MONITORING AND EVALUATION OF POWER TRANSMISSION PROJECTS IN ZESCO

By

Providence Sepeti

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NAME	**SIGNATURE**
……	…….
Supervisor	
……	…….
Examiner	
……	…….
Examiner	
……	…….
Examiner	
……	…….
Dissertation Chairperson	

ABSTRACT

Monitoring and Evaluation (M&E) is an essential aspect in the management of any project. It explains whether a project is meeting its objectives and identifies project areas that need to be adjusted. ZESCO limited is Zambia's largest utility company responsible for generation, transmission and distribution of electricity. Transmission projects in ZESCO are one of the several projects that the utility company undertakes. Currently ZESCO has no prescribed guide that can be used for monitoring and evaluation of projects.

The main aim of this study was to develop a time and scope M&E framework for power transmission line projects. The study was guided by three objectives: 1) to scrutinise how power transmission line projects in ZESCO were being monitored and evaluated; 2) to determine ways of managing project information for transmission projects; and 3) to develop guidelines to counter the challenges the organisation was facing in carrying out M&E for power transmission projects.

The study reviewed data from the following transmission projects (through detailed analysis of the project documentation); Kariba North Bank – Kafue West 330kV transmission project, Pensulo – Kasama 330kV transmission project, restringing of Kafue town - Mazabuka 88kV line and Leopards Hill to Coventry 132kV transmission line project. A non-probabilistic sampling method called judgement sampling was used in this study. The main research instruments employed in this study were the questionnaire and interview guide. Observation was also used. The majority of the data collected were qualitative in nature.

The study established that monitoring and management of information on transmission projects in ZESCO needed to be improved. There was no guide that project managers could use to effectively monitor projects under their control. There was lack of uniformity in the methods used for different projects. Evaluation of transmission projects was rarely carried out on ZESCO projects. Evaluations were mostly carried out on projects funded by international agencies like the World Bank. The study further established that the unit tasked to carry out M&E did not receive the required support from ZESCO management. The M&E framework was therefore developed to guide Project Managers in their work. The study established guidelines to counter the challenges that the organisation was facing in carrying out M&E.

Recommendations were also made on ways of improving information management on transmission projects. It is recommended that Directors and Senior Managers who bear responsibility for effecting key corporate decisions be capacitated on the importance and crucial role that M&E provides for an institution during project implementation. There should also be funds in the budget specifically allocated for M&E of power transmission projects.
Keywords: monitoring, evaluation, project, management, transmission, ZESCO

DEDICATION

This report is dedicated to my lovely wife, Bwile and my parents Francis and Noria for their love for me.

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ABBREVIATIONS AND ACRONYMS

ADB	-	African Development Bank
AEEP	-	Africa –European Union (EU) Energy Partnership
CSF	-	Critical Success Factor
EMP	-	Environmental Management Plan
EU	-	European Union
FGE	-	Fund for Gender Equality
GAP	-	Global Aids Programme
GEF	-	Global Environmental Facility
GF	-	Global Fund
HIV	-	Human Immunodeficiency Virus
ICT	-	Information Communication Technology
IFRC	-	International Federation of Red Cross
INTRAC	-	International NGO Training and Research Centre
IT	-	Information Technology
kV	-	Kilo Volt
M&E	-	Monitoring and Evaluation
MAMA	-	Mobile Alliance for Maternal Action
NCC	-	National Council for Construction
NFI	-	National Foundation for India
PED	-	Planning and Evaluation Department
PIU	-	Project Implementation Unit
PM	-	Project Manager
PMI	-	Project Management Institute
PMP	-	Performance Management Plan
REA	-	Rural Electrification Authority
SCADA	-	Supervisory Control And Data Acquisition
UDS	-	Umhlaba Development Services
UN	-	United Nations
UNDP	-	United Nations Development Programme

UNEP	-	United Nations Environmental Programme
US	-	United States
ZEMA	-	Zambia Environmental Management Agency

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Monitoring and Evaluation (M&E) is an essential part of any project or programme, large or small. A project is a temporary endeavor undertaken to create a unique product, service, or result while a programme is defined as a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually (PMI, 2008). M&E explains whether a project or programme is making a difference and for whom; it identifies project or programme areas that are on target, aspects of a project or programme that need to be adjusted and replaced due to poor performance. Information captured from M&E can lead to better decisions about programme investment and management in general. Additionally, M&E can demonstrate to programme implementers and funders that their investments are paying off (Peersman & Rugg, 2010). Several studies have been carried out with the aim of determining the Critical Success Factors (CSFs) which contribute to project success. Kamau & Mohamed (2015) contend that some CSFs appear consistently in a number of studies and one of such factor is the M&E function. Other CSFs include; budget performance, schedule performance and quality performance.

Chandurkar & Sen (2014) explain that, "in monitoring, we systematically gather information about our activities, track their progress and assess deviations to ensure course correction, when and where necessary". The course correction action is what referred to as control. Monitoring leads to control. According to Mwangu & Iravo (2015), monitoring and controlling the progress of a project is one of the most important functions of project management because it is a determinant of project success. Mwangu & Iravo (2015) further state that monitoring and control are often regarded as a single activity because they are both project management functions, sequential and closely related. Evaluation on the other hand is "an unbiased assessment of the achievement of the project objective and it seeks to analyse the differential contribution of the project towards the desired change" (Chandurkar & Sen, 2014).

Most projects and programmes today have incorporated M&E in their management process. Alva (2012) states that in order for Mobile Alliance for Maternal Action (MAMA) to achieve its overall goal of improving maternal, new-born and child health among other target population in developing countries, there is need for an appropriate tool for planning, managing, monitoring and evaluating. According to Mendoza (2011), M&E is a requirement included in the Fund for Gender Equality (FGE) project document (the legal signed agreement). In the field of public health, understanding a complex epidemic such as the Human Immunodeficiency Virus (HIV) epidemic, and determining the effectiveness and efficiency of the programmatic response requires a sustainable, comprehensive, strategic and multi-method M&E system (Peersman & Rugg, 2010).

Various reports in the energy sector have recommended the use of M&E in projects and programmes. For instance, the terminal evaluation report of the United Nations Environmental Programme (UNEP)/Global Environmental Facility (GEF) revealed that, project monitoring was essential (Gron & Chisonga, 2014). The audit of the Environmental Management Plan (EMP) of the Caprivi interconnector transmission project linking Zambia and Namibia recommended that a monitoring programme be developed at the beginning of the project. The audit further recommended that a specific person/persons be assigned to ensure that activities related to daily inspection and monthly monitoring were carried out (Luxembourg, 2012). The outcome report of the Africa – European Union (EU) Energy Partnership (AEEP) energy stakeholder dialogue in Zambia in relation to the existing energy policy framework recommended that government should formulate a rigorous M&E framework (AEEP, 2013).

Implementation of projects requires that M&E is conducted in a systematic and orderly manner. Therefore, there is need for projects to have M&E systems in place. One of the important components of an M&E system is the indicator matrix or an M&E framework. The M&E framework is a critical tool for planning and managing data collection, analysis and use of data (Chaplowe, 2008).

Kent (2011) report that:

> *In recent years, efforts to strengthen M&E systems especially by organisations in the health sector have yielded progress. One of such organisation is the Global Fund to Fight Aids, Tuberculosis and Malaria (GFATM). However, the organisations have certain weaknesses in both monitoring and evaluation. In terms of monitoring, data that are routinely collected are often not analysed to inform programme management, especially at local programme management levels. As for evaluation, very few programmes consistently plan or conduct evaluative activities. For most countries, the M&E agenda is often affected by donor influences and therefore not aligned with national priorities.*

The African Development Bank (ADB) Group in the Victoria Falls – Katima Mulilo 132kV Interconnection Project reported that although the project had achieved its power transfer objectives, there were various shortcomings related to the overall project management which included weak post-project M&E. One of the lessons from the project was that the availability of monitoring data and statistics on the performance of the transmission lines helps improve ZESCO efficiency and operational effectiveness (Pateguana & Manai, 2011). The monitoring data can be made available if there is a good M&E system in place.

In the rural electrification programme, Dastgeer et al. (2011) observed that the monitoring and reporting structure for the Rural Electrification Authority (REA) was weak. The Authority did not have resources to undertake M&E on a regular basis. The organisation lacked dedicated M&E unit and staff. The reporting structure for REA was weak and needed improvement. The reports contained little analysis of the achievements against set targets and the key performance indicators (KPIs) were not reported upon. There was also no consistency in reporting at REA and at times planned targets changed from one report to the other without explanation. This reporting can be enhanced if there is an M&E framework in place.

1.2 Statement of the Problem

Adams et al. (2006) reported that a lot of energy projects are faced with the challenge of developing reliable, cost effective and credible means of measuring their effectiveness. Shaipra (2011) as reported by Karani, Bichanga & Kamau (2014) stated that effectiveness measures the extent to which a development programme or project is achieving the specific objectives set for it. Maria & Manai (2012) reported that availability of monitoring data and statistics on the performance of the transmission lines would help improve ZESCO efficiency and effective operational performance. A recommendation was made that projects should be continuously monitored by the project team to determine whether they are meeting the set objectives within the planned time and cost. All this can be enhanced if there is an M&E framework in place. It is important that during project design, the broad framework of the M&E is established (UDS, 2016).

The need for M&E information on transmission projects is important to stakeholders such as ZESCO management and project funders who would want to know how resources are being utilised and whether works are carried out as originally planned. This information on the performance of transmission projects can be made available if there is a robust M&E framework. The goal of the M&E framework is to establish a well-coordinated, harmonised M&E system (Karani et al., 2014). According to Alotaibi (2011) as reported by Kamau & Mohamed (2015), the lack of an evaluation framework has a negative effect on the project success. Kamau & Mohamad (2015) further state that project managers are required to undertake more rigorous monitoring and evaluation of the projects and develop frameworks and guidelines for measuring impact. Praefecke (2010) further supported this assertion stating that donor-funded projects require a comprehensive M&E plan which includes an M&E framework.

Monitoring and Evaluation frameworks and guides are already in existence. Even if M&E frameworks already exist, it is important for various project types to have specific M&E frameworks. Common accountability frameworks have several benefits but must be adaptable to different contexts (INTRAC, 2011). This is because different projects even if they are similar, have unique outputs and indicators which are different.

