THE INFLUENCE OF MONITORING & EVALUATION TOOLS AND TECHNIQUES ON PROJECT DELIVERY CAPABILITY (PDC): A CASE OF HIV/AIDS INTERVENTIONS IN NAIROBI AND NYANZA REGIONS, KENYA

BY

MATASYOH PRUDENCE KHATIALA

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DECLARATION

This research project report is my original work and has not been presented for a degree in any other university or learning institution.

……. Date ……..

Prudence Khatiala Matasyoh

Reg No L50/60477/2010

This project has been submitted for examination with my approval as university supervisor.

…… Date ……

Prof. Christopher Gakuu

Department of Extra-Mural Studies, University of Nairobi

DEDICATION

This work is dedicated to Nikki, my daughter, who lights up my life, and who teaches me every day, what it means to love.

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ABSTRACT

This research project sought to determine the influence of Monitoring and Evaluation tools and techniques on Project Delivery Capability (PDC), in HIV/AIDS interventions in Nairobi and Nyanza regions in Kenya. The main objectives of the study were to determine how the use of Earned Value Management, Variance Analysis, Performance Reviews and Project Management Software influence Project Delivery Capability (PDC). The study reviewed literature related to the study problem, and specifically the influence of Monitoring and Evaluation tools and techniques on previous projects elsewhere in the world. The study adopted the cross sectional survey design. The survey method was considered most appropriate because the respondents in this study were uniquely qualified to provide the desired information. The study used primary and secondary methods of data collection. Primary data was collected through questionnaires which targeted Monitoring and Evaluation departments and specialists in organizations that offered HIV/AIDS intervention programmes in the two regions with the highest HIV/AIDS prevalence rates. Mugenda and Mugenda (1999) suggest that in descriptive studies ten percent of the survey population is representative enough to generalize characteristics being observed. In this study therefore 25% percent of the population constituted the sample size of 40. The target population was 160. Data analysis was done using (SPSS) Statistical Package for Social Science. Qualitative data was analyzed by coding according to variables in the study. Quantitative data was then analyzed through the use of descriptive statistics and the results then presented in form of tables. The results of the study revealed that Earned Value Management, Variance Analysis, Performance Reviews and Project Management Software were prevalent in use among 51%, 49%, 65% and 45% of the interventions respectively. 80% of the respondents said that more extensive and better use of Earned Value Management would enhance Project Delivery Capability (PDC). 82% of the respondents said that Variance analysis positively influenced Project Delivery Capability (PDC), while 85% said the use of Performance Reviews would enhance Project Delivery Capability (PDC). Project Management Software was the least used tool and 70% of the respondents said that more extensive and better use of the tool would enhance Project Delivery Capability (PDC). There were also other M&E tools and techniques in use in the HIV/AIDS interventions. The respondents recorded the use of impact assessment questionnaires (18%), feedback from target groups (17%), sample effect indicators (5%), incident report forms (15%), evaluation assessments (12%), benchmark tests (10%), time analysis among others. The study recommended increased training and awareness on Monitoring and Evaluation processes and procedures, enforcing of the existing structures, documentation of lessons learned and the tailoring of Monitoring and Evaluation solutions to the local setting. In conclusion, the study suggested two areas for further study. First, a study on Monitoring & Evaluation tools and techniques in use on other types of projects outside the health sector, for example, manufacturing, and secondly, a study on other tools and techniques used in the other parts of the Project Life Cycle in HIV/AIDS interventions in Kenya.

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ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy
ARV	Antiretroviral Drugs
AMREF	African Medical and Research Foundation
ANC	Ante-Natal Care
BCC	Behaviour Change Communication
BSS	Behavioural Surveillance Survey
CBO	Community-Based Organisation
CHW	Community Health Worker
CSW	Commercial Sex Worker
CACC	Constituency AIDS Coordination Committee
CCC	Comprehensive Care Centre
CDC	United States Centres for Disease Control and Prevention
COBPAR	Community-Based Programme Activity Reporting
CRIS	Country Response Information System
DANIDA	Danish Agency for International Development
DfID	Department for International Development
DASCO	District AIDS and STI Coordinator
DHMT	District Health Management Team
DMOH	District Medical Officer of Health
DSS	Demographic Surveillance System
DTC	District Technical Committee
EVM	Earned Value Management
FBO	Faith-Based Organisation
FHI	Family Health International
FSW	Female Sex Worker
GoK	Government of Kenya
HAART	Highly Active Antiretroviral Therapy
HBCW	Home Based Care Worker

HIV	Human Immunodeficiency Virus
HCBC	Home and Community Based Care
IDU	Injecting Drug User/Intravenous Drug User
ICRH	International Centre for Reproductive Health
IRAPP	Institute for Regional Analysis and Public Policy
JAPR	Joint Annual Programme Review for HIV and AIDS
JCRC	Joint Clinical Research Centre
KAIS	Kenya AIDS Indicator Survey
KDHS	Kenya Demographic and Health Survey
KEMRI	Kenya Medical Research Institute
KEMSA	Kenya Medical Supplies Agency
KNASP	Kenya National HIV and AIDS Strategic Plan
KNBS	Kenya National Bureau of Statistics
KSPA	Kenya Service Provision Assessment
MARPs	Most-at-Risk Populations
MERG	Monitoring and Evaluation Reference Group
M&E	Monitoring and Evaluation
MCG	Monitoring and Coordination Group
MDG	Millennium Development Goal
MoH	Ministry of Health
MSM	Men who have Sex with Men
MDR	Multi-Drug Resistance
MSM	Men who have Sex with Men
MTCT	Mother to Child Transmission
NACC	National AIDS Control Council
NGO	Non-Governmental Organisation
NORAD	Norwegian Agency for Development Co-operation
NIHID	National Integrated HIV Information Database
NIMES	National Integrated Monitoring and Evaluation System
NASCOP	National AIDS and STD Control Programme

NBTS	National Blood Transfusion Services
NEPHAK	Network for Empowerment of People Living with HIV and AIDS inKenya
OI	Opportunistic Infection
OVCA	Orphans and Vulnerable Children Archdiocese
OVCs	Orphans and Vulnerable Children
OP	Office of the President
PLHIV	People Living with HIV
PLWHA	People Living with HIV and AIDS
PSI	Population Services International
PEPFAR	US President's Emergency Plan for AIDS Relief
PEP	Post Exposure Prophylaxis
PMI	Project Management Institute
PMTCT	Prevention of Mother-to-Child Transmission
PMO	Provincial Medical Officer
REACH	Rapid and Effective Action Combating HIV/AIDS
SME	Small and Medium scale Enterprise
STI	Sexually Transmitted Infection
TB	Tuberculosis
TALC	Teaching-aids at Low Cost
TASO	The AIDS Support Organisation
TBA	Traditional Birth Attendant
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
UNGASS	United Nations General Assembly Special Session on HIV and AIDS
VCT	Voluntary Counselling and Testing
WHO	World Health Organisation
WOFAK	Women Fighting AIDS in Kenya

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Project Management is an applied field. As such, a clear understanding of the state and evolution of professional practice is particularly important to its future development. One important aspect of project management practice is the use of tools and techniques that are specific to the field. A rich array of project management tools and techniques has emerged from practice (Slevin, et al, 2004).

