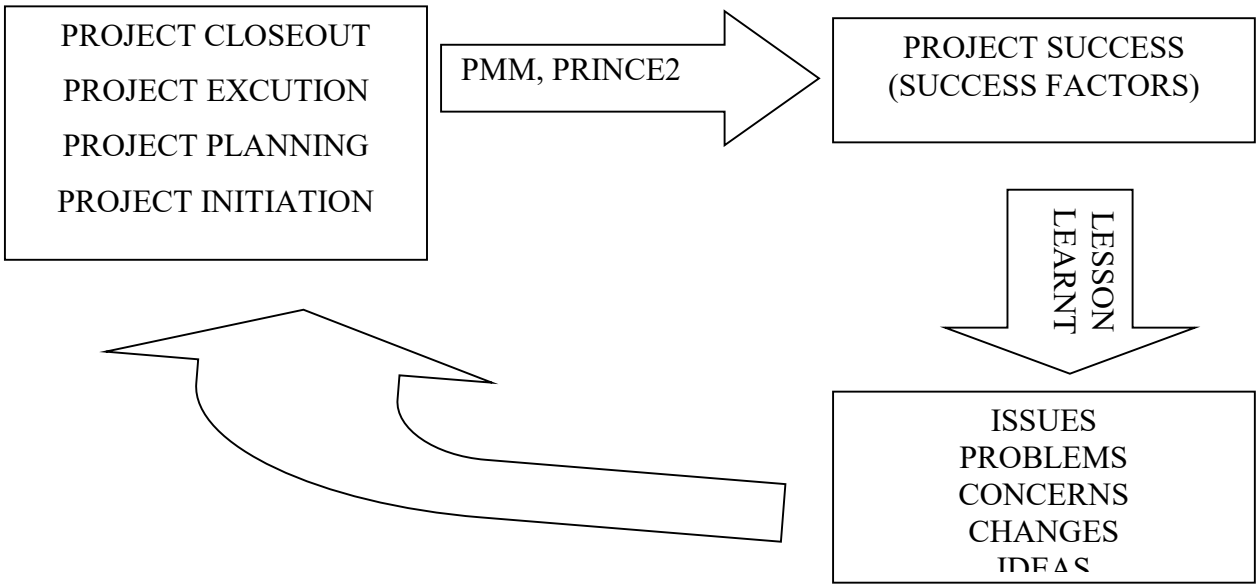


Fig 2.1 Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

After looking at the literature covered by other authors in chapter 2, we will move on to chapter 3, which covers the Research paradigm that was used in the study.

For this research, the descriptive approach has been used, as its characteristics are most suitable for this study. This study used a deductive approach and questionnaire to validate the model shown in fig 2.1

3.2 Description of the study area

The study will focus on a segment; Chainage 110+908 up to Chainage 133+791 km Main Canal Construction Project is part of the Kuraz Sugar Development project.

The Kuraz Sugar Development project site is found in Southern Nations Nationalities and Peoples Regional state (SNNPR). It is located in Omo-Gibe River Basin and falls in Selamago and Gnangatom Woredas of South Omo zone, Menit Shasha and Maji Woredas of Bench-Maji zone and Decha Woreda of Keffa zone (Kaleb and Lemma, 2017).

The Right Bank Side command area is specifically situated at the Right bank areas of the Omo River. The source of water for Irrigation development is the Omo River is the source for irrigation development. Geographically, the project area is located between 585015 and 630735m N latitudes and between 131246 and 165112m E longitudes. The project area is at a distance of about 950km from Addis Ababa to Hana Mariam town (Kaleb and Lemma, 2017).

3.3 Research Approach and Design

For this research, descriptive approach has been used as its characteristics are most suitable for this study. The company has been using conventional method of project management and has not any record of using project management methodology until they introduced PRINCE2 in 2014. The research paradigm will allow the researcher to find out patterns and regularities between the effectiveness of project management methodologies in irrigation construction project.

When using this approach, a single respondent survey was used. Surveys are done to systematically collect the same data from people around the project. A census of project stakeholders was used for this survey. For data collection, questionnaires based on the research objectives has been used to collect data for the survey. Bulk Email has been also sent to those who are working on the selected particular project, in the form of electronic mail. The results then collected and different statistical tests that include descriptive statistics analysis has been applied.