Until the year 2013, ZESCO did not have a dedicated M&E unit for its projects. The unit called 'Corporate Project' formed in 2013 was tasked to monitor project performance within the institution. By 2015, this unit was still in its formative stages. The requisite M&E procedures and systems had not been actualised. Despite the available literature on the importance of M&E, ZESCO did not have documented M&E guidelines for its transmission projects thereby putting transmission projects at risk of poor performance. As a result project managers did not have guidelines to enable them monitor their projects. This contributed to poor performance of projects.

The continued implementation of capital projects such as power transmission projects without a well formulated and strategic M&E framework could not yield the desired results. It is against this background that this study was undertaken to develop a time and scope M&E framework for power transmission line projects in ZESCO.

1.3 Aim of the Study

The aim of the study was to develop a time and scope M&E framework for power transmission line projects in ZESCO to be used during implementation of projects.

1.4 Objectives

The specific objectives were to:

i. Scrutinise how power transmission line projects in ZESCO were being monitored and evaluated;
ii. Determine ways of managing project information for transmission projects; and
iii. Develop guidelines to counter the challenges the organisation was facing in M&E of power transmission line projects.

1.5 Research Questions

i. How should M&E for power transmission line projects be carried out?
ii. How should information on power transmission line projects be managed?

iii. What challenges is the organisation facing in carrying out M&E for Power Transmission projects?

1.6 Significance of the Study

It is hoped that the findings of this study will enhance the effectiveness and general efficiency in management of transmission projects. Project Managers will have a guide to use in monitoring their projects. Corporate management as well will have a guide to use in the evaluation of transmission projects.

The findings of this research are expected to broaden the understanding of Project Managers and teams on challenges affecting M&E in projects. The community likewise is bound to benefit as the study highlights the importance of community participation in M&E of projects. It is also hoped that the implementation of the findings from the study will improve donor confidence in the country's power electricity delivery and keep stakeholders like the general-public updated on the progress of the transmission projects.

1.7 Organisation of the research

This report is organised as follows:

Chapter 1 introduces the study. It outlines the background of the study, statement of the problem, purpose of the study and significance of the study.

Chapter 2 presents the various literature that was consulted in the study. It looked at project management and M&E of projects.

Chapter 3 presents the research methodology that was adopted for the study. It outlines the research design, sampling technique and instruments used in conducting the study.

Chapter 4 presents the research finding. It outlines the analysis and discussion of the research findings.

Chapter 5 presents the conclusions drawn from the findings and recommendations that were made to improve M&E.

1.8 Chapter Summary

This chapter set out to introduce and outline the area of investigation which is M&E of power transmission line projects in ZESCO. The research problem was defined and objectives of study given. The next chapter reviews different literature that is consistent and related with the study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In this chapter, different literature material that contained information that was related and consistent with this study was reviewed through use of text books, journals and published studies. This section is important as it brings out important information that is known about our study.

2.2 Projects and their Management

The Project Management Institute (PMI) defines a project as a temporary endeavour undertaken to create a unique product, service, or result (PMI, 2008). Like most organizational efforts, the major goal of a project is to satisfy a customer's need. Larson & Gray (2011:p.5) outline the major characteristics of a project as follows:

1. *An established objective;*
2. *A defined life span with a beginning and an end;*
3. *Usually, the involvement of several departments and professionals;*
4. *Typically, doing something that has never been done before and*
5. *Specific time, cost, and performance requirements.*

Another vital perspective in one's understanding of M&E of projects is project management. The PMI (2008) defines project management as the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Project management is accomplished through the appropriate application and integration of the 42 logically grouped project management processes comprising the five process Groups. These five process groups are: Initiating, planning, executing, monitoring and controlling and closing (PMI, 2008). Managing a project typically includes: Identifying requirements, addressing the various needs, concerns, and expectations of the stakeholders as the project is planned and carried out, balancing the competing project constraints including, but not limited to: scope, quality, schedule, budget, resources and risk (PMI, 2008).

2.3 Monitoring and Evaluation

Monitoring, evaluation and control are very important management functions for ensuring that project objectives are fully achieved and that the project remains on course (Mwangu & Iravo, 2015). The M&E guide by the Planning and Evaluation Department (PED) of the International Federation of Red Cross (IFRC) and Red Crescent Societies define monitoring as the routine collection and analysis of information to track progress against set plans and check compliance to established standards (IFRC, 2011). In the case that the project is off track against set plans, the information collected in monitoring helps to put the project on track in an exercise called controlling. According to Odiorne (1965) as reported by Mwangu & Iravo (2015), there are three activities that are involved in controlling. These activities are; rescheduling activities, reallocating resources and altering project objectives. Monitoring and control are often regarded as a single activity because they are both project management function, sequential and closely related (Mwangu & Iravo, 2015).

Monitoring is an important element of project management as it provides the necessary information needed in controlling the project. Peersman & Rugg (2010) report that "Monitoring gives information on where a policy, programme or project is at any given time. It can provide a 'snapshot' of the situation or programme status". In project management, information on how the project is meeting the set plans is cardinal. Effective implementation of complex projects like power transmission line projects requires the availability of information on the status of various project activities. This information can be acquired by having a sound monitoring system in place. Monitoring helps in the tracking of progress and can notify management when things are going wrong so that they take corrective action.

The results of monitoring are used as input to evaluation. According to Farell et al. (2002), as reported by Basheka & Byamugisha (2015), evaluation assesses the value or worth of a programme. IFRC (2011) define evaluation as an assessment, as systematic and objective as possible, of an on-going or completed project, programme or policy, its design, implementation and results. Gosling (2010) further states that an evaluation

attempts to link a particular output or outcome directly to an intervention after a period of time has passed. Chandurkar & Sen (2014: p.58) state that:

> *The objective is what is sought in a project once all the project activities are completed. Thus, it is this objective that is the domain of evaluation. Evaluation provides an estimate of what has been achieved relative to what was to be achieved. Unlike monitoring which is concerned with 'what we are doing', evaluation looks at or measures 'what we have done'. An evaluation also seeks to analyse the differential contribution of the project in achieving the desired change*.

A good evaluation can help to predict if and when the project objectives will be met under conditions of a particular time.

Chandurkar & Sen (2014: p.59) further add that:

> *An evaluation answers a number of related questions such as:*
> - *Relevance: whether the rationale of the project holds true;*
> - *Efficiency: how well the inputs have translated into outputs;*
> - *Effectiveness: the level of achievement of project objective;*
> - *Results: the level of achievement of immediate, intermediate and long-term project results;*
> - *Impact: the incremental change that could be attributed to the project and*
> - *Sustainability: whether or not the change is long-lasting*

There is a thin boundary between monitoring and evaluation. The United Nations Development Programme (UNDP) (2009) reported that the aims of monitoring and evaluation are similar; to provide information that can help in decision making, improve performance and achieve planned results. It is clear that both monitoring and evaluation are aimed at helping projects to meet projects objectives on time. There are however a few differences between monitoring and evaluation. Kent (2011) summarises the differences between monitoring and evaluation in Table 2-1. While monitoring is

directed at cross-checking whether the work is on track over a period of time, evaluation seeks to assess the value created from the work (Chandurkar & Sen, 2014).

Table 2-1 Monitoring and Evaluation

Dimension	**Monitoring**	**Evaluation**
Frequency	Periodic, occurs regularly	Episodic
Function	Tracking/oversight	Assessment
Purpose	Improve efficiency, provide information for reprogramming to improve outcomes	Effectiveness, relevance, impact, cost-effectiveness (population effects)
Focus	Inputs, outputs, processes, work plans (operational implementation)	Effectiveness, relevance, impact, cost-effectiveness (population effects)
Methods	Routine review of reports, registers, administrative databases, field observations	Scientific, rigorous research design, complex and intensive
Information Source	Routine or surveillance system, field observation reports, progress reports, rapid assessment, programme review meetings	Same source used for monitoring, plus population-based surveys, vital registration, special studies

Dimension	Monitoring	Evaluation
Cost	Consistent, recurrent costs spread across implementation period	Episodic, often focussed at the midpoint and end of implementation period

Source: Kent (2011)

Peersman & Rugg (2010) report that, there are different methods of carrying out M&E. These methods include; activity M&E, process M&E and result - based M&E. Result – based M&E has got many and growing applications (Kusek & Rist, 2004). The results from projects include; outputs, outcomes or impacts. The many and growing applications for result – based M&E are attributed to the growing demand for accountability and demonstrable results. The motivating factor for M&E is improving project performance and helping in meeting the desired project objective.

In the implementation of result – based M&E, the needs of the people implementing projects and programmes should be considered. Management should ensure that personnel implementing projects and programmes have the necessary resources and tools to do the work. Management should not just be interested in the results but also ensure that the resources needed to do work are provided.

2.4 Purpose of Monitoring and Evaluation

Close M&E during implementation leads to project success (Karani et al., 2014). Monitoring and evaluation provides information that is needed for programme and project management. Programme and project management is about making the correct decisions to achieve the programme and project goals and objectives. The Global Aids Programme (GAP) (2008) as reported by Peersman & Rugg (2010) states that programme management involves good programme planning (such as setting realistic goals and objectives and ensuring that programme activities are in line with these), good programme implementation (such as meeting timelines and ensuring the quality of the programme) as well as good resource management (such as monitoring the use of funds

and ensuring value for money). Patton (1997) as reported by Peersman & Rugg (2010) further states that the first and perhaps the most important guiding principle for all M&E efforts is that information should be collected with the intention of being used for programme improvement.

Wagner et al. (2005) in the M&E of ICT in Education Projects Hand book give the purpose of M&E as to provide credible options based on the best information that can be gathered to support one or another decision. Kim et al. (2013) in the Study of M&E in Six Norwegian Civil Society Organisations state that the purpose of evaluation is usually said to be a combination of learning, guidance and accountability. Josephine, Simon & John (2014) further add that a strong evaluation would use multiple methods to triangulate data and draw conclusions about what worked and why.