The Project Management Institute's (PMI) *A Guide to the Project Management Body of Knowledge (*PMBOK *Guide)*, has identified and described generally accepted project management practice. Generally accepted means that the knowledge and practices described are applicable to most projects, most of the time, and that there is widespread consensus about their value and usefulness (Project Management Institute, 2000). The PMBOK Guide also provides an inventory of generally valued tools and techniques, which serves as an important starting point for understanding the practice of project management.

Project management is said to be largely generic (Wirth, 1992), that is to say, applicable to many industries with little adaptation. But project management practices are known to vary significantly from one type of project to the next. Organizations and project managers must choose the tools and techniques that will be part of their toolbox. This set of tools should be aligned with project characteristics and organizational contexts. The PMBOK Guide classifies the tools and techniques by project phase so as to underline the use throughout the project life cycle. The main phases of a project are Initiation, Planning, Execution, Monitoring and Evaluation and Closure. This study will focus on the Monitoring and Evaluation phase and the tools and techniques used therein.

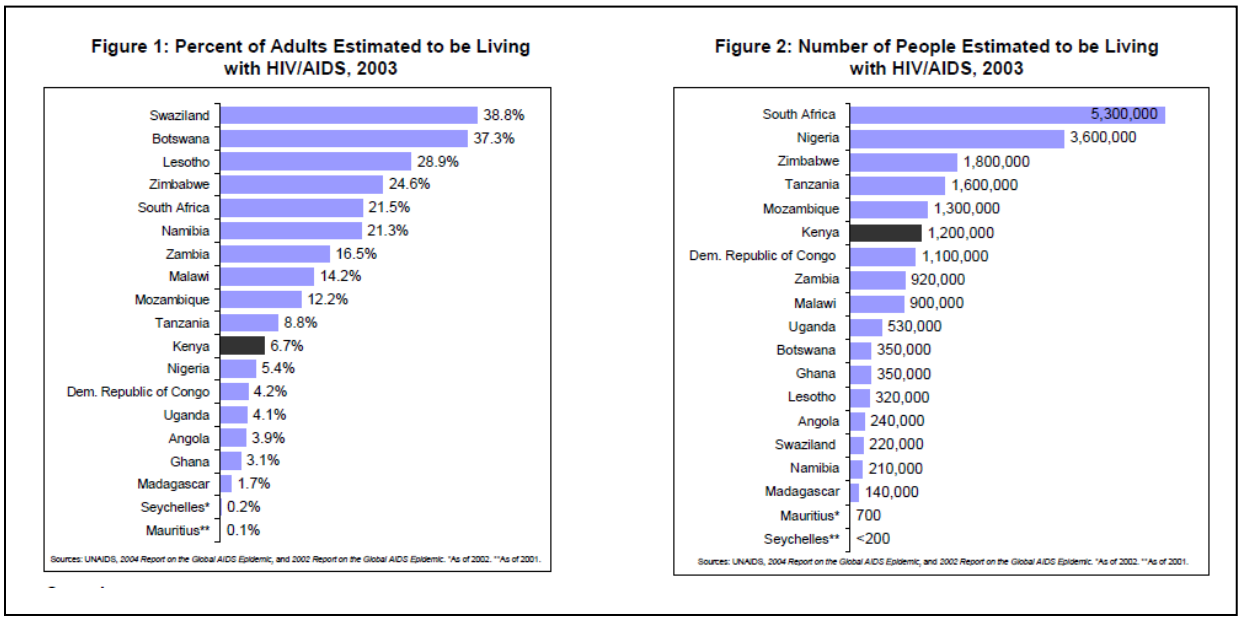
The Monitoring and Controlling Process Group consists of those processes required to track, review and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes. The key benefit of this

process group is that project performance is observed and measured regularly and consistently to identify variances from the project management plan. (*PMBOK Guide* 4th Edition, 2008)

Kenya is home to one of the world's harshest HIV/AIDS epidemics. The first case of AIDS in Kenya was diagnosed in 1984. Since then the epidemic has spread to all parts of the country, with the impact on the country increasing tremendously over the years. An estimated 1.5 million people are living with HIV; around 1.2 million children have been orphaned by AIDS; and in 2009 80,000 people died from AIDS related illnesses (UNAIDS, 2010) Kenya's HIV prevalence peaked during 2000 and, according to the latest figures, has dramatically reduced to around 6.3 percent. (UNGASS, 2010) This decline is thought to be partially due to an increase in education and awareness, and high death rates. (UNGASS, 2008)

Kenya's HIV epidemic has been categorised as generalised – meaning that HIV affects all sectors of the population. Nearly half of all new infections were transmitted during heterosexual sex whilst in a relationship and 20 percent during casual heterosexual sex. (UNGASS, 2010) HIV prevalence is higher amongst specific groups and tends to differ according to location, gender and age.

Figure 1: Percent of Adults Estimated to be Living with HIV/AIDS, 2003 and. Number of people Estimated to be living with HIV/AIDS, 2003



Source: UNAIDS, 2004 Report on the Global AIDS Epidemic, and 2002 Report on the Global AIDS Epidemic

Several donor governments provide funding and other support to address Kenya's HIV/AIDS epidemic including: the United States, the United Kingdom, and Japan. Kenya is one of the 15 focus countries of the United States Government's President's Emergency Plan for AIDS Relief (PEPFAR). There are also many NGOs and charitable institutions that run HIV/AIDS related projects within Kenya. Their activities in Kenya aim to integrate maternal and child health, family planning, reproductive health, and HIV/AIDS services in both clinical and community settings across the country. Pregnant and postpartum women who attend family planning (FP), antenatal, and prevention of mother-to-child transmission (PMTCT) clinics receive counseling on both FP and HIV prevention, as do attendees at voluntary counseling and testing centers, enabling programs to reach a large cross section of the population.

The critical need to ensure that available resources are used effectively, to have a greater impact, places unprecedented responsibility on monitoring and evaluation (M&E). There is need to deliver more effective results in HIV/AIDS interventions through increased country M&E capacity. M&E frameworks must be strengthened, thereby enhancing the efficiency, effectiveness and transparency of HIV/AIDS interventions.