This study uses a deductive approach and questionnaire to validate the model shown in Fig. 2.1

3.4 Data Type

There are many ways of collecting data namely structured interviews, questionnaires, existing documents, observation, archival records and physical artifacts. In this study, quantitative (nominal), (qualitative) documents has been used in addition to the online questionnaires which was used for the data collection, as they were the most suited for the survey.

The questionnaire developed consisted of questions that were developed by the researcher as well as questions adopted and adapted from other sources. After the first draft of the questionnaire, it was sent to 3 people for pilot testing to ensure that the questions were valid and reliable. From the responses received, corrections were made and the questionnaire were resent for further testing before being finalized and sent to the individuals in the target group. The questioner was prepared using SURVEY MONKEY and was distributed via email. The researcher will provide a pre-defined set of questions with the questionnaire, which required the respondent to select one from five alternative answers. These questions were based on the objectives mentioned in the research proposal and are summarized in table 3.1.

Table 3.1 Research Objective Vs Question on questioner

Research Objective	Variable Being Tested	Question Number in Questioner
Review project	- Resource Mobilization	1

efficiency	- Activities carried out as scheduled - Activities are carried out as per budget - Activities are carried out according to the scope - Activities are carried out according to the expected quality.	2 3 4 5
Review organizational benefit	- Improvement in organizational capability - Met organizational objectives - Yielded business and other benefits - Smooth hand over of project output	6 7 8 9
Explore PRINCE2's impact on the project	- New understanding/ Knowledge gained - End product will be used as planned - Risk register and mitigation - Cost effectiveness of work - Adhered to defined procedures - Controlling the project	10 11 12 13 14 15
Investigate stakeholders satisfaction	- PRINCE2 helped involve end - users - End user satisfaction - Project team satisfaction - Supplier satisfied - Met client's requirement	16 17 18 19 20
Examine future potential of using PRINCE2	- Motivated for future projects - Learned from project - Created more functional system	21,22 23 24,25

Each of the research objectives were listed in table 3.1. The variables to be tested for each objective were then listed and the questionnaire was developed to cover all these variables. From each questionnaire sent it was now easier for the researcher to collect all relevant

information to address the objectives of this research. The questions were created to get as much important feedback as possible to better understand the area of study.

In as much as this was a good way of getting quantitative information in the descriptive paradigm it will have its own weaknesses. The questionnaire does not give an option for thorough explanations, and the researcher could not ask further questions. This would have make the questionnaire longer and much more difficult to analyze later.

After looking at the data collection method in this section, focus was now on the data analysis methods covered in section 3.5

3.5 Source of Data

3.5.1 Primary data sources

The primary data mentioned on table 3.1, column 2, was collected from the client, Consultant (ECDSWC), Contractor + Client (ECWC) through the Project Board, Project Team and Construction site team. In this study, a survey will be used; questioner has been sent via email.

3.5.2 Secondary data sources

To strengthen the reliability of research data and supplement the information missing in the questioner survey, information was collected from other related researches, Journals, the company procedure and policy and relevant corporate reports.

3.6 Census Survey Design

3.6.1 Census design

In this study, the study design will adopt quantitative data collection using standard questionnaire. Three stakeholders namely Client (ECWC, Client sector), Consultant (ECDSWC) and Contractor (ECWC, Contraction sector) has been focus of the study. There are

4 lots with different team members, project managers and team leaders. Census Survey was conducted in the entire project members.

3.6.2 Census determination

Accurate information about given population could be obtained only from census study. The researcher has decided to conduct a survey among the entire project crew. The census survey will be conducted electronically through survey monkey https://www.surveymonkey.com