Monitoring and evaluation provides information that is needed by funders and beneficiaries of projects or programmes. The availability of M&E information also facilitates data sharing among different stakeholder. Peersman & Rugg (2010) report that M&E data are collected to justify the use of programme resources vis-à-vis progress made and objectives achieved. Funders of programmes are particularly interested in these data, as there is often a requirement for the programme to show certain levels of performance in order to maintain the funder' support. Programme beneficiaries are also keenly interested in knowing that the programme targeted at them is effective and guarantees value for money. Therefore, as can be seen from above, M&E is a good management tool and it helps in the improvement of project performance and achieving of projects goals.

2.5 Requirements for Monitoring and Evaluation

Monitoring and evaluation systems should be basic and easy to follow. Kavlie & Sleeckz (2011) report that a monitoring system should include results that are appreciated and understood by a wider audience. The emphasis on effective results frameworks should be on simplifying systems, making them useable and ensuring that systems are contributing to staff confidence. The M&E process should be kept simple and flexible (INTRAC, 2011).

In project management, it is important to have projects that are well planned. Project planning sets the crucial foundation for project M&E and can significantly affect the success or failure of an M&E process (UDS, 2016). Mwangu & Iravo (2015) state that planning defines the strategies, tactics and methods for achieving project objectives. The way in which M&E is to be carried out should be part of the project plan. It is important that during the design stage of a project, the broad framework of the M&E is established (UDS, 2016). If planning is poor or non-existent, it is much harder to develop a good M&E system (INTRAC, 2011). It is difficult to carry out M&E on a project which is not well planned. The way in which a project intends to carry out M&E should be part of the implementation plan.

Monitoring and evaluation requires that a logical framework be designed at the beginning of the project. A logical framework is a tool for designing, monitoring and evaluating projects (Myrick, 2013). Chandurkar & Sen (2014) explain that:

> *To ensure that the project achieves its desired results, it is necessary to prepare a blueprint of change. This requires a thorough cause-and-effect analysis underlying the project logic or what is known as developing the 'theory of change'. Theory of change is an explicit articulation of what change is sought to be achieved and how it is to be effected through the project intervention. It forms the roadmap to the envisioned change, highlighting the necessary and sufficient conditions required for ushering in the change in a given context. Although the theory of change has been variously known as 'impact pathways', logic model', and 'results framework', what is common to all these models and frameworks is they represent the pathways of change based on sound cause-effect logic. The theory of change is a conceptual map of the terrain of change on which the project is located, providing a pathway or direction of causality of how the project is to lead to the changes desired. A well-articulated theory of change helps us in identifying the roadmap of change, clarifying its assumptions and claims, and making explicit the chain of causality from inputs to outputs to outcome and finally impact.*

Monitoring and evaluation staff should have clear roles and responsibilities. Dessler (2013) states that employees should have clear roles and responsibilities. In any organisation or project, the responsibility of M&E staff should be clearly known. Monitoring of development results take place at different levels. These levels are national, programme, outcome and project output (UNDP, 2009). The UNDP (2009) further report that while monitoring functions of projects should be assigned to project team members, monitoring responsibilities at outcome and higher result levels should be collective efforts. Chandurkar & Sen (2014: p.57) explain that

> *The best monitoring is done by those who are involved in the day-to-day implementation of project activities. This is because they know best what activities have been planned and are currently underway and therefore, are in the best position to gauge whether they are on track or not.*

Monitoring of projects therefore, should be done by project team members under the supervision of the project manager.

The support of senior managers in any organisation is important in setting up and implementing M&E systems. According to Mustaffa (2012) as reported by Kamau & Mohamed (2015), management commitment is a key aspect when it comes to the implementation of M&E since they are key decision makers in an organisation. In order to develop better M&E systems for learning and improving, the support of senior managers and trustees is needed (INTRAC, 2011). The involvement of senior managers is likely to enhance the support that M&E units require. It is therefore important that senior managers are capacitated with information on the importance of M&E.

The other requirement for M&E are the resources. Human and financial resources are necessary for M&E. According to Magondu (2013) as reported by Mohamed & Kamau (2015), staff capacity both in number and skills are instrumental in any effective implementation and sustainability of M&E. The implementation of projects require that

project team members have basic skill of M&E. Project team members should be able to collect data on the progress of the project and compare it to the implementation plan so that an assessment is done as to whether the objectives are being met. Karani et al. (2014) stated that incompetency on the use of M&E systems by project managers affects the M&E of projects. Therefore, project managers and their teams should be capacitated with necessary skills needed to carry out M&E. This should include skills in management and leadership (Kamau & Mohamed, 2015). If people carrying out M&E lack the basic M&E skills, they will be wasting time and resources collecting unnecessary information and leaving out important information. Lack of time and financial resources is another challenge in the M&E process. Peersman & Rugg (2010) explain that "there are many programme aspects that one might like to collect data about. However, all data collection has costs in terms of time and often financial resources". Therefore, it is important to decide what information is most needed to make necessary decisions about the programme.

In M&E, it is important to engage stakeholders. A good M&E team is one that has good stakeholders' representation (Kamau & Mohamed, 2015). Stakeholders will help in getting the necessary information that they need. Peersman & Rugg (2010) state that in order to determine the types of data needed, it is important to find out what stakeholders want to know about the programme and thus, how data are intended to be used.

2.6 Project Communication Management

According to the PMI (2008: p.243):

> *Project communication management include the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval, and ultimate disposition of project information. Project managers spend the majority of their time communicating with team members and other project stakeholders, whether they are internal (at all organisational levels) or external to the organisation. Effective communication creates a bridge between diverse stakeholders involved in a project, connecting various cultural and*

organisational backgrounds, different levels of expertise and various perspectives and interests in the project execution or outcome.

Larson & Gray (2011) further state that project communication management includes the following processes:

1. Identifying stakeholders;
2. Planning communications;
3. Distributing information;
4. Managing stakeholder expectations; and
5. Reporting performance.

Communication is a key component in coordinating and tracking project schedules, issues, and action items. It minimises misinterpretation and misrepresentation of project information. Project team members need to be communicating frequently among themselves and with other stakeholders.

2.7 Monitoring and Evaluation Framework

Effectiveness of project M&E is dependent on the approach of M&E used (Kamau & Mohamed, 2015). The M&E frameworks are examples of M&E approaches. According to Chapman & Wameyo (2001) as reported by Lennie & Tacchi (2011), frameworks are seen as useful for giving an overview of areas to look at but should be seen as tools for facilitating creative thinking. Karani et al. (2014) reported that the goal of the M&E framework is to establish a well-coordinated, harmonised monitoring, evaluation and research system. Chaplowe (2008) refers to the M&E framework as an indicator matrix and defines it as a critical tool for planning and managing data collection, analysis, and use. UNDP (2009) state that a clear framework, agreed among the key stakeholders at the end of the planning stage, is essential in order to carry out M&E systematically. This framework serves as a plan and guide for monitoring and evaluation and includes the following:

i. What is to be monitored and evaluated;
ii. The activities that need monitoring and evaluation;
iii. Who is responsible for monitoring and evaluating activities;

iv. When monitoring and evaluation activities are planned (timing);

v. How monitoring and evaluation are carried out (methods) and

vi. What resources are required and where they are committed

In carrying out M&E of projects, Chandurkar & Sen (2014: p.61) recommend the style of performance management as opposed to project management. They argue that

> *Unlike project management, which is limited to process management or managing project activities, time and cost, performance management is about managing project results. In project management, the starting point becomes activities and how to better manage or organise them to achieve the results we want. However, in the case of performance based management, results become the basis of all project planning, wherein what result is to be achieved determines what activities are to be carried out.*

Performance management therefore uses the term Performance Management Framework as opposed to the M&E Framework but the two are basically one and the same. Table 2-2 below shows a typical performance measurement framework.

Table 2-2 Typical Performance Measurement Framework

Expected results	Indicator	Periodicity	Source	Baseline	Milestones			Target	Responsibility
					Y1	Y2	....		
Impact									
Outcome									
Outputs									
1.....									
2.....									

Source: Chandurkar & Sen (2014)

Different programmes and projects have come up with M&E frameworks for their works. The MAMA M&E framework includes performance metrics, indicator definition and reference sheets, and guidelines for data collection and programme evaluation (including in-depth studies and analyses to answer specific questions) (Alva, 2012).

Performance management frameworks and/or M&E frameworks have different elements as can be shown in Table 2-2 above. The elements which make these frameworks unique are what is to be monitored and evaluated and the indicators. Kusek & Rist (2004) define indicators as the quantitative or qualitative variables that provide simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of an organisation against the stated outcome.

Quantitative indicators are numerical while qualitative indicators are descriptive observation. Praefcke (2010) explains that performance indicators help to determine the extent to which a project is achieving the expected results. They are a means of measuring what actually happened in terms of quantity, quality and cost.

2.8 Identified Gaps

The literature clearly underscores the need for projects to have clearly designed and implementable M&E frameworks. These frameworks are necessary to ascertain if:

(i) The implementation of activities are according to plan, efficient and cost effective;

(ii) The desired outputs will be realised and at what cost or quality and

(iii) The envisaged outcomes will be realised.