The unexamined project is not worth much. No matter how perfect the plan, without regular reviews during the life of the project neither the project progress nor the realty of the plans can be assessed. (Cleland & Ireland, 2004). Without effective monitoring and control, it is impossible to judge if HIV/AIDS interventions are going in the right direction, whether progress and success can be claimed, and how future efforts might be improved.

1.2 Statement of the Problem

After HIV/AIDS was declared a national disaster in 1999, the World Bank funded a 4-year multi-sectoral project under the Multi-Country HIV and AIDS Project (MAP) approach. This project, Kenya HIV and AIDS Disaster Response Project (KHADREP) closed in December

2005. During the last 4 years of implementation NACC, as the coordinator of the project, learned several lessons including the accountability and effective monitoring of the community grants which were a major part of the KHADRE Project. Despite the existence of a Financial Management Agency (FMA), the lack of an effective M&E system negated the flow of information on how the community grants were used and the compliance to approved proposals and the contracts signed with the FMA. Furthermore, the lack of an effective M&E system meant that project outcomes could not be ascertained.

A new follow-up project was developed known as 'Total War Against HIV and AIDS' (TOWA), which closely follows the design of the former project. In this study, we sought to establish whether the lessons learned during the KHADRE Project were applied to improve the M&E systems, and ultimately, Project Delivery Capability (PDC) in interventions under the new TOWA project. Monitoring and Evaluation processes must be built in and tied to other project management practices to ensure that what is being implemented is per plan and delivers the intended results and outcomes.

This study therefore sought to determine the influence of Monitoring and Evaluation tools and techniques in HIV/AIDS interventions in Kenya, on Project Delivery Capability (PDC).

1.3 Purpose of the Study

This study sought to determine the influence of Monitoring and Evaluation tools and techniques used in HIV/AIDS interventions in Kenya on Project Delivery Capability (PDC).

Secondly, this study aimed to provide formal insight into understanding the tools and techniques that project managers involved in HIV/AIDS interventions use in practice.

1.4 Objectives

The main objective of the study was to determine the influence of monitoring and evaluation tools and techniques in HIV/AIDS interventions on Project Delivery Capability (PDC).

To achieve this objective, the specific objectives of this study were as follows:

i. To determine how the use of Earned Value Management in HIV/AIDS interventions influences Project Delivery Capability.

ii. To assess how the use of Performance Reviews in HIV/AIDS interventions influences Project Delivery Capability.

iii. To determine whether the use of Variance Analysis in HIV/AIDS interventions influences Project Delivery Capability.

iv. To assess how the use of the Project Management Software (for scheduling) in HIV/AIDS interventions influences Project Delivery Capability.

1.5 Research Questions

Based on the objectives of the study, the research questions are as follows:

i. How does the use of Earned Value Management in HIV/AIDS interventions influence Project Delivery Capability (PDC)?

ii. Does the use of Performance Reviews in HIV/AIDS interventions influence Project Delivery Capability (PDC)?

iii. How does the use of Variance Analysis in HIV/AIDS interventions influence Project Delivery Capability (PDC)?

iv. Does the use of the Project Management Software (for scheduling) in HIV/AIDS interventions influence Project Delivery Capability (PDC)?

1.6 Significance of the Study

International commitment to HIV/AIDS has increased rapidly in recent years stimulated by the leadership of the Joint United Nations Programme on HIV/AIDS (UNAIDS) and its co-sponsors. Kenya has been one beneficiary of such commitment. UNAIDS and the UN Family support a variety of HIV/AIDS activities in Kenya. The resources available for HIV/AIDS interventions are limited, thus creating a need for cost-effectiveness to ensure maximum impact by the interventions. Monitoring and evaluation is one important way to ensure this.

Important components of M&E include improvements in surveillance, routine monitoring frameworks, supporting a learning agenda on what is working and what is not working, and

assessing whether changes expected from program and policy interventions are actually happening. The above can aid to judge whether programs and interventions are achieving their intended aims, and provide a basis for decision making that is truly evidence based. Use of known Monitoring and Control tools and techniques facilitates sound strategic planning, improves Project Delivery Capability (PDC) and improves cost-effectiveness of HIV/AIDS interventions.

The study provided information that is at variance with the documented tools and techniques as defined in the PMBOK and provided key insights into updating the professional knowledge base. The results of this study were important in that they can assist further research in other project management processes.

1.7 Delimitation of the Study

There are very many HIV/AIDS interventions in the country. The researcher therefore had a variety to choose from. HIV/AIDS project management in Kenya is very well organized at national level by NACC and NASCOP, so there was adequate data for the study. The study focused on Nairobi and Nyanza regions of Kenya, which are the two regions with the highest HIV/AIDS prevalence rates

1.8 Limitations of the Study

The following were some of the challenges encountered in the course of the study

Funding limitations

There are very many HIV/AIDS interventions all over the country and as such, it was not possible to include all of them in the study due to the financial implications involved. This made it necessary to concentrate only on HIV/AIDS interventions implemented by NACC under the Total War Against HIV and AIDS (TOWA) Project in Kenya.

Lack of locally defined Monitoring and Evaluation tools and techniques

There is no specific known set of tools and techniques to be used in Monitoring and Evaluation of HIV/AIDS interventions in Kenya. This study therefore adopted the set of M&E tools and techniques put forth by the Project Management Institute (PMI).

Diverse locations of HIV/AIDS interventions

Most HIV/AIDS interventions are spread all over the country. This inevitably led to logistical problems. The study focused on Nyanza and Nairobi regions as demarcated by NACC, which are the two regions with the highest HIV/AIDS prevalence rates.

1.9 Assumptions of the Study

To achieve the objectives of the study, the following assumptions were made:

That the Monitoring and Evaluation tools and techniques contained in the PMBOK *Guide* can be used as a benchmark. The Project Management Institute (PMI) has developed the Project Management Body of Knowledge, PMBOK *Guide,* which itemizes the key processes in project management, and the key tools and techniques used in these processes.

That the sample used represents the whole population. The sampling technique used will be assumed to obtain a sample representative of the whole population.

That the data collection instrument is valid and is measuring the desired constructs

The respondents would answer the questions correctly and honestly, and that they would disclose the information required by the researcher upon request.

1.10 Definitions of Significant Terms

This section defines the significant terms used, defined in the context of this study.

Earned Value Management – A method for measuring project performance that compares the work planned with the work actually accomplished to determine if costs and time frames are as planned.

Evaluation - A rigorous, scientifically based collection of information about programme activities, characteristics, and outcomes that determine the merit or worth of a specific programme. It is the episodic assessment of overall achievements.

Indicator - A measure of change, progress or state.

Most at Risk Populations - Groups whose behavior puts them at the greatest risk of being infected with HIV. In Kenya, sex workers (both female and male), injecting drug users (IDU), and men who have sex with men (MSM) are primarily considered MARPs.