Table 3.2 Table for Census

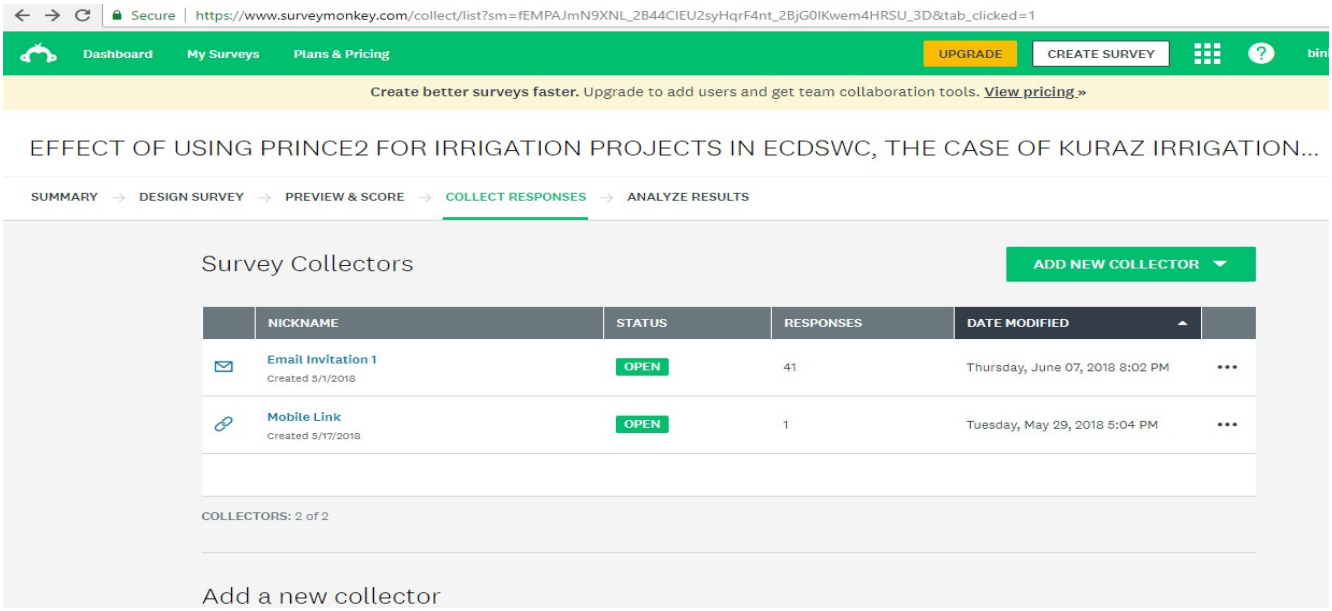
Sections Name	No. of Population
Corporate	4
Project Board	4
Project Manager	1
Construction Team	33
Construction Supervision Team	44
Client Representative team	10
	96

3.7 Data collection methods and tools

The research was conducted mainly on primary data. A Structured Questionnaire was modified from Robert Joslin, Ralf Müller (2014) and has been used to collect data from all stakeholders.

The questionnaire had 25 questions; all questions were answered online through www.surveymonkey.com.

Fig 3.1 Overview of the data collection tool.



3.8 Data Analysis and Presentation

As data means row material, it has to pass through a process of analysis and interpreted accordingly before their meaning and implications are understood. The data analysis method that is mainly used within the descriptive paradigm is qualitative analysis. The data from document analysis and Likert scale questionnaire has been analyzed using measures of frequency and central tendency and has been presented in a narrative form by using tables. Percentage, frequency and mean will be used to understand the relationship between PRINCE2, and PROJECT SUCCESS. The data was processed, analyzed and interpreted using Statistical Package for the Social Sciences (SPSS).

3.9 Ethical Standards and Procedures

According to Rajesh Kumar and C. Kandasamy (2012) ethical consideration in research work are the following:

- **Right to choose**; everyone has the right to determine whether or not to participate in a research project.
- **Right to be informed**: Research participants have the right to be informed of all aspects of a research task. Knowing what is involved, how long it will take, and what will be done with the data, etc.
- **Right to Privacy**: all consumers have right to Privacy.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

96 employees that are working in the project client, consultant and contactor were involved in the online survey; out of 96, 21 do not have email account and could not participate. Therefore, out of the remaining 75, 42 has filled the online survey and the data has been analyzed for the 40 people, since two of the surveys were not complete.

Meanwhile, IBM SPSS Statistics 20 was used to analyze the survey data obtained from www.surveymonkey.com.

4.1 Review project efficiency

Table 4.1 was used to check the role of PRINCE2 to enhance the project efficiency in C110+908 up to C133+791 km.

According to Table 4.1 – 4.5, on average more than 77% of respondents have agreed that a significant change has been observed in the resource mobilization, schedule and budget utilization, scope and quality control after application of PRINCE2 in the project.