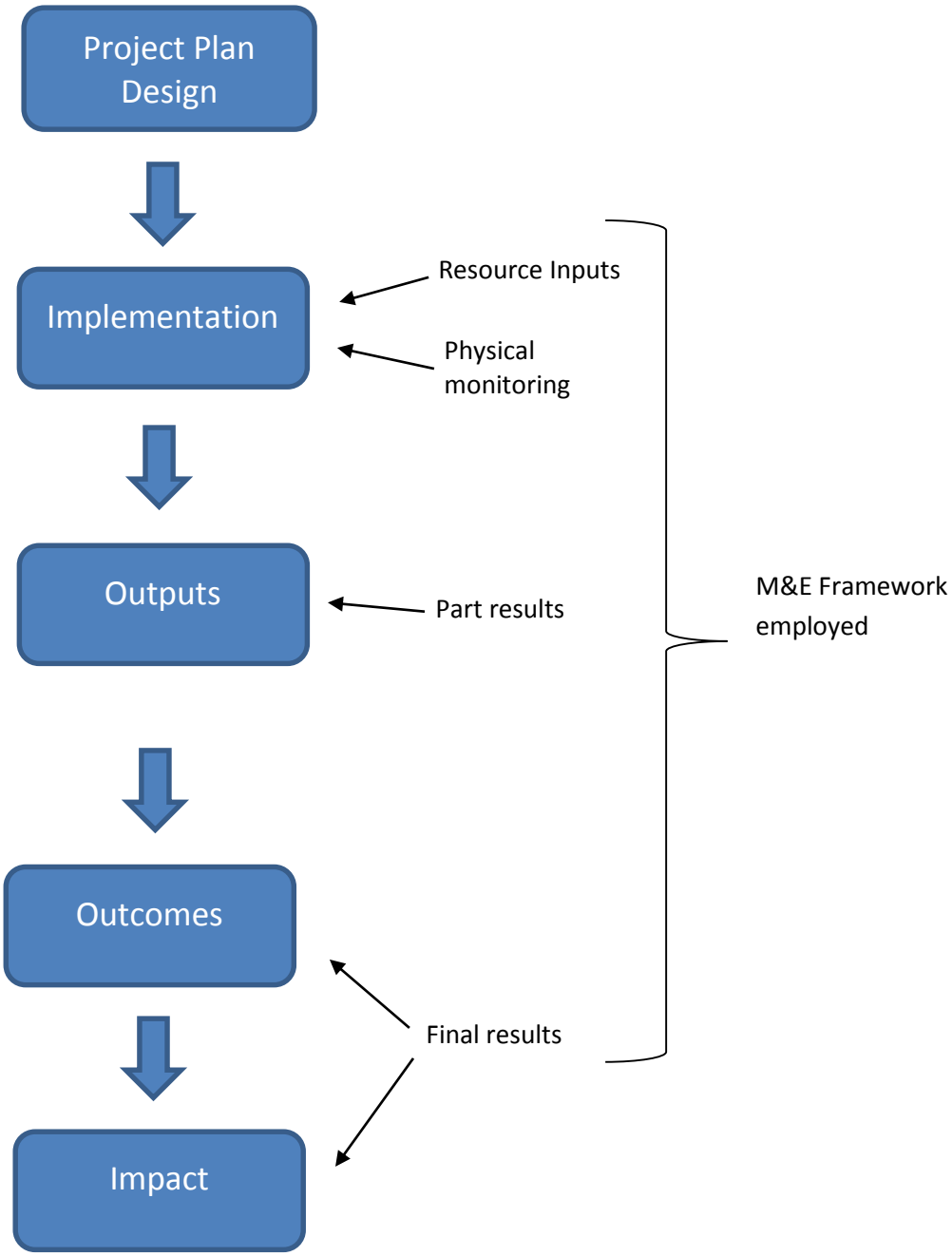

Fig 2-1: The project life cycle showing M&E

Source: Own design

2.9 Summary of Literature Review

This chapter brought out a lot of information that concerns our study, monitoring and evaluation of projects. Projects and their management were discussed. A project is defined as a temporary endeavour undertaken to create a unique product, service, or results while project management was defined as the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. A project is described to be a unique undertaking having a fixed duration and resources.

Projects should have people to carry out the M&E functions. These people should be provided with the necessary resources and trained with right skills to carry out M&E of projects. This is because the best people to carry out M&E of projects are the projects team members.

Monitoring involves systematically gathering information about our activities, tracking their progress and assess deviations to ensure course correction, when and where necessary. Evaluation is an assessment, as systematic and objective as possible, of an on-going or completed project, programme or policy, its design, implementation and results. Both monitoring and evaluation are aimed at helping projects to meet projects' objectives on time.

Monitoring and evaluation systems should be basic and easy to follow. The implementation of projects requires that project team members have basic skill of M&E. In monitoring and evaluation, it is important to engage stakeholders. Stakeholders will help in getting the necessary information that they need.

Project communication management includes the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval, and ultimate disposition of project information. Communication is a key component in coordinating and tracking project schedules, issues, and action items.

A clear framework, agreed among the key stakeholders at the end of the planning stage, is essential in order to systematically carry out monitoring and evaluation. This framework serves as a plan and guide for monitoring and evaluation.

M&E provides information that is needed by funders and beneficiaries of projects or programmes. The availability of M&E information also facilitates data sharing among different stakeholder. Monitoring and evaluation is a good management tool and helps in the improvement of project performance and achieving of projects goals.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents research methodology that was applied in the achievement of the research objectives. Kothari (2004) defines research methodology as way to systematically solve the research problem.

3.2 Research Design

Khotari (2004: p.1) describes research as:

> *The systematic method consisting of enunciating the problem, formulating a hypothesis, collecting the facts or data, analysing the facts and reaching certain conclusions either in the form of solution(s) towards the concerned problem or in certain generalization for some theoretical formulation.*

Research generates new knowledge and helps to solve different problems that affect society.

According to Rajasekar (2013), a research design should indicate various approaches to be used in solving the research problem, sources and information related to the problem. There are a number of ways that research can be used to gain new knowledge. Waliman (2011) describes various ways that research can be used to gain new knowledge as to; categorise, describe, explain, evaluate, compare, correlate, predict and control. This study utilises two ways described by Waliman (2011). These are descriptive and control ways of carrying out research. Descriptive research relies on observation as a means of collecting data while control research is done after understanding a problem or situation and is a measure to solve the problem (Waliman, 2011). For control type of research, one needs to know what the cause and effect relationships for the problem or situation are (Waliman, 2011).

The study aimed at designing an M&E framework for power transmission projects in ZESCO. The objectives of the study were to; scrutinise how power transmission line projects in ZESCO were being monitored and evaluated, determine ways of managing project information for transmission projects and to develop guidelines to counter the challenges the organisation was facing in M&E of power transmission projects. In order to achieve the aim and objectives of the study, the following was done:

i) Literature review;
ii) Data collection;
iii) Data analysis and
iv) Design of M&E framework.

Literature was reviewed through use of text books, journals and published studies. Data was collected through observation, interview, questionnaire and review of project data. Data analysis was done using Microsoft excel 2010. The M&E framework was designed using Microsoft Excel 2010.

3.3 Population and Sampling

According to Waliman (2011), a population is a collective term used to describe the total quantity of things (or cases) of the type which are the subject of a study. The population for this study was the different managers who had more than five years of experience on ZESCO power transmission projects. The study looked at power transmission line projects within ZESCO. According to Gregorich & Carter (2008), sampling involves the selection from the total population of a subset of individuals upon which measurements will be made; the measurements made on this subset (or sample) will then be used to estimate the properties (or parameters) of the total population. A non-probabilistic sampling method called judgement sampling was used in this study. Nonprobability sampling is a sampling technique in which some units of the population have zero chance of selection (Bhattacherjee, 2012). In non-probabilistic sampling, items for the sample are selected deliberately by the researcher.

Singh (2006) states that judgement sampling involves the selection of a group from the population on the basis of available information thought. In judgment sampling, the

investigator uses his or her judgement to select the specific units to be included in the sample (Sharon, 2010). For this study, the sample included Site and Project Managers with more than 5 years of experience on transmission projects in ZESCO. This is because the Site and Project Managers are senior staff on projects and are expected to have a lot information on power transmission projects including M&E of projects. The study also reviewed documents from transmission projects in ZESCO. Only transmission projects commissioned in the immediate past 5 years or those nearing completion were considered. This is because the study wanted to acquire the latest information on how M&E for the transmission projects was being carried out. There were few transmission projects found to have been completed in the past five years, therefore the study reviewed data from four projects.

3.4 Data Collection Instruments

A well-designed data collection instrument will result in higher quality, accurate, up-to-date and relevant data. It will also save on time during data entry (Grosh & Glewwe, 2010). In this study, Interviews, self-administered questionnaire and observations were used. Both primary and secondary data were collected. Walliman (2011) describes primary data as data that has been observed, experienced or recorded while secondary has been described as written sources that interpret or record primary data. These instruments are seen by the researcher to be effective in generating the required response. The questionnaire contained closed and open ended questions. The closed ended questions are easier to administer as each item is followed by an alternative answer and is economical in terms of time. The open ended questions on the other hand were appropriate in this study as they allow a greater depth of response.

To test for reliability and validity of the questionnaire and the interview guide, a pilot study was conducted. Dawson (2002: p.95) explains that, "once you have constructed your questionnaire, you must pilot it. This means that you must test it out to see if it is obtaining the results you require". A pilot study is like a trial done before the actual survey. In this study, the trial or pilot questionnaire were administered to project

engineers. The questionnaire were later edited and corrected before they were administered to respondents of interest.

It is important to check the effectiveness of the measurements made through validity and reliability. For quantitative data analysis, issues of validity and reliability are important in research (Dawson, 2007). Qualitative research also employs validity and reliability test. Validity is a test which should be carried out to show whether variables or the research instrument is measuring what the researcher wants to measure. An important way that qualitative researchers ensure that their findings are valid is called triangulation (Alston & Bowles, 2003). According to Davis (1994) as reported by Alston and Bowles (2003), triangulation is the use of a variety of methods and also sometimes researchers' theories, data collection methods or a combination of these. To test for validity, this study, therefore, used a combination of questionnaire, interviews, review of project documents and observation to collect data. Reliability on the other hand is about consistency. A variable is reliable if someone else who uses it gets very similar results to the original researcher, or if the original researcher uses the measure at a later time, or with a similar group of people and similar results appear (Alston & Bowles, 2003). In this study, to test for reliability, the same questions in the questionnaire were repeated in the interview guide. The administering of questionnaire and interview guide were done on different days.

3.5 Data collection Procedure and Ethical Issues

Collection of data was done through observations, self-administered questionnaire and interview methods. The interviews were conducted on a face-to-face basis. In cases where interviewees were not available within town, phones were used. The questions contained in the interview guide were asked to the respondents on phone. The researcher had a moral obligation to treat all the data collected with confidentiality. The identity of the respondents and data from interviews and questionnaire were treated with due confidentiality.

3.6 Data Analysis Techniques

According to Kothari (2004), data analysis refers to the computation of certain measures along with searching for pattern of relationship that exist among data-groups. The aim of this research was to design an M&E framework for power transmission line projects. The majority of the data collected was qualitative in nature which enabled the researcher to gain a better understanding of how M&E of power transmission line projects were being carried out. Tables were used to present data for easy comparison. The M&E framework was thereafter developed to address the prevalent shortcomings in M&E of ZESCO transmission projects nationwide.