Monitoring - The process of routinely collecting, storing, analysing and reporting project/programme information used to make decisions for project management. Monitoring provides project management and project stakeholders with the information needed to evaluate the progress of the project, identify trends, patterns or deviations, keep project schedule and measure progress towards the expected goals.

Performance Reviews – A method for examining and communicating project status to the relevant stakeholders.

Pillar - A pillar in strategic plan refers to the set of outcomes and outputs within the KNASP III Results Framework, which are intended to achieve each of the four programme outcomes and through implementation within a single overall strategy.

Project Delivery Capability - This is a term used to describe all the aspects of project governance, support and overall oversight that enable organizations to improve the way they manage the 'doing of their projects' and as a consequence increase the success rate of their projects.

Project Management Software – A computer software that aids the project management function of scheduling project activities and forecasting.

Research - The generation of knowledge that can be used to prevent disease, promote, restore, maintain, protect and improve the population's development and well-being.

Results Based Planning and Management – A programming approach focusing on 'results', where a 'result' is defined as 'a measurable or describable change resulting from a cause and effect relationship'.

Surveys - Periodic, focused assessments that collect health data from a population. Surveys are used to assess the perceptions, behaviour, knowledge, attitudes and, increasingly, infection status, of targeted populations.

Tools and Techniques – The various methods available to a project manager and his team for use in the processes of Monitoring and Evaluation

Variance Analysis – A method for examining schedule, technical, performance or cost deviations from a specific project plan.

Vulnerable groups - These are groups that may be at higher risk of acquiring HIV infection and include uniformed services, disadvantaged children/orphans and vulnerable children (OVC), widows, older persons, people with disabilities, populations of humanitarian concern (refugees and internally displaced persons), and mobile populations.

1.11 Organization of the Study

This report has five chapters. Chapter one described the background of the study, problem, the chapter presents the study objectives, research question and study assumptions. Chapter two focused on the literature review and conceptual framework. The necessary literature related to the study problem has been reviewed with an objective of developing a conceptual framework model that provided the influence of M&E tools and techniques on Project Delivery Capability. Chapter three presents the methodology used in the study. The researcher adopted descriptive design so as to capture the influence of M&E tools and techniques on Project Delivery Capability. The pertinent issues discussed in this chapter include the target population, sample and sampling technique to be used, the research design, description of tools to be used in data collection, the measurement of the variables and techniques used in analyzing the collected data. Chapter four discusses the findings of the questionnaire that was administered with discussions on the same while chapter five highlights the answers to the questions with recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed literature that was relevant to the study with a purpose of exploring previous research work and other secondary data useful to the study. The chapter examined what other researchers and scholars have said regarding the identified variables and their influence on Project Delivery Capability.

2.2 Monitoring and Evaluation defined

Bermberger (2004) defines monitoring as that type of evaluation that is performed while a project is being implemented, with the aim of improving the project design and functioning while in action. On the other hand, an evaluation studies the outcome of a project with the aim of informing the design of future projects. Casley and Kumar (1997) define monitoring as the continuous assessment of project implementation in relation to agreed schedules, and of the use of inputs, infrastructure, and services by project beneficiaries. They assert that monitoring provides managers and other stakeholders with continuous feedback on implementation and identifies actual or potential successes and problems as early as possible to facilitate timely adjustments to project operation. They then define evaluation as the periodic assessment of a project's relevance, performance, efficiency, and impact (both expected and unexpected) in relation to stated objectives. Project managers undertake interim evaluations during implementation as a first review of progress, a prognosis of a project's likely effects, and as a way to identify necessary adjustments in project design.

In the National HIV/AIDS M&E Framework (2005), monitoring is defined as the routine, daily assessment of ongoing activities and progress. In contrast, evaluation is the episodic assessment of overall achievements. Monitoring looks at what has been done, whereas evaluation examines what has been achieved or what impact has been made. A monitoring and evaluation (M&E) system is defined as a system designed to guide the process of collecting, analyzing and presenting specific data, based on pre-defined indicators, with the purpose of quantifying

achievements (or levels of success) of a defined strategy and guiding future strategy and interventions.

Cleland & Ireland (2004) see monitoring as keeping track of and checking systematically all project activities. This enables the evaluation, which is an examination and appraisal of how things are going on the project. The Project Management Institute's PMBOK Guide (2004) terms monitoring and controlling project work as the process of tracking, reviewing and regulating the progress to meet the performance objectives defined in the project management plan. In this text monitoring is said to include status reporting, progress measurement, and forecasting. Jennings & Swiss (2001) hold a similar position. They write that monitoring and evaluation is the process of collecting and analyzing information about the project that tells you whether you are on track to reach your objectives, and whether or not the project achieved or contributed to the desired impact. In order to know whether or not you are on track to achieving your program's objectives, you must monitor the project during implementation as well as evaluate its impact at the end of the project. Monitoring the progress of the project allows you to adapt the program as needed to ensure that you attain your objectives. It is necessary to plan for monitoring and evaluation when you design your program; this will help you both to design an effective program and ensure that you plan (and budget) for appropriate monitoring and evaluation activities. There are as many definitions as there are authors. However, the central theme remains the same – no matter how perfect the plan, without regular reviews during the life of the project neither the project progress nor the realty of the plans can be assessed.

2.3 Monitoring & Evaluation of HIV/AIDS interventions in Africa

According to a 2006 report by Technical Support Facility (tsfsouthernafrica.com) in South Africa, Monitoring and Evaluation (M&E) of HIV and AIDS programmes is critical in today's environment of heavily donor-funded projects and other reporting requirements. M&E is an essential field of its own necessary to monitor and shape the direction of national responses to the epidemic, as a tool for resource mobilization and as a guide to resource allocation. The processes involved in developing M&E for national and other programmes can also be very important, in terms of empowering and mobilizing diverse stakeholders, a means of forging a

common national vision and a renewed effort to tackle the many complex challenges associated with HIV and AIDS. However, M&E of HIV and AIDS programmes and activities have tended to be characterized by certain limitations: Lack of uniformity in approaches, tools and methods used in developing M&E frameworks; Lack of standardized, on-going skill-building for M&E professionals; and M&E plans not being adequately costed or budgeted. (tsfsouthernafrica.com, retrieved 11.02.12)

There are many efforts underway to improve the quality of M&E, including the World Bank GAMET (Global AIDS Monitoring and Evaluation Team) and UNAIDS. These two agencies work together to standardise M&E processes and offer a variety of tools and frameworks. In addition to this, the Global Fund to Fight HIV/AIDS, TB and Malaria (GF) in collaboration with multi- and bi-lateral development partners, have developed some standard indicators and tools for use in developing, reporting and monitoring GF grants. (World Bank, 2005)

Mertens & Carael (1997) note that over the past decade only a limited number of public health initiatives have been subjected to systematic monitoring and evaluation and, in many instances, there is growing pressure to estimate which approaches work best for a given level of inputs in order to allocate resources effectively. In the field of HIV/AIDS prevention and care, the first difficulty is that many national AIDS programs lack clearly stated objectives and involve a wide variety of players. These players each have their own guidelines for project/program design, monitoring, and evaluation. The second difficulty relates to the fact that evaluation involves multiple methods, multiple audiences, multiple funding sources, multiple perspectives, multiple paradigms, multiple roles, and multiple solutions to multiple problems (Quinn Patton, 1986).