Table 4.1 Resource mobilized used as planned.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		34	85.0	85.0	85.0
	1	5	12.5	12.5	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

Table 4.2 Activities carried out as scheduled.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		32	80.0	80.0	80.0
	1	7	17.5	17.5	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

Table 4.3 Activities are carried out as per budget.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		33	82.5	82.5	82.5
	1	6	15.0	15.0	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

Table 4.4 Activities are carried out according to the designed scope.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		33	82.5	82.5	82.5
	1	6	15.0	15.0	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

.

Table 4.5 Activities are carried out according to the expected quality.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		35	87.5	87.5	87.5
	1	4	10.0	10.0	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

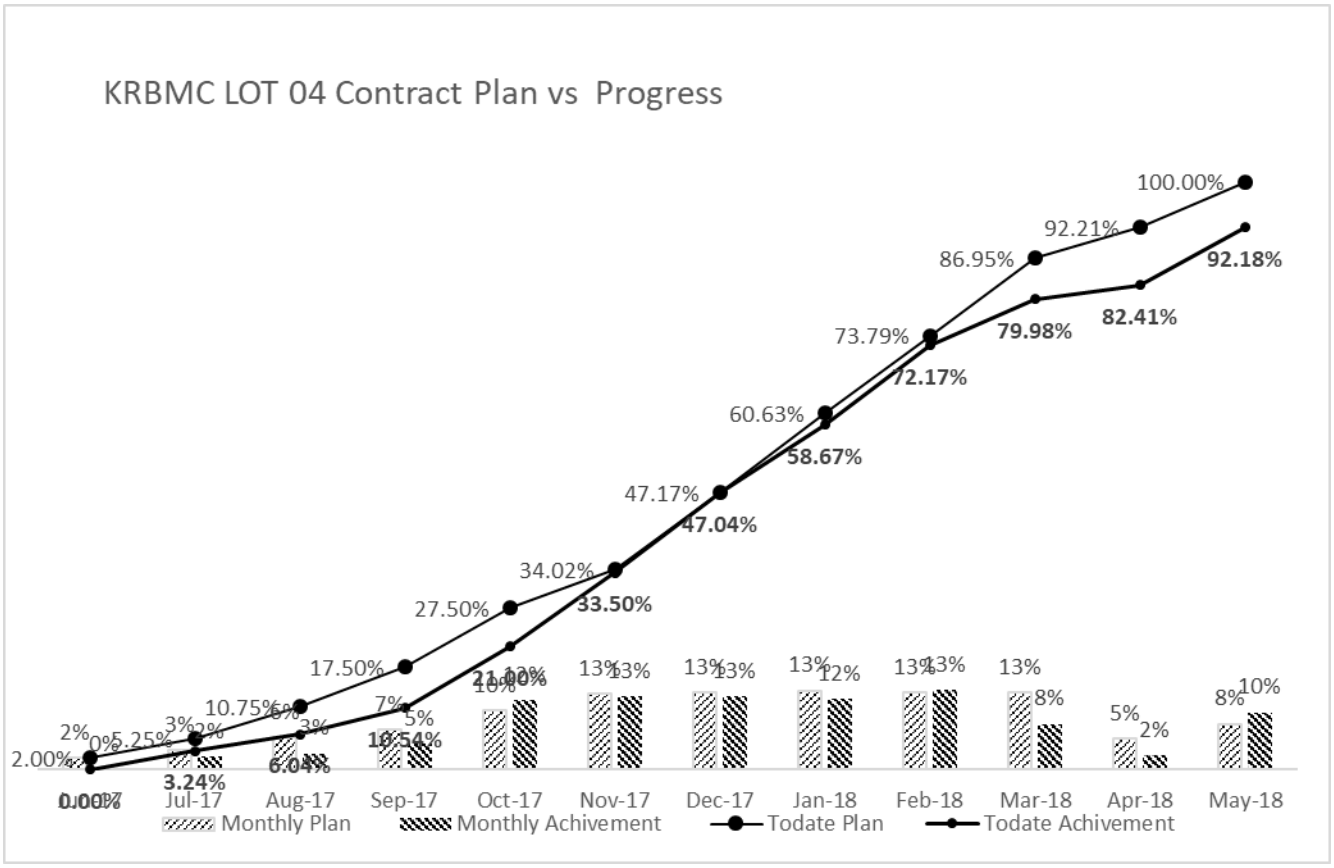
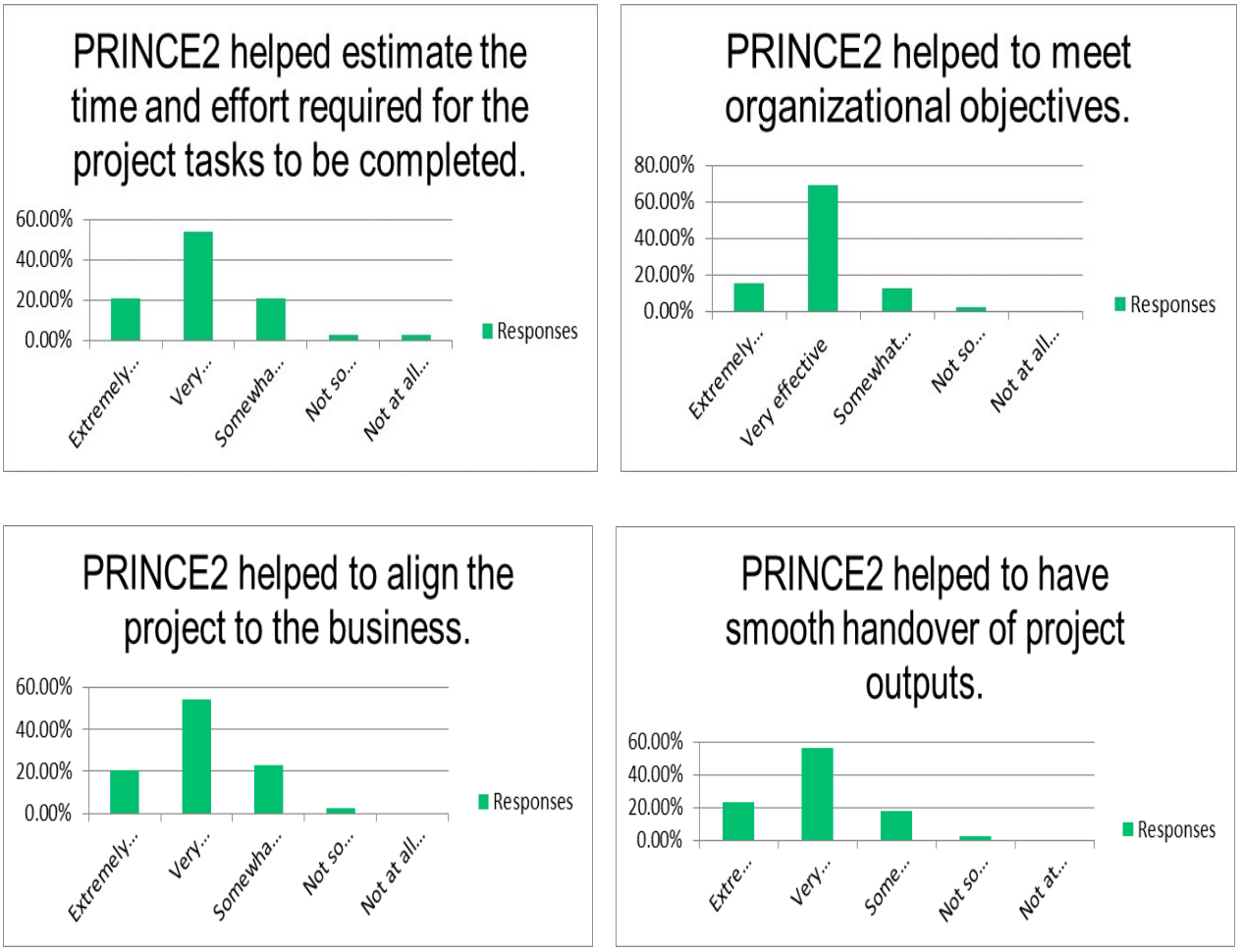


Fig 4.1 Project performance against planned target time

4.2 Review organizational benefit

Graph 4.10 also used to check the organizational benefit obtained as a result of using the project management methodology. According to the result, more than 77% of respondents have agreed that a significant change has been observed in the time and effort estimation after application of PRINCE2 in the project.