3.7 Summary of the Research Methodology

This chapter brought out important steps that were adopted in carrying out the study. The M&E problems facing transmission projects were brought to the fore. The study utilised two ways of carrying out research namely descriptive and control ways. In the descriptive way, data was collected to find out how transmission projects were being monitored and evaluated. Problems in the way M&E was being conducted were identified and as a control measure, solutions were prescribed. Data was collected through observation, interviews, questionnaire and review of project data. The population for the questionnaire and interviews were experienced Project and Site Managers in the power transmission projects. A non-probabilistic type of sampling called judgement sampling was adopted for the study. Only professionals who the researcher felt had experience on transmission projects and were well informed in M&E were sampled for interviews and questionnaire. The questionnaire and interview guide were piloted and tested for validity and reliability before being administered to the respondents of interest. Data analysis was simplified because the data collected was only assisting in finding out how M&E for transmission projects was being carried out. Tables were used to present frequency and percentage of occurrences. The M&E framework was thereafter designed which was the main aim of the study. The methodology process for this study is summarised in Figure 3-1.

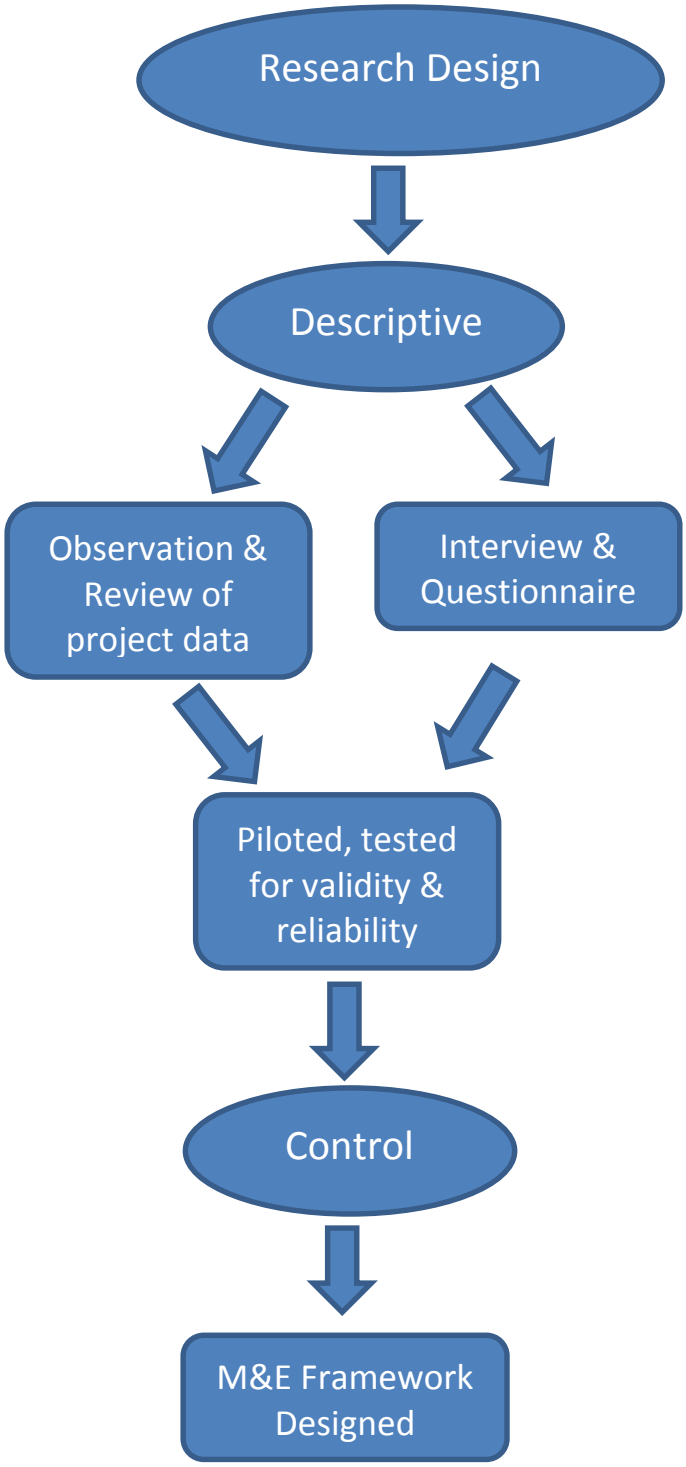

Figure 3-1: The Research Methodology illustrated

CHAPTER FOUR: DATA PRESENTATION, KEY FINDINGS AND DISCUSSION

4.1 Introduction

In this chapter, the research findings are presented, analysed and discussed. The findings of the study were compared with the objectives of the study so as to arrive at the conclusion.

4.2 Results from the Questionnaire

The sample for the study were Project and Site Managers who had more than five years of experience on power transmission projects in ZESCO. These were found not to be many. Therefore, questionnaires were administered to all available Project and Site Managers. According to Babbie (2007) as reported by Sharon (2010), a response rate of at least 50% is considered adequate for analysis and reporting while a response rate of 60% is good and that a response rate of 70% is very good. The questionnaire were administered to 22 people. Out of the 22 questionnaire administered in this study, 20 completed questionnaire were collected by the researcher. This represents a response rate of 90.9% which is adequate for the study.

4.2.1 Working experience in ZESCO

Figure 4-1 shows the number of years respondents had worked for ZESCO. The 10% of the respondents had worked in ZESCO for a period of more than 15 years. The majority of the respondents (i.e. totalling 50%) had worked in ZESCO for a period ranging between 10 and 15 years. The 30% had worked in ZESCO for a period between 5 and 10 years. The remaining 10% of the respondents had worked and in ZESCO for a period 0 to 5 years.

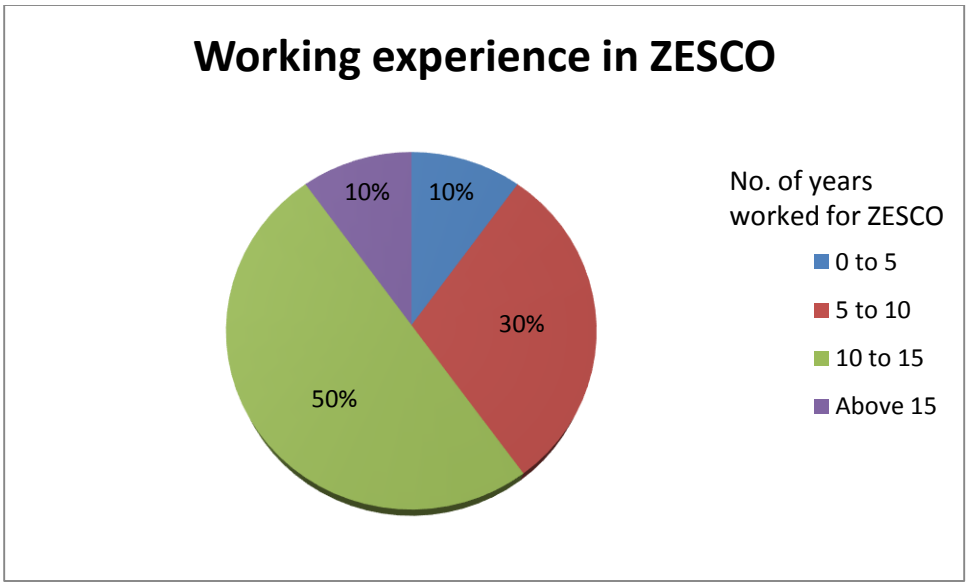

Figure 4-1: No. of years the respondent had worked for ZESCO

4.2.2 Consultations during planning of transmission projects

The managers of the transmission and planning directorates are involved in the planning process of transmission projects. Other people involved in the planning of transmission projects are planning engineers in the transmission directorate in consultation with other stakeholders like operation and maintenance engineers. High level planning is done by senior managers while the low level planning is done by chief, principle and senior engineers. Respondents had different views as to whether enough consultations were made by the planning team when planning for transmission projects. Only 45% of the respondents felt that enough consultations were made during planning of transmission projects. This shows that 55% of the respondents indicated that there was not enough consultation made by the people planning for transmission projects.

4.2.3 Project scope and completion time of transmission projects

In project management, it is important to monitor the performance of a project in terms of time and scope. Depending on their experience, the respondents had different views on the performance of transmission projects in terms of scope and time. Only 10% of the respondents indicated that transmission projects get to be completed on time. The

remaining 90% of the respondents stated that projects don't get to be completed on time. Table 4-1 shows some of the reasons given as to why projects fail to complete on time

Table 4-1: Project completion time

Reasons given as to why projects fail to complete on time	**% of respondents who gave that reason**
Lack of a robust system for tracking projects	10
Scope change: Projects experience change in the scope. The change in projects scope affects the performance of projects	40
Unrealistic planning: Sometimes the set project duration times are not realistic. The resources available for projects in most cases cannot allow projects to be completed on time	20
Delay in starting or implementing the project. Sometimes project implementation commences long after the planned start date	10
Project scoping: Project scoping is poorly done or at times not done on most projects	10
Bureaucracy: The administrative system in ZESCO is extensive and complicated. Any payment for example has to be authorised by not less than 3 officials before it is effected	20
Non-performance of contractors: Sometimes the procurement method used to select the contractor does not produce or provide the best contractor. Some contractors fail to perform	40
Financial problems: delays in concluding financial agreements for externally funded projects and delays in paying contractors negatively affect project completion time	50
Safe guard issues: Sometimes the wayleave for the transmission lines are not fully acquired leading to disturbances from the owners of the land during construction	10

On projects' scope, 60% of the respondents stated that transmission projects get to fulfil the scope and the other 40% stated otherwise. Poor planning and scoping were cited as reasons that contribute to the failure of projects to meet the projects' scope.

4.2.4 Role and Responsibilities of project team members

During project implementation, it is important that project team members have clear roles and responsibilities. The 80% of the respondents stated that most project team members had clear roles and responsibilities during project implementation.

4.2.5 Monitoring and evaluation plans

As to whether M&E plans are prepared for transmission projects, 45% of the respondents stated that they were prepared while the other 55% stated that M&E plans were not prepared. It is essential for projects to have plans on how they are going to be carrying out M&E activities.