2.4 The HIV/AIDS Situation in Kenya

HIV/AIDS continues to ravage every sector of Kenya's economy. The pandemic has left behind millions of orphans and created widespread poverty and helplessness among the population. Kenya is currently experiencing a mixed and geographically heterogeneous HIV epidemic. Its characteristics are those of both a 'generalised' epidemic among the mainstream population, and a 'concentrated' epidemic among specific most-at-risk populations. (National HIV/AIDS Monitoring and Evaluation Framework, 2009/10-2012/14)

Various studies in Kenya have revealed high HIV prevalence amongst a number of key affected groups, including sex workers, injecting drug users (IDUs), men who have sex with men (MSM), truck drivers and cross-border mobile populations. (UNGASS, 2008) Some of these groups are marginalised within society, and therefore difficult to reach with HIV prevention, treatment and care, and the extent to which HIV is affecting these groups has not been fully explored. (UNGASS, 2010) In 2008, an estimated 3.8 percent of new HIV infections were among IDUs and in the capital, Nairobi, 5.8 percent of new infections were among IDUs. (Strathdee, S.A, et al, 2010). HIV infections are easily prevented in healthcare settings, nevertheless, 2.5 percent of new HIV infections occurred in health facilities during 2008 in Kenya (Business Daily 2010, 9th November)

Table 2.1
Estimated National HIV Prevalence in Kenya 1990-2006

Years	%
1990	5.1
1991	6.3
1992	7.4
1993	8.5
1994	9.5
1995	10.4
1996	11.2
1997	11.9
1998	12.5
1999	13.0
2000	13.4
2001	12.8
2002	10.6
2003	9.4
2004	7.5
2005	7.3
2006	6.9

Source - UNGASS (2010) *'Country progress report - Kenya'*

Women are disproportionally affected by HIV. In 2008/09 HIV prevalence among women was twice as high as that for men at 8 percent and 4.3 percent respectively. Kenyan women experience high rates of violent sexual contact, which is thought to contribute to the higher prevalence of HIV. In a 2003 nationwide survey, almost half of women reported having

experienced violence and one in four women aged between 12 and 24 had lost their virginity by force (UNGASS, 2010) Adult HIV prevalence is greater in urban areas (8.4 percent) than rural areas (6.7 percent) of Kenya. However, as around 75 percent of people in Kenya live in rural areas, the total number of people living with HIV is higher in rural settings (1 million adults) than urban settings (0.4 million adults) (UNGASS, 2010) Table 2.1 shows the HIV Prevalence rates in Kenya.

Data from recent national surveys in Kenya, including the 2007 Kenya AIDS Indicator Survey and KDHS 2008-2009, have shown promising increases in behaviors that help slow the spread of HIV, including an increase in condom use, delay in sexual debut, and reduction in the number of sexual partners. (KAIS, 2007, KDHS 2008/09) According to the NACC, previous attempts by individual implementers and stakeholders in developing M&E systems often led to parallel systems being developed for different programmes. There was a minimum sharing of information between programmers and between different implementers leading to inefficiency in utilizing scarce resources. The Table 2.2 below by UNAIDS, shows the HIV/AIDS situation in Kenya, compared against Sub-Saharan Africa and the rest of the world.

Table 2.2
HIV/AIDS in Kenya

Indicator	Kenya	Sub-Saharan Africa	Global
Estimated number of people living with HIV/AIDS, 2003	1.2 million	25 million	37.8 million
Percent of adult population estimated to be living with HIV/AIDS, 2003	6.7%	7.5%	1.1%
Estimated number of deaths due to HIV/AIDS, 2003	150,000	2.2 million	2.9 million
Women as percent of adults estimated to be living with HIV/AIDS, 2003	65%	57%	48%
Percent of young women, ages 15-24 estimated to be living with HIV/AIDS, 2001	12.4-18.7%	8.9%	1.4%
Percent of young men, ages 15-24 estimated to be living with HIV/AIDS, 2001	4.8-7.2%	4.4%	0.8%
Estimated number of AIDS orphans, 2003	650,000	12.1 million	15 million
Number of people estimated to be receiving antiretroviral therapy (ART) June 2005	33,000-46,000	500,000	970,000
Number of people estimated to be in need of ART, June 2005	233,000	4.7 million	6.5 million

Source - UNAIDS, *2004 Report on the Global AIDS Epidemic*, July 2004.

2.5 The History of Monitoring & Evaluation Efforts in HIV/AIDS Interventions in Kenya

In 2000, Kenya was one of the first African countries to sign a Development Credit Agreement (DCA) with the World Bank to implement a 4-year multi-sectoral project under the Multi-Country HIV and AIDS Project (MAP) approach. The project closed in December 2005, and a new follow-up project was developed known as 'Total War Against HIV and AIDS' (TOWA). The TOWA project closely follows the design of the former project, with a great deal of emphasis on community participation. (NACC, 2007)

During the last 4 years of implementation of the former project (Kenya HIV and AIDS Disaster Response Project) NACC, as the coordinator of the project, learned several lessons including the accountability and effective monitoring of the community grants which were a major part of the KHADRE Project. Despite the existence of a Financial Management Agency (FMA), the lack of an effective M&E system negated the flow of information on how the community grants were used and the compliance to approved proposals and the contracts signed with the FMA. Furthermore, the lack of an effective M&E system meant that project outcomes could not be ascertained. (NACC, 2007)

According to the report UNAIDS/05.08, although financing for the response to AIDS in low- and middle-income countries has increased significantly, it falls far short of the scale necessary to achieve the Millennium Development Goal of reversing the epidemic by 2015. As such, whatever funds available must be used effectively. This calls for coordination and harmonization of efforts among the many actors in the response to AIDS at the global, national and local levels. This requirement is felt most keenly at the country level. Even in countries that have established national AIDS authorities and clearly defined national priorities, parallel financing, planning, programming and monitoring continue to prevail. Inevitably, this weakens the national response. (www.unfpa.org) retrieved 12.05.12

To tackle this pervasive problem, in September 2003, at the 13th International Conference on AIDS and STIs in Africa, a working group approved a set of guiding principles for optimizing the use of resources and improving the country-level response to AIDS. In April 2004, the Consultation on Harmonization of International AIDS Funding—bringing together

representatives from governments, donors, international organizations and civil society—endorsed the "Three Ones" principles as follows:

One agreed AIDS action framework that provides the basis for coordinating the work of all partners;

One national AIDS coordinating authority, with a broad-based multisectoral mandate;

One agreed country-level monitoring and evaluation system.