Graph 4.1 Analysis for Organizational Benefit

4.3 Explore PRINCE2's impact on the project

After highlighting their idea in the organizational benefit, the respondents had to highlight the overall impact of using PRINCE2 in their project. This was captured in table 4.11 – 4.14.

According to Table 4.6 – 4.10, more than 77% of respondents have agreed that a significant change has been observed in the usage of end- product, Risk register and timely response, cost effectiveness of work and adherence to procedures after application of PRINCE2 in the project.

Table 4.6 Building reliability that end product will be used as planned.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		34	85.0	85.0	85.0
	1	5	12.5	12.5	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

Table 4.7 Timely Risk register and Mitigation.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		31	77.5	77.5	77.5
	1	8	20.0	20.0	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

Table 4.8 Improve in the cost effectiveness of work.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		34	85.0	85.0	85.0
	1	5	12.5	12.5	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

Table 4.9 Project adherence to the defined procedures.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		29	72.5	72.5	72.5
	1	10	25.0	25.0	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

Table 4.10 PRINCE2 helped keep the project under control.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		31	77.5	77.5	77.5
	1	8	20.0	20.0	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

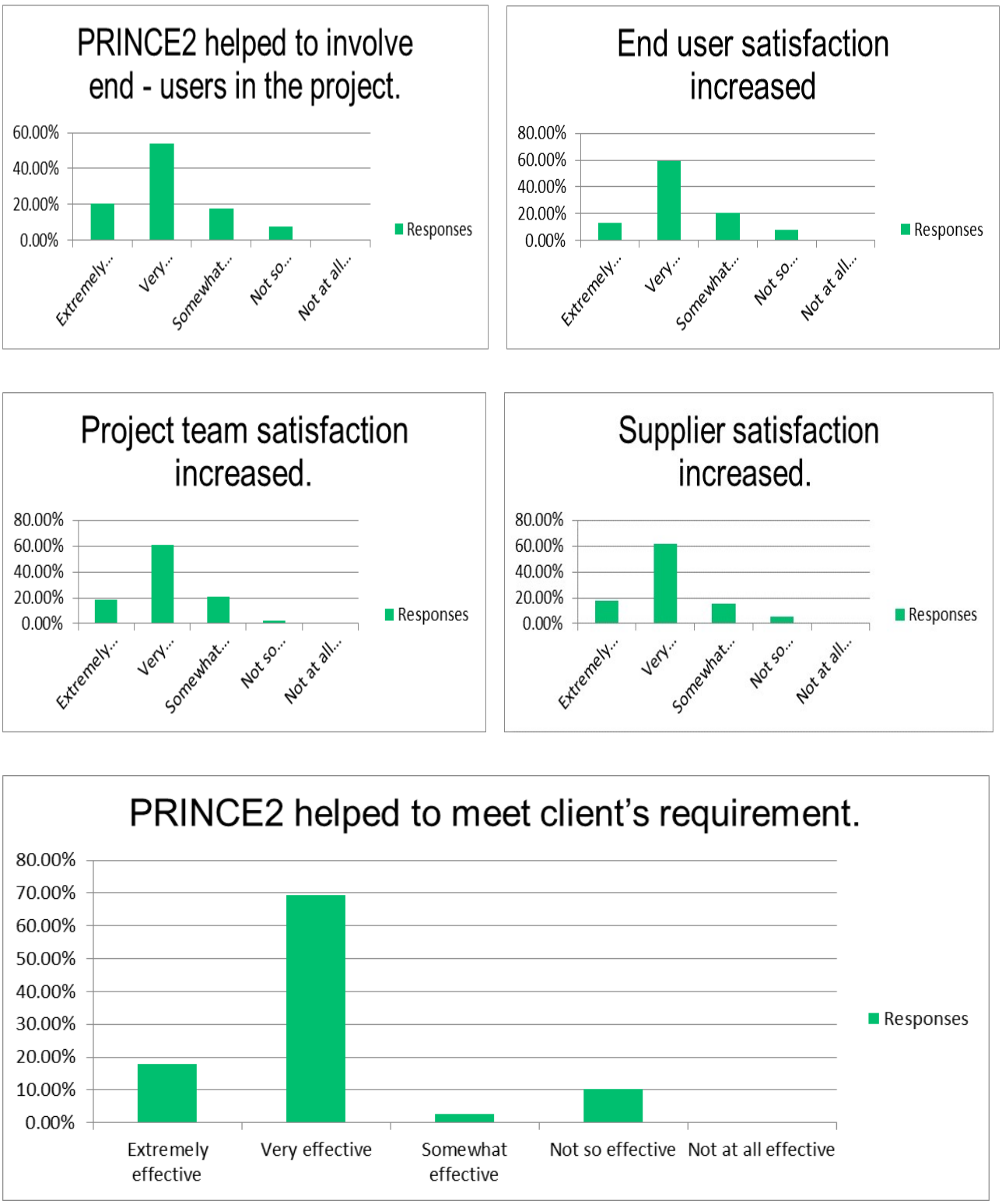
Table 4.11, Project Report October 2018

S.No	Parameters	Unit	Stage 01	Stage 02	Stage 03
1	Scope	Km	7.61	7.61	7.61
2	Cost	Birr	159,056,479.83	159,056,479.83	159,056,4
3	Benefit	Ha	4812.2	4812.2	4812.2
4	Risk				
4.1	Cost overrun Due to design revision	Score	<40	<40	<40
4.2	Overrun due to ambitious plan	Score	<40	<40	<40
4.3	Poor quality due to aggressive plan	Score	<40	<40	<40
4.4	Delay of works on headwork, 0+00 up to 65+451, 65+451 to 84+022 and 84+022 to 110+908		<40	<40	<40

4.4 Investigate stakeholders satisfaction

The respondents were also asked how much the stakeholders are satisfied with the application of PRINCE2 in the project. All the information was summarized in Table 4.15 – 4.20.

According to Graph 4.20, more than 80% of respondents have agreed that end users are directly involving in the project, they are not only owners as before but also part of the project; in addition, stakeholders including the project owner, project team and supplier are satisfied by the project progress after application of project management methodology.