4.2.6 M&E Personnel in transmission projects

In a project, there should be personnel responsible for carrying out M&E. The 90% of the respondents stated that there were no people who were assigned the role of M&E and only 10% of the respondents indicated that there were people who were assigned the role of carrying out M&E for transmission projects. The 10% of the respondents were said to have the necessary skills required to carry out M&E for transmission projects.

4.2.7 Evaluation in transmission projects

Evaluations should be carried out to assess the performance of projects. As to whether ZESCO carried out evaluations for its transmission projects, 85% of the respondents stated that ZESCO did not carry out evaluations for its projects while only 15% of the respondents stated that ZESCO did carry out evaluations. The few respondents who had prior experience of working on projects which carried out evaluations stated that the evaluations were carried out by internal evaluators.

4.2.8 Funding for transmission projects

Funding for M&E of projects was another problem. Only 10% of the respondents stated that there was a specific allocation of funds for M&E of power transmission projects. The

10% of the respondents who indicated that there was funding for M&E activities however stated that the funding was inadequate.

Table 4-2 shows some of the results from the questionnaire survey. Respondents had different views on how ZESCO was managing projects depending on their experience on projects.

Table 4-2: Results from questionnaire

Question	Yes (%)	No (%)	At times (%)
Do planners of transmission projects make enough consultation?	45	45	10
Do projects get to be completed on time?	10	90	0
Do transmission projects fulfil the scope?	60	30	10
Do project team members have clear roles and responsibilities?	80	15	5
Do transmission projects have M&E plans?	55	45	0
Are there people assigned the role of carrying out M&E for transmission projects?	10	90	0
Do the personnel have the necessary skills to carry out M&E?	10	90	0
Do projects have M&E plans?	45	55	0
Does ZESCO carry out evaluations for its transmission projects?	15	85	0
Is there a specific allocation of funds for M&E of transmission projects?	10	90	0

4.2.9 Major stakeholders in transmission projects

The following were identified by the respondents as being the major stakeholders for transmission projects:

i) Government;
ii) Customers;
iii) Operations and Maintenance departments;
iv) Power Distribution department;
v) Transmission operations and maintenance;
vi) Energy Regulation Board;
vii) Financiers;
viii) Land owners and community where the line is passing;
ix) National Control Centre (NCC);
x) Environmental and Social affairs Unit;
xi) ZEMA;
xii) Civil Engineering department;
xiii) Affected people for compensation; and
xiv) Auditor General.

4.2.10 Data collection methods for transmission projects

There are many ways that are used to collect data on the implementation of transmission projects. The respondents revealed the following as ways in which data is gathered on projects:

i. During site meetings;
ii. Through observation;
iii. During site inspection; and
iv. Through supervision.

A number of reports are produced from the collected data on projects. Respondents stated that the following reports are produced on projects:

i. Weekly progress reports;

ii. Monthly progress reports;
iii. Quarterly progress reports;
iv. Annual progress reports; and
v. Monthly directorate reports.

The respondents indicated that the produced reports are circulated to various project stakeholders including the following:

i. All project team members;
ii. Senior Managers;
iii. Director for transmission;
iv. Managing Director;
v. Financiers; and
vi. Corporate Management.

These reports are circulated mainly through emails and sometimes as hard copies.

4.2.11 Data storage & Management

Information management is important in project management. Project data should be well organised and stored safely. The respondents indicated that project data was stored in both hard and soft copies. The project data was stored in form of:

i. Site meeting minutes;
ii. Notes;
iii. Monthly reports;
iv. Gantt charts;
v. Checklists; and
vi. Project performance reports.

4.3 Results from Observations and Review of Project Data

This research study reviewed reports from four power transmission projects in ZESCO carried out in the past 5 years from 2009 to 2015. These are:

i. Kariba North Bank – Kafue West 330kV Transmission Project;
ii. Pensulo – Kasama 330kV Transmission Project;

iii. Restringing of Kafue town – Mazabuka 88kV Line Project and
iv. Leopards Hill – Coventry 132kV Transmission Line Project.

The researcher is an employee of ZESCO Ltd and therefore personal observation was used in the study. To avoid bias, only observed facts were recorded. The following issues were identified from both review of project data and personal observation:

a) ZESCO projects are carried out by the Project Implementation Unit (PIU). A team of ZESCO employees is assembled to run and supervise ZESCO projects. The team is composed of various professionals from different departments within ZESCO.

   The Pensulo – Kasama 330kV transmission project for example had the following PIU;

   i. Project Manager;
   ii. Site Manager ;
   iii. Substation Engineer;
   iv. Protection Engineer Transmission;
   v. Protection Engineer Distribution;
   vi. Project Engineer;
   vii. SCADA/Telecoms;
   viii. Safety Officer; and
   ix. Project Accountant

b) The composition of the project team (PIU) is not adequate on transmission projects. Some professionals like Civil Engineers and Land Surveyors are not permanent on the projects. They are just called in when their services are needed. This creates a challenge as they are not always released by their supervisors.

c) The other challenge created by inadequate personnel is the approval of drawings. For all the projects that were examined in this study, it was found that the contractor did the survey works and prepared the design drawings which were thereafter submitted to ZESCO for approval. For any design drawing submitted to ZESCO for approval, ZESCO had to respond to the contractor within two weeks. If there was no response within two weeks, the design drawings were

considered to be approved. This approach however posed a problem due to limited Engineers on the projects. A lot of designs were not adequately checked and monitored before they were considered to be approved.

d) Most Senior Engineers, Site Managers and Project Managers stayed in Lusaka away from where the projects were taking place. They only visited the projects mostly once in a month. Data on the monitoring of projects was collected by junior officers who are on site. It is important for site and project managers to be on site most of the times so that they see for themselves what is taking place and not just rely on information from their junior officers.

e) Some key personnel were left out in the planning of transmission projects. This brought about scope changes as certain critical information was only brought out during implementation of projects. Projects' scope need to be communicated and reviewed by all key stakeholders at the early stages to avoid omissions and other problems discovered during advanced implementation stages of projects.

f) The managers of projects did not make follow ups to ensure that issues discussed in meetings and set activities were done as planned. The same activity items repeated a number of times on the 'to do' list before they were cleared.

g) Monitoring systems on projects funded by international agencies like World Bank had better monitoring systems than the ZESCO projects. This is partly because the international funders strongly adhere to the requirements for projects to be monitored in accordance with the basic fundamentals of M&E practice.

h) Project data was stored in many forms. Some of them are; site meeting minutes, monthly reports and checklists.

i) Management of project information was found to be a problem on projects. During the research survey for example, projects site managers did not have a well organised system of storing project information. It took days for them to find where reports were saved or stored. It was also difficult to get all the reports as some could not be found.

j) Some reports were not done to the desired standard as they did not contain background information on the projects. It is important to include background

information of projects in the reports so that whoever is reading the reports is able to understand what the report is about.

k) The contractors of the transmission projects were guided by the ZESCO Project Implementation Unit (PIU) on how to prepare the monthly progress reports. The contractors were also submitting lists of subcontractors and suppliers of key equipment to ZESCO for approval.

l) In the project reports, the performance of the contractor was given rating by ZESCO. The rating was showing whether a contractor was doing well with reference to time and scope.

4.4 Monitoring and Evaluation Framework

This study developed an M&E framework to help Project Managers in the management of transmission projects. It is a guide to be used in the M&E of transmission projects. Table 4-3 shows a list of M&E activities and positions responsible for those activities. It is the duty of the Project Manager to develop that list at the beginning of the project. The Project Manager should also devise the Performance Monitoring Plan (PMP). This is shown in Table 4-4. A guide on how evaluations for transmission projects should be conducted is presented. This contains question that should be answered in an evaluation.

The M&E of ZESCO's transmission projects was scrutinised and the results presented. Evaluation of transmission line projects was found to be rarely done as only projects funded by international agencies like World Band were carrying out evaluations. This is partly because the international funders strongly adhere to the requirements for projects to be evaluated in accordance with the basic fundamentals of M&E practice. The study however found out that monitoring was carried out on transmission projects. The main deficiency established was that there was no guide that project managers could use to effectively monitor projects under their control.

Peersman & Rugg (2010), report that M&E should be an essential component in project management. This was not the case with the power transmission projects as ZESCO had not been paying attention to M&E activities of projects. In the year 2013, ZESCO

introduced the ‘corporate projects’ unit but by the year 2015 this unit was still in its formative stage and had not received adequate attention from ZESCO management. The unit had also not created M&E guidelines and systems to be used during project implementation. This study has therefore developed an M&E framework to guide project managers during implementation of transmission projects. This is presented in appendix 3.

4.4.1 Activity vs. Responsibility Plan

It should be noted that table 4-3 is a guide and may not be exhaustive. Project Managers are at liberty to add on other activity items which might be vital in the M&E of their particular projects. The Project Manager appears on the ‘responsibility’ column for all activities. This is because the Project Manager should be responsible and accountable to all project activities.

Before the implementation of a project, the Project Manager should start by ensuring that he/she has a good team to help him implement the project. It should be noted that the Project Manager is accountable for all activities in the project. Therefore, he should be monitoring all team members as well as the activities to make sure that the project objectives are being attained on time and that they adhere to the required specification.

The project manager and other key project team members should undertake a desk review of the implementation plan so as to ensure that the project is well planned because poorly planned projects make the M&E process cumbersome. After reviewing the implementation plan, the project manager should assign activities and tasks to all project team members. The Project Manager should ensure that the implementation plan is availed to all team members. The Project Manager should also strive to make all team members understand what the project is about. The heads of departments or sections in the project should be submitting daily and weekly programmes of works to the project manager.

The Site Manager should have an organised way of storing project information and the information should be shared with the Project Manager and other project team members. Both soft and hard copies should be properly filed by projects secretaries.