UNAIDS was called on to act as facilitator and mediator in efforts to realize these principles. (UNAIDS, 2008)

In recognition of the challenges posed by the AIDS epidemic, the Government of Kenya established policy guidelines in the Sessional Paper No 4 of 1997 on AIDS in Kenya and in 1999, AIDS was declared a national disaster. A body to spearhead the coordination of interventions, the National AIDS Control Council (NACC), was created under the Office of the President to provide leadership and coordinate a multisectoral response to the epidemic. (UNAIDS, 2004) Kenya implemented the multisectoral response to HIV/AIDS through its first multisectoral strategic plan for five years 2000-2005. The priority areas were identified as: Prevention and advocacy, Treatment, continuum of care and support, Mitigation of the socio-economic impact, Monitoring, evaluation and research, and Management and coordination. (NASCOP, 2004)

The KNASP 2000-2005 also emphasized greater involvement of the civil and private sector organizations. The Strategic Plan came to an end and lessons learnt as well as achievements and challenges encountered in the implementation guided the development of KNASP 2005/6-2009/10. The goal of the KNASP 2005/6-2009/10 was to reduce the spread of HIV, improve the quality of life of those infected and affected, and mitigate the socio-economic impact of the epidemic. The priority areas identified were Prevention of new infections, Improve the quality of life, Mitigation of socio-economic impact. (UNAIDS, 2008)

During the development of the KNASP 2005/6-2009/10, results or milestones to be achieved within the first and second year of the KNASP life for each priority area were identified. The Framework was reviewed and updated annually by all partners and formed the basis for progress

reporting at the annual JAPR, using information collected through the National HIV/AIDS M&E Framework. Indicators in the results framework were incorporated to the national indicators for the purpose of reporting. (UNAIDS, 2008)

In line with the 'Three Ones" principles, the Second Kenya National HIV and AIDS Strategic Plan (KNASP II) 2005/6-2009/10 strove to control the spread of HIV by defining an overarching strategy, a clear vision, goals and targets. In addition to strengthening the coordination and overall management of the national HIV response in Kenya, that strategic plan provided a framework and context within which sectoral HIV and AIDS strategies, plans and budgets were formulated and monitored. To achieve an overall prevalence target of below 5.5 per cent by 2010, three priority strategies were adopted: prevention of new infections; improving the quality of life of people who were infected or affected by HIV; and mitigating the socio-economic impact of HIV and AIDS. (WHO, 2010) A fourth priority area – Support Services – was added to these three to facilitate the implementation of KNASP II. It comprised, among other things, Monitoring and Evaluation and Financing and Procurement. The first National HIV and AIDS M&E Framework was thus developed to guide the collection, analysis, utilization and dissemination of information. This information would enable tracking of progress in response to HIV and AIDS and inform decision-making as charted out in the current strategic plan. A list of national indicators was defined at impact, outcome and output levels, and a Monitoring and Evaluation Implementation Manual developed to facilitate the operationalization of the framework. (WHO, 2010)

Towards the end of 2008, two important new sources of information became available – Kenya AIDS Indicator Survey (KAIS, 2007) and the Kenya Modes of Transmission study (MoT, 2008), which had significant implications for KNASP II. According to the findings of the Modes of Transmission study, HIV incidence remained high at 76,000 – 104,000 per year. Age and sex differentials are considerable, with HIV prevalence peaking among women (13.3 per cent among the 30-34 years age group) a decade earlier than among men at (10.2 per cent among 40-44 years age group). Determinants of HIV infection among men included circumcision status and engaging in sex with other men (MSM).

An estimated 83 per cent of adult males in high prevalence districts in Nyanza Province were not circumcised and the Kenya AIDS Indicator Survey revealed that 13.2 per cent of uncircumcised men aged 15-64 years were living with HIV. Further, a third of uncircumcised men aged 35-39 years were infected with HIV. (KAIS, 2008) In response to the new evidence, the NACC - leadership together with other stakeholders - agreed to undertake a comprehensive Strategic Review that would inform the new strategic plan covering the period 2009/10 – 2012/13. This would enable the country to not only address the new evidence about the epidemic, strengthen new approaches to prevention and care and treatment; and mitigation of socio-economic impact of HIV and AIDS, but also to re-articulate its commitment to effective and sustainable programming through the new Government development strategy, Vision 2030. The Strategic Review of KNASP II's National M&E Framework conducted between November 2008 and June 2009 (as part of the overall Strategic Review) identified various strengths and weaknesses in it. Regarding key strengths, the information generated through the established M&E system contributed to HIV programming and reviews, particularly the Joint Annual Programme Review of AIDS (JAPR) process and the UNGASS reporting and engagement of Monitoring and Coordination Groups for the four priority areas. The information also contributed largely to the development of the new KNASP III. (UNGASS, 2010)

However, the comprehensive review also identified some critical gaps including: The National M&E Framework was not well aligned to KNASP II and not adequately integrated in the planning process; There was limited data use in planning at decentralized levels due to capacity constraints; The timeliness and quality of information products from some sub-systems were not satisfactory; There were parallel M&E systems; Data quality assurance systems were inadequate; Some vital data were not reported, e.g., data for services to MARPs; Dissemination of HIV M&E information to all stakeholders was not timely. (UNGASS, 2010) It was thus agreed that a National HIV and AIDS Monitoring, Evaluation and Research Framework would be developed as one of several tools that would support the implementation of the new strategic plan, KNASP III. (UNAIDS, 2010)

A comprehensive National HIV and AIDS Monitoring, Evaluation and Research Framework (M&E Framework) was then developed to coordinate stakeholders towards one agreed country-

level monitoring and evaluation system. (WHO, 2012) The process of developing the M&E framework was participatory, with extensive consultations among a wide range of stakeholders at constituency, provincial and national levels. The goal of the M&E framework is to establish a well-coordinated, harmonized monitoring, evaluation and research system. This system is supposed to provide timely and accurate strategic information to guide the planning of the national response to HIV and AIDS in order to achieve the objectives of KNASP III. (UNAIDS, 2010)

2.6 Monitoring & Evaluation Tools and Techniques and their use on previous projects

The World Bank, in a 2005 article *'Monitoring and Evaluation – Some tools, methods and approaches'* documents several M&E tools. The documented tools include several data collection methods, analytical frameworks, and types of evaluation and review. The *M&E Overview* discusses: Performance indicators, The logical framework approach, Theory-based evaluation, Formal surveys, Rapid appraisal methods, Participatory methods, Public expenditure tracking surveys, Cost-benefit and cost-effectiveness analysis, and Impact evaluation.