Graph 4.2 Analysis for Stakeholders Satisfaction

4.5 Examine future potential of using PRINCE2

Apart from the above questions, the researcher has also asked about the potential of using PRINCE2 in the future and the results are summarized as follows. According to Table 4.12 – 4.16, more than 77% of respondents have agreed that project impact on beneficiaries is visible after introduction of PRINCE2.

Table 4.12 Visibility of project's impacts on beneficiaries.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	34	85.0	85.0	85.0
	2	5	12.5	12.5	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

Table 4.13 Stakeholders motivation to apply PRINCE2 for future projects.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	32	80.0	80.0	80.0
	2	7	17.5	17.5	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

Table 4.14 PRINCE2 helped to take "lesson learned" from the project.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		30	75.0	75.0	75.0
	1	9	22.5	22.5	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

Table 4.15 PRINCE2 helped develop a more functional system.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		34	85.0	85.0	85.0
	1	5	12.5	12.5	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

Table 4.16 PRINCE2 provided useful guidelines of working on a project.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		32	80.0	80.0	80.0
	1	7	17.5	17.5	97.5
	Extremely effective	1	2.5	2.5	100.0
	Total	40	100.0	100.0	

CHAPTER FIVE

MAJOR FINDINGS, CONCLUSIONS AND RECOMMENDATION

5.1 Major Findings

This section shows the overall picture of the study.

- Project Completion: Ensures that the project will be 100% completed in time with 15% variation cost.
- Quality: 85.7% of the samples test has fulfilled the quality requirement.
- Documentation and Recordings: Detail documentation has been observed and will ensure that future changes are made with little extraordinary effort.
- Project system closure: this includes closing the financial system i.e. all payments and work termination were improved.

5.2 Conclusion

Understanding the gap in the project performance, Ethiopian Construction Design Supervision Works Corporation had started applying PRINCE2 in Kuraz Project. It was started, as pilot few year back, yet the researcher could not find any pervious assessment document. The study attempted to assess effect of the project using primary and secondary data sources. A total of 42 respondents has successfully submitted their online survey; 2 were incomplete and has been out of the analysis process.