Table 4-3: Activity vs. Responsibility

No.	**Activity**	**Responsibility**
1	Checking Human Resource Available (PIU)	Project Manager (PM)
2	Reviewing the implementation plan	Project Manager/PIU
3	Assigning Activities to the team members	Project Manager
4	Preparing programme of works	Site Manager/PM
5	Ensuring that all team member have the implementation plan and programme of works	Site Manager/PM
6	Organizing site meetings	Site manager/PM
7	Taking minutes in the meetings	Site Manager/PM
8	Preparing project reports	Site Manager/PM
9	Circulating project reports	Site Manager/PM
10	Storing and filing of Project Data	Site Manager/PM
11	Ensuring that Activities are being done accordingly	Project Manager
12	Develop a performance monitoring plan/framework	Project Manager
13	Checking for deviation from the plan	Project Manager
14	Taking corrective action	Project Manager
15	Assessment of the Project	Corporate Projects/PM

4.4.2 Performance Measurement Plan

Table 4-4 is an illustration of the Performance Measurement Plan. A complete and clearer plan is shown in Appendix 3 at the end of the report. This plan was developed to make the monitoring of projects easier. In the first and second columns respectively, ‘what

needs to be done' and the 'outputs' are presented. After the 'output' column, the 'indicator' column is presented. The indicator shows how each parameter or activity is going to be monitored. The 'measurement period' column comes after the 'Indicator' column and is the frequency by which the 'indicator' data is collected. The 'source/data collection method' column follows the 'measurement period'. This provides either the source of data for the indicator or the method used to collect the data on the indicator. The 'baseline' is the initial situation before intervention. Since this table will have to be updated every month, the baseline in this case is the measurement for the previous month. There is also a column for the 'milestones' just after the baseline column. In Table 4-4, two columns are provided to present measurements for the current month and these are 'planned progress' and 'actual progress'. The 'End of project target' column provides the expected indicator measurement at the end of the project. Comparing the measurements 'planned progress' and 'actual progress' can show whether project activity is progressing in terms of time or not. If there is marked progression, 'Good' is indicated on the 'output' and 'Bad' is indicated when the project activity is below the set targets. There is also a 'Quality (scope)' column. In this column, the quality of work done is assessed to be either 'good' or 'bad'. The 'Responsibility' is also presented. In the 'Responsibility' column, the officer responsible for collecting data on a particular indicator is indicated.

Again, as with Table 4-3, this table is just a guide and may not be exhaustive. Therefore, Project Managers can add items which can augment the overall monitoring process.

Table 4-4: Performance Measurement Plan

What need to be monitored	Expected Results (Output)	Indicators (How is the parameter going to be monitored)		Measurement Period	Source/Data collection Method	Baseline	Milestones			Progress Planned	Progress Actual	End of Project Target	Project Performance rating (Good/Bad)		Responsibility
		Quality (Scope)	Time			May, 2015	April, 2015	Aug, 2015	Dec, 2015	June, 2015		Dec, 2017	Quality (Scope)	Time	
Line survey works	Survey data and drawings	See contract specifications	% of the total stretch for which survey data and drawings have been obtained	monthly	Progress reports/ survey reports	0%						100%			Land Surveyor
Designs of Power transmission lines	Drawing for towers	See contract specifications	% of the total stretch for which tower drawings have been prepared	monthly	Progress reports/ Engineer's reports	0%						100%			Project manager
	Drawings for tower foundations	See contract specifications	% of the total stretch for which tower foundation drawings have been prepared	monthly	Progress reports/ Engineer's reports	0%						100%			Civil engineer
	Electrical and earthing drawing	See contract specifications	% of the total stretch for which electrical and earthing drawings have been prepared	monthly	Progress reports/ Engineer's reports	0%						100%			Lines engineer
	Assembly drawings	See contract specifications	% of the total stretch for which assembly drawings have been prepared	monthly	Progress reports/ Engineer's reports	0%						100%			Lines engineer

4.5 Project Evaluation

The ‘Corporate Projects’ unit should be responsible for carrying out evaluations on projects. This is because they are not part of the PIU and are less likely to be biased compared to the project team members. Evaluations are best done by external evaluators because they are able to give an independent assessment on the performance of the project and the ‘Corporate Projects’ unit are not part of the PIU.

The ‘Corporate Projects’ unit should be sending their officers to be attending site meetings, conduct on-site field inspections and also scrutinise the available progress reports from transmission projects. For easy management of projects, the corporate projects unit should set up a programme for evaluating projects. Every project should be evaluated at least after every quarter of the year. The set dates for project evaluation meetings should be communicated to Project Managers at the beginning of each year. If changes are made on to the set dates, the Project Manager should be communicated to in good time. Project and Site Managers should attend the evaluation meetings.

During the evaluation exercise, officers from the corporate projects unit should probe the Project Manager on any issues arising from the monthly progress reports that they might need clarification on. The project managers should also be ready to clarify on any matters relating to assessment of the performance of projects.

The evaluation should look at what has been done and compare with what was planned for during the period under review. The following questions should be posed during the evaluation and answers sought (Chanduka & Sen; 2014):

1. Is there change?
2. Is the change because of the project?
3. How has the project contributed to achieving the desired change?
4. Is the project still relevant?
5. How efficient are the project processes?
6. How effective is the project?
7. What is the level of achievement of the project results?

8. What impact has the project created?
9. How sustainable is the change?

After the evaluation exercise, the corporate project unit should prepare an evaluation report. The evaluation report should contain answers to the above questions. The report should be presented to management so that decisions are made. The decision made should be implemented on projects.

The 'corporate projects' unit should also assemble a good system of storing information obtained from different projects. Project information should be well arranged on their servers. Project managers should have access to this server and be able to view and upload information.

4.6 Management of project information

According to the PMI (2008), Project communication management includes the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval, and ultimate disposition of project information. Power transmission projects in ZESCO lacked information management processes. Management of project information was found to be problematic in ZESCO as Site and Project Managers evidently did not have their information properly organised. The information was scattered and not stored in an orderly way. Site Managers had problems to locate project information whenever they were requested to avail it. There was no proper document archiving in place. Document archiving demands order in the way documents are kept. There should be an archive register which shows the exact location of all the documents. The study therefore recommended guidelines on how to better manage project information.

4.7 Monitoring and Evaluation Process

Kusek & Rist (2004) contend that the essential actions involved in building an M&E system are to:

i. Formulate outcomes and goals;
ii. Select outcome indicators to monitor;

iii. Gather baseline information on the current condition;

iv. Set specific targets to reach and dates for reaching them;

v. Regularly collect data to assess whether the targets are being met; and

vi. Analyse and report the results.

These activities are necessary and should be contained in any M&E process. The people carrying out M&E should ensure that the right outcomes and goals are formulated. This will set the required direction needed when carrying out M&E. The right and appropriate indicators for the outcomes should also be selected. Adams et al. (2006) define indicators as quantitative or qualitative values which describe reality and indicate the degree of change. The indicator should tell whether the outcomes are being met or not. Prior to carrying M&E, baseline data on the outcome indicators should be collected. The baseline data will give the status of the indicator before any intervention. It sets the basis for which any change on the indicator is measured. During M&E it is also important to ensure that right and realistic targets are set. All project activities should be carried out with the objective of meeting the set targets. Kusek & Rist (2004) further outline the steps involved in designing, building, and sustaining a result-based M&E system as summarised in Figure 4-2.

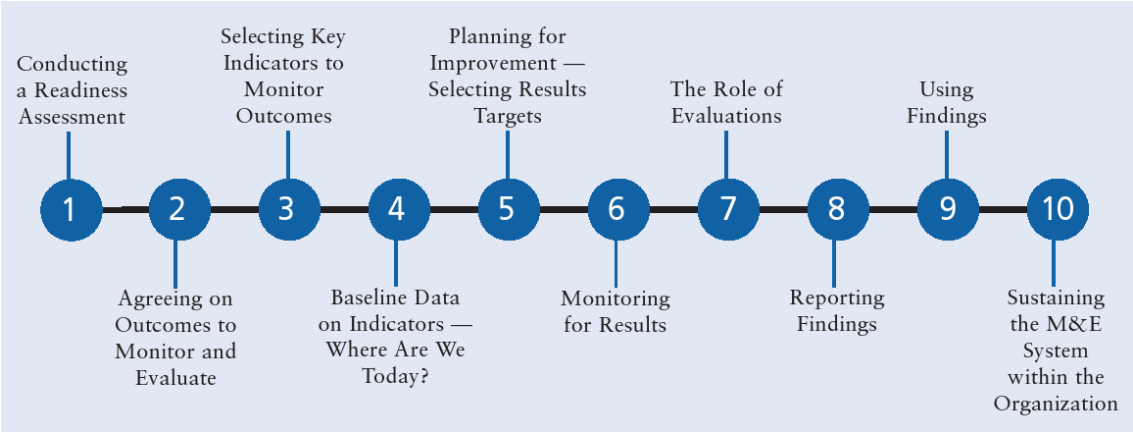

Figure 4-2: Ten Steps to Designing, Building and Sustaining a Result-Based M&E System

Source: Kusek & Rist (2004)

The study, however, established that the managers of transmission projects lacked this important information on the essential actions and processes involved in developing and

sustaining M&E systems resulting in projects running on weak or in some instances no M&E systems.

The first step in developing and sustaining an M&E system is to conduct a readiness assessment. This assists in determining whether the prerequisites for developing an M&E system are in place. Financial resources and skilled human resource in M&E are essential in setting up an M&E system. The study revealed that transmission projects in ZESCO lack support from management and skilled personnel in M&E. It should be noted that for transmission projects to have successful M&E systems, ZESCO management should play a leading role in championing and supporting the 'Corporate Projects' unit to conduct M&E activities by availing the requisite resources.

The other processes which are shown in Figure 4-2 are equally important in developing and sustaining an M&E system. Therefore, project managers in transmission projects should have the relevant competencies to effectively comprehend and conduct the M&E process.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The previous chapter dwelt on the key findings of the study. This chapter presents conclusions drawn from the findings and makes recommendations to improve M&E and project information management. The conclusions and recommendations drawn were focussed on addressing the purpose of this study which was to design an M&E framework for power transmission projects in ZESCO.

5.2 Achievement of the Research Objectives

The aim of the study was to develop a time and scope M&E framework for power transmission line projects in ZESCO to be used during implementation of projects. The specific objectives were to:

i. Scrutinise how power transmission line projects in ZESCO were being monitored and evaluated.
ii. Determine ways of managing project information for transmission projects.
iii. Develop guidelines to counter the challenges the organisation was facing in carrying out M&E for power transmission projects.