WHO's work in strengthening of M&E systems in countries is conducted in a close collaboration with UNAIDS, World Bank, UNICEF; CDC, USAID and many other partners. This partnership aims to support countries in the development of better M&E systems. This includes the development of a national M&E plan based upon a simple framework, selected indicators and a plan for data collection, reporting, analysis and dissemination strategy for the next three to five years; training and capacity building of M&E staff; development of regional networks of consultants and institutions for technical assistance; development of locally appropriate tools and methods for M&E; development of a data management system. It is also important to link the national M&E plans to international goals such as the goals set at the UNGASS Declaration on HIV/AIDS and the Millenium Development Goals. (WHO, 2004)

WHO's efforts in M&E focus on the health sector. A major part of the interventions and programmes against AIDS take place in the health sector. Therefore, much of WHO's work in M&E concentrates on development of guidelines and tools for monitoring health interventions, such as anti-retroviral treatment programmes, counselling and testing, and prevention of mother

to child transmission. (K'Oyugi & Muita 2002). In addition, WHO is facilitating the collection of data on specific indicators of the health sector response at the country level. One of WHO's main activities is the development of guidelines and tools for monitoring and evaluation of health sector programmes. The guidelines have been developed in close collaboration with other international agencies and organizations, and major donors with strong country inputs. The focus is on national level monitoring. (USAID, 2010, UNGASS, 2010)

In 2000, a guide for national programmes was developed with a set of core and additional indicators for 14 programme areas. In the subsequent years work has been ongoing on the development of M&E guides for specific interventions areas, such as young people and HIV prevention, prevention of mother to child transmission, care and support and anti-retroviral therapy programmes. Since 2003 several guidelines have been published to describe a coherent approach to the M&E of scaling up to reach the goal of "3 by 5". (WHO, 2004)

In the June 2004 'Monitoring and Evaluation Toolkit' developed by WHO, UNICEF, CDC and other partners, the origin of the 'Three Ones' is discussed. The article also states that the importance of creating, implementing and strengthening a single, unified and coherent M&E system at the country level cannot be overemphasized. From the point of view of the national programme, a coherent M&E system helps ensure that donor-funded M&E efforts best contribute to national needs. These needs go beyond disease-focused M&E, rather than simply serving the reporting needs of specific international donors or organizations. (WHO, 2004)

The Project Management Institute (PMI) identifies a set of tools and techniques used in monitoring and evaluation of projects. These tools and techniques selected for this study are a part of this set. They are: Earned Value Management, Variance Analysis, Performance Reviews and the Project Management Software. The section below discussed these tools and techniques, their use, and how their use has influenced Project Delivery Capability on past projects.

2.6.1 Earned Value Management

Earned value management (EVM), is a project management technique for measuring project performance and progress in an objective manner. Because EVM has the ability to combine

measurements of scope, schedule and cost, in a single integrated system, Earned Value Management is able to provide accurate forecasts of project performance problems, which is an important contribution for project management. (Project-management-knowledge.com, retrieved 12.05.12)

Earned Value is also known as Performance Measurement, Management by Objectives, Budgeted Cost of Work Performed and Cost Schedule Control Systems. The earned-value measurement concept was first introduced to the American defense contracting community when the government issued the Department of Defense (DoD) and NASA Guide to PERT/Cost in 1963, which provided a simple definition of earned value. In 1967 the DoD established the Cost/Schedule Control Systems Criteria (C/SCSC) to standardize contractor requirements for reporting cost and schedule performance on major contracts. The C/SCSC concept has been consistently applied for over 30 years and has set the standard for major government systems acquisitions. Other government agencies in United States and in other nations such as Australia, Canada and Sweden have adopted similar earned-value criteria in management of their major system acquisitions. (Christensen, 1998)

Nagrecha (2002) points out that although some people consider the C/SCSC standards ideal for all private firms to emulate, many within private industry have had difficulty employing the rigid criteria on all their projects. He finds this unfortunate since earned value performance measurement provides a sound project management tool. When properly employed, it can give the project manager an early warning signal that the project is heading for a cost overrun unless immediate steps are taken to change the spending plan. In 1995, private industry as represented by the National Security Industrial Association (NSIA) was allowed to assess the utility of the earned-value criteria. After a long study, NSIA subcommittee came up with its version of the criteria, reworked significantly to be more palatable to the project management community. The industry standard was called the Earned Value Management System (EVMS). The DoD endorsed this major development in December 1996. (Nagrecha, 2002)

Robert Marshall, in his 2007 article in the Journal of Contract Management defines Earned Value Management (EVM) as a project management technique for measuring project

performance and progress in an objective manner. He says that EVM has the ability to combine measurements of scope, schedule, and cost in a single integrated system. Earned Value Management is notable for its ability to provide accurate forecasts of project performance problems. Early EVM research showed that the areas of planning and control are significantly impacted by its use; and similarly, using the methodology improves both scope definition as well as the analysis of overall project performance. More recent research studies have shown that the principles of EVM are positive predictors of project success. (Christensen, 1998)

The Project Management Institute (PMI) documents the following as the essential features of any EVM implementation: a project plan that identifies work to be accomplished; a valuation of planned work, called Planned Value (PV) or Budgeted Cost of Work Scheduled (BCWS); and pre-defined "earning rules" (also called metrics) to quantify the accomplishment of work, called Earned Value (EV) or Budgeted Cost of Work Performed (BCWP). (PMI, 2005) EVM emerged as a financial analysis specialty in United States Government programs in the 1960s, but it has since become a significant branch of project management and cost engineering. Project management research investigating the contribution of EVM to project success suggests a moderately strong positive relationship. Implementations of EVM can be scaled to fit projects of all sizes and complexities. (Marshall, 2006)

Sumara & Goodpasture (1997) identify three steps in EVM implementation where emphasis is on technical performance. The first step is to define the work. This is typically done in a hierarchical arrangement called a work breakdown structure (WBS) although the simplest projects may use a simple list of tasks. The second step is to assign a value, called planned value (PV), to each activity. The third step is to define "earning rules" for each activity. The simplest method is to apply just one earning rule, such as the 0/100 rule, to all activities. Using the 0/100 rule, no credit is earned for an element of work until it is finished; the 50/50 rule, means 50% credit is earned when an element of work is started, and the remaining 50% is earned upon completion. These initial three steps define the minimal amount of planning for simplified EVM. The final step is to execute the project according to the plan and measure progress. When activities are started or finished, EV is accumulated according to the earning rule.

Dwivedi (2006) writes that Earned Value Management (EVM) helps project managers to measure project performance. It is a systematic project management process used to find variances in projects based on the comparison of worked performed and work planned. EVM is used on the cost and schedule control and can be very useful in project forecasting. The project baseline is an essential component of EVM and serves as a reference point for all EVM related activities. EVM provides quantitative data for project decision making.