The researcher, who had been using PRINCE2 while he used to work in the same company, has reviewed previous reports and himself was involved in the previous projects. The company has been using a conventional method of project management (sense of contract administration) and was not successful in most of its project; over costing, under quality works, extended project duration and scope management was part of the history (may be still in the other projects).

However, after started using PRINCE2, significant amount of change has been recorded; even though majority of the staff did not yet aware of its importance.

The strengths of the using PRINCE2 were; it helped the project to be under control. Quality, Cost, Time, Scope, Risk, Benefit and Stakeholder Management are core of the project.

Therefore, since using PRINCE2, Quality of the work is significantly increased; Time, Scope and Cost are under control as well. The project owner is seriously aware of the risks and expected benefits ahead and stakeholder management and communication has also significantly improved.

5.3 Recommendations

To the company

- Shall give continuous capacity building training to its employees, so that they will be fully use the PMM.
- Shall closely work with all the stakeholders so that the next projects will pass though PRINCE2.
- The company should hire more young people who can easily assimilate technology.
- The company should regularly assess effectiveness of PMM's they are using.
- The company shall also try other PMM's like PMBOK for other projects.

To the staffs

- Change resistant employees should look into inside and update themselves with the current technologies.
- They shall be cooperative for researchers.

To future researcher

- The researcher hopes this paper will serve as a corner stone for future similar projects.

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Appendix I: Questionnaire

St. MARY'S UNIVERSITY

Department of Project Management

Introduction

Thank you in advance for your voluntary participation in completion of this questionnaire. I am doing thesis on "Assessing Effect of Using PRINCE2 for Irrigation Projects in ECDSWC, the Case of Kuraz Irrigation Project".

The purpose of this questionnaire is to gather information about the utilization of PMM PRINCE2 in the corporation. Your contribution and honest responses are very important in the study and will help gain better understanding on how to improve and expand it for other projects. Your response will only be used for research purpose.

EFFECT OF USING PRINCE2 FOR IRRIGATION PROJECTS IN ECDSWC, THE CASE OF KURAZ IRRIGATION PROJECT

St. MARY'S UNIVERSITY

Department of Project Management,
Survey for MBA Thesis Consumption

Thank you in advance for your voluntary participation in completion of this questionnaire. I am doing thesis on "THE IMPACT OF USING PRINCE2 FOR IRRIGATION PROJECTS IN ECDSWC, THE CASE OF KURAZ IRRIGATION PROJECT."

The purpose of this questionnaire is to gather information about impact observed after introduction of PRINCE2 in the company, particularly for Kuraz Project. Your contribution and honest responses are very important in the study and will help gain better understanding on how to use PMM to increase project performances. Your response will only be used for research purpose.

1. PRINCE2 helped resource mobilized used as planned.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

2. PRINCE2 helped activities carried out as scheduled.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

3. PRINCE2 helped activities are carried out as per budget.

- [ ]

Extremely effective

- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

4. PRINCE2 helped activities are carried out according to the designed scope.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

5. PRINCE2 helped activities are carried out according to the expected quality.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

6. PRINCE2 helped estimate the time and effort required for the project tasks to be completed.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

7. PRINCE2 helped to meet organizational objectives.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

8. PRINCE2 helped to align the project to the business.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

9. PRINCE2 helped to have smooth handover of project outputs.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

10. PRINCE2 helped to gain new understanding/ Knowledge.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

11. PRINCE2 helped to be reliable that end product will be used as planned.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

12. PRINCE2 helped in risk register and mitigation.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

13. PRINCE2 helped to improve cost effectiveness of work.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

14. PRINCE2 helped project adhered to defined procedures.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

15. PRINCE2 helped keep the project under control.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

16. PRINCE2 helped to involve end - users in the project.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

17. End user satisfaction increased

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

18. Project team satisfaction increased.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

19. Supplier satisfaction increased.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

20. PRINCE2 helped to meet client’s requirement.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

21. PRINCE2 helped to make the project’s impacts on beneficiaries visible.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

22. Stakeholders motivated to apply PRINCE2 for future projects.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

23. PRINCE2 helped to take "lesson learned" from the project.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

24. PRINCE2 helped develop a more functional system.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective

25. PRINCE2 provided useful guidelines of working on a project.

- [ ] Extremely effective
- [ ] Very effective
- [ ] Somewhat effective
- [ ] Not so effective
- [ ] Not at all effective