The objectives were addressed as follows:

i) Objective One

The manner in which monitoring and evaluation of transmission projects were carried out was scrutinised and the results presented in chapter four. Evaluation of transmission projects was rarely carried out on ZESCO projects. Evaluations were mostly carried out on projects funded by international agencies like the World Bank. The study however established that monitoring was carried out on transmission projects. The main deficiency was that there was no guide that Project Managers could use to effectively monitor projects under their control. There was clear evidence of a lack of uniformity in the methods used by each manager to monitor projects which underscores the

finding that there were no clear set guidelines in place, which are a necessary imperative for processes such as monitoring within an organisation.

ii) Objective Two

The way project information was managed was investigated and the study has recommended ways of improving information management on projects. These are presented in section 5.3.

iii) Objective Three

The challenges which ZESCO Ltd was facing in carrying out M&E were established and presented in chapter four. Guidelines to counter the challenges are also presented in section 5.3.

5.3 Recommendations and guidelines for Information Management and M&E

The following guidelines and recommendations were made based on the findings of the study:

i) Directors and Senior Managers who bear responsibility for effecting corporate decisions should be capacitated on the importance and critical role that M&E provides for an institution during project implementation.

ii) Adequate attention should be given to project implementation planning and necessary consultations should be made during the planning exercise. This makes M&E easier;

iii) The M&E framework developed in this study should be used as guide by project managers in carrying out M&E for their projects;

iv) The 'Corporate Projects' unit must be supported and funded by ZESCO management and should employ people who have M&E skills;

v) To ensure proper implementation of transmission projects, all project team members should undergo M&E and project management training;

vi) To enhance monitoring of projects, all site managers should be working from the sites regularly and not be staying and working far away from where the project activities are taking place;

vii) To enhance M&E, all members of the PIU must have clear roles and responsibilities. All project activities should be clearly assigned to project personnel;

viii) The 'Corporate Projects' unit should ensure that all projects prepare and submit their M&E plans;

ix) The 'Corporate Projects' should set up a programme for evaluating projects and that projects be evaluated at least after every quarter of the year;

x) To improve management of project information, the 'corporate projects' unit should employ an IT Specialist to be managing project information. The institution should also buy modern software which help in managing information;

xi) All members of the PIU must undergo record keeping, document archiving, report writing and basic information management training. This is to improve information management on projects;

5.4 Conclusion

Monitoring and evaluation is an essential component in the management of power transmission projects. Despite the availability of literature on how to carry out M&E, transmission projects in ZESCO are still facing challenges to monitor and evaluate their projects. The study concluded that M&E of power transmission projects in ZESCO needs to be improved.

Good information management is critical in project implementation. There is a lot of literature and information on how to manage project information. Despite the availability of this information, management of project information was established to be problematic and needed to be improved. The study made recommendations on ways of improving information management on transmission projects.

Power transmission projects in ZESCO are faced with a lot of M&E challenges. The study developed guidelines to counter the challenges ZESCO was facing to effectively monitor and evaluate transmission projects. The M&E framework was also developed to guide project managers in carrying out M&E.

5.4 Recommendations for further research

The study pursued to design a monitoring and evaluation framework for power transmission projects in ZESCO. It is recommended that further research should be carried out on the utilisation of progress reports by transmission projects stakeholders.

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APPENDIX 1: QUESTIONNAIRE

THE UNIVERSITY OF ZAMBIA
SCHOOL OF ENGINEERING
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
P.O. BOX 32379, LUSAKA
Cell: +260977382924, Email: psepeti@zesco.co.zm

28th February, 2015

Dear Sir/Madam

QUESTIONNAIRE SURVEY ON THE MONITORING AND EVALUATION OF TRANSMISSION PROJECTS IN ZAMBIA

I am pursuing a Master of Engineering Degree in Project Management [MENG PM] at the University of Zambia. My research topic is on Monitoring and Evaluation of Power transmission projects in Zambia.

Accompanying this letter is a questionnaire that has to be filled in by you. It will only take a few minutes of your time to complete. Please attempt to answer all questions. You must be assured that all the information gathered will be kept strictly confidential and will only be used for the purpose of this research. Your names will not be mentioned anywhere.

Should there be any queries, please do not hesitate to contact the undersigned or the research supervisor using the details provided below. Your assistance and cooperation will be highly appreciated.

Thank you in advance for your time and cooperation.

Yours Faithfully,

Sepeti Providence (Master of Engineering Student)

Supervisor: Dr. Ian Nzali Banda – ian.banda@unza.zm

Tick were applicable or comment if necessary

1) For how long have you been working for ZESCO?

   0 – 5 [ ] 5 – 10 [ ] 10 – 15 [ ] Above 15 [ ]

2) Who is involved in the planning of transmission projects in ZESCO?

   ……

   ……

   ……

   ……

   …….

3) Do you think enough consultation is made by the people involved in the planning of transmission projects?

   Yes [ ] No [ ]

   Other……

   ……..

4) Who are the major stakeholders in transmission projects?

   ……

   ……

   ……

   ……

5) Do transmission projects on average get to be completed within the planned time?

   Yes [ ] No [ ]

   Other……

   ……

6) If your response is No, what do you think causes the delay?**.....**

   ……

   ……

   ……

   ……

7) Do transmission projects on average fulfil their scope?

Yes [ ] No [ ]

Other……

……...

8) If your response is No, what do you think are the reasons?.....

……

……

……

……

9) Do project team members have clear roles and responsibilities?

Yes [ ] No [ ]

Other……

……

10) Do transmission projects have monitoring and evaluation plans?

Yes [ ] No [ ]

Other……

11) Are there people who are assigned the role of carrying out monitoring in transmission projects?

Yes [ ] No [ ]

Other……

12) If your response is Yes, do you think they have the necessary skills to carry out monitoring?

Yes [ ] No [ ]

Other…….

13) Does ZESCO carry out evaluations for their transmission projects?

Yes [ ] No [ ]

Other…….

14) If your response is Yes, who does the evaluation for transmission projects in ZESCO?

Internal evaluator [ ] External evaluator [ ]

Other……..

15) Who collects data on the implementation and progress of a transmission project?

Project manager [ ] Site manager [ ] Other……

16) How is this data collected?

During site meetings [ ] Through observation [ ]

Other……

17) In what form is the data stored?

Site meeting minutes [ ] Notes [ ] Other…….

18) What reports are produced from the data if any?

Monthly progress reports [ ] Quarterly progress reports [ ]

Annual progress reports [ ]

Other…….

19) To who is the report circulated to?

All project team members [ ] Senior Managers [ ]

Other……

20) How is the report circulated?

Through email [ ] Hard copies [ ] Both [ ]

Other……

21) How frequent is this done?

Weekly [ ] Monthly [ ] Quarterly [ ] Annually [ ]

Other……..

22) Is there a specific allocation of funds for monitoring and evaluation?

Yes [ ] No [ ]

Other……..

23) If the response is Yes, do you think it is enough?

Yes [ ] No [ ]

Other…….

Thank you

Interview Guide

1. How is the planning for transmission projects done?

   ……
   ……
   ……
   ……
   ……

2. Who is involved in the planning of transmission projects?

   ……
   ……
   ……
   ……
   ……
   ……..

3. Do you think enough consultation is made by the people involved in the planning of transmission projects?

   ……
   ……
   ……
   ……
   ……
   ……..

4. How do transmission project fare in terms of time and scope?

   ……
   ……
   ……

……

……

……..

5. How is monitoring and evaluation carried out on transmission projects?

……

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……

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……..

6. Are there competent people to carry out M&E for transmission projects?

……

……

……

……

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……..

7. What are the main challenges that transmission projects face?

……

……

……

……

……

8. How are reports received from various projects checked or verified for accuracy?

……

……

……

……

……

9. How are the stakeholders to transmission projects engaged?

   ……

   ……

   ……

   ……

   ……

10. How are the findings from evaluation used

    ……

    ……

    ……

    ……

    ……

11. What is the composition of the project team?

What need to be monitored	Expected Results (Output)	Indicators (How is the parameter going to be monitored)		Measurement Period	Source/Data collection Method	Baseline	Milestones			Progress Planned	Progress Actual	End of Project Target	Project Performance rating (Good/Bad)		Responsibility
		Quality (Scope)	Time			May, 2015	April, 2015	Aug, 2015	Dec, 2015	June, 2015		Dec, 2017	Quality (Scope)	Time	
Line survey works	Survey data and drawings	See contract specifications	% of the total stretch for which survey data and drawings have been obtained	monthly	Progress reports/ survey reports	0%						100%			Land Surveyor
Designs of Power transmission lines	Drawing for towers	See contract specifications	% of the total stretch for which tower drawings have been prepared	monthly	Progress reports/ Engineer's reports	0%						100%			Project manager
	Drawings for tower foundations	See contract specifications	% of the total stretch for which tower foundation drawings have been prepared	monthly	Progress reports/ Engineer's reports	0%						100%			Civil engineer
	Electrical and earthing drawing	See contract specifications	% of the total stretch for which electrical and earthing drawings have been prepared	monthly	Progress reports/ Engineer's reports	0%						100%			Lines engineer
	Assembly drawings	See contract specifications	% of the total stretch for which assembly drawings have been prepared	monthly	Progress reports/ Engineer's reports	0%						100%			Lines engineer
Wayleave	Cleared wayleave	See contract specifications/ ZEMA guidelines	% of the total stretch for which the wayleave has been cleared	monthly	Progress reports/ Engineer's report	0%						100%			Site Manager
Setting out works	Set out positions of towers	See contract specifications	% of the total stretch for which tower positions have been set out	monthly	Progress reports/ Survey reports	0%						100%			Land Surveyor
Tower construction works	Foundation works for towers	See contract specifications	% of foundation works that have been completed	monthly	Progress reports/ Engineer's reports	0%						100%			Civil Engineer
	Erected towers	See contract specifications	% of towers erected	monthly	Progress reports/ Engineer's reports	0%						100%			Civil Engineer/Lines Engineer
	Installed accessories	See contract specifications	% of accessories installed	monthly	Progress reports/ Engineer's reports	0%						100%			Lines Engineer
	Strung Towers	See contract specifications	% of the total stretch that has been stringed	monthly	Progress reports/ Engineer's reports	0%						100%			Lines Engineer
Running tests for transmission lines	Tests Report	See contract specifications/ International standards	% of the total stretch that has been tested	monthly	Progress reports/ Engineer's reports	0%						100%			Site Manager