According to Dwivedi, EVM contributes to preventing scope creep, improving communication and visibility with stakeholders, reducing risk, profitability analysis, project forecasting, better accountability and performance tracking. He documents EVM as consists of the following primary data elements. Each data point value is based on the time or date an EVM measure is performed on the project. Budget At Completion (BAC) - Total cost of the project; Budgeted Cost for Work Scheduled (BCWS) / Planned Value (PV) - The amount expressed in Pounds (or hours) of work to be performed as per the schedule plan PV = BAC * % of planned work; Budgeted Cost for Work Performed (BCWP) / Earned Value (EV) - The amount expressed in Pounds (or hours) on the actual worked performed EV = BAC * % of Actual work; Actual Cost of Work Performed (ACWP) / Actual Cost (AC) - The sum of all costs (in Pounds) actually accrued for a task to date.

Haughey, (2004) holds the view that current performance is the best indicator of future performance, and therefore using trend data, it is possible to forecast cost or schedule overruns at an early stage in a project. The most comprehensive trend analysis technique is the Earned Value method. In a nutshell, Earned Value is an approach where you monitor the project plan, actual work, and work-completed value to see if a project is on track. Earned Value shows how much of the budget and time should have been spent, with regard to the amount of work done so far.

Englert and Associates, (2003) Inc define Earned Value Management as, "A method for measuring project performance. It compares the amount of work that was planned with what was actually accomplished to determine if cost and schedule performance is as planned." The Project Magazine (2005) defines it as, "A methodology used to measure and communicate the real physical progress of a project taking into account the work complete, the time taken and the costs

incurred to complete that work." The user guide for Microsoft Project 2003 defines Earned Value as, "A method for measuring project performance. It indicates how much of the budget should have been spent, in view of the amount of work done so far and the baseline cost for the task, assignment, or resources."

Field Operative (2004) defines it as, "The physical work accomplished plus the authorised budget for this work. The sum of the approved cost estimates, (which may include overhead allocation), for activities, (or portions of activities), completed during a given period, usually project-to-date." NASA (2002) defines it as, "An integrated management control system for assessing, understanding and quantifying what a contractor or field activity is achieving with program dollars. EVM provides project management with objective, accurate and timely data for effective decision making."

Haughley (2004) also writes that Earned Value differs from the usual budget verses actual costs incurred model, in that it requires the cost of work in progress to be quantified. This allows the project manager to compare how much work has been completed, against how much he expected to be completed at a given point. The project manager needs to agree the project scope, create a Work Breakdown Structure (WBS) and assign budget to each work package, the lowest level of the WBS. Next he or she will create a schedule showing the calendar time it will take to complete the work. This overall plan is baselined (this is the planned value) and used to measure performance throughout the project. As each work package is completed (earned) it is compared with planned value, showing the work achieved against plan. A variance to the plan is recorded as a time or schedule deviation. It is necessary to get the actual costs incurred for the project from the organisations' accounting system. This cost is compared with the earned value to show an overrun or under run. (Marshall, 2007)

Following are some of the benefits of EVMS, described by Fleming and Koppleman as the legacy of using the criteria on government contracts for three decades (1996, p.22). The first benefit is a single management control system providing reliable data. Although the criteria do not require an external report, managing with one system while reporting from another is neither efficient nor effective. The second benefit is the integration of work, schedule, and cost using a

Work Breakdown Structure. The criteria require that all the authorized work and related resources are defined and integrated using a product-oriented work breakdown structure. The third benefit is a database of completed projects useful for comparative analysis. (Beach, 1990).

The fourth documented benefit is the cumulative Cost Performance Index as an early warning signal. The cumulative cost performance index (CPI) is defined as the earned value to-date divided by the cost to-date (Christensen and Heise, 1993). The fifth benefit is the Schedule Performance Index as an early warning signal. The schedule performance index (SPI), defined as earned value divided by planned value, is useful for identifying schedule problems, especially when used with critical path information (Fleming and Koppelman (1996). The sixth benefit is the Cost Performance Index as a predictor for the final cost of the project. The cumulative CPI is also useful for determining a reasonable lower limit for the estimated final cost of a contract, termed the "Estimate At Completion" (Christensen 1996). The seventh benefit is an index-based method to forecast the final cost of the project. It has been shown that the SPI and CPI can be combined to estimate a reliable upper bound to the EAC (Christensen 1996).
The eighth benefit is the To-complete performance index to evaluate the forecasted final cost. Another earned value index, the To-complete Performance Index (TCPI), is useful for evaluating the reasonableness of the contractor's EAC or other financial goals (Christensen, 1994). The ninth benefit is the periodic (e.g., weekly or monthly) Cost Performance Index as a benchmark. While cumulative performance indices are useful for predicting trends at summary levels in the WBS, weekly or monthly CPIs are useful for cost performance trends at the detailed levels of the WBS (Fleming and Koppelman, 1996) The criteria recommend an analysis of these and all other metrics at the frequency and level needed by management for effective control (DOD 1996). The tenth and last benefit is the management by exception principle can reduce information overload. By directing management attention to only the most critical problems, information overload can be reduced. (Christensen 1996).

Kerby and Counts (2005) studied the benefits of EVM from a project manager's perspective. They documented the experience of the Habitat Holding Rack (HHR) project manager at the Marshall Space Flight Center (MSFC). They concluded that basically, EVM is a process to help

measure performance in cost, schedule, and technical areas and to help the manager better identify project risks. If managers can measure performance effectively, and predict a good percentage of issues/concerns upfront, mitigation plans can be put into place that help reduce or eliminate big impacts to the project. (http//cio.gsfc.nasa.gov retrieved 15.10.2011)

Nagrecha (2002) holds the view that Earned value analysis is a method of performance measurement. Many project managers manage their project performance by comparing planned to actual results. With this method, one could easily be on time but overspend according to the plan. A better method is earned value because it integrates cost, schedule and scope and can be used to forecast future performance and project completion dates. It is an "early warning" program/project management tool that enables managers to identify and control problems before they become insurmountable. It allows projects to be managed better – on time, on budget.

Christle (2000) holds a similar view. He describes Earned Value analysis as a method of performance measurement. Earned Value is a program management technique that uses "work in progress" to indicate what will happen to work in the future. Earned Value is an enhancement over traditional accounting progress measures. Traditional methods focus on planned accomplishment (expenditure) and actual costs. Earned Value goes one step further and examines actual accomplishment. This gives managers greater insight into potential risk areas. With clearer picture, managers can create risk mitigation plans based on actual cost, schedule and technical progress of the work. It is an "early warning" program/project management tool that enables managers to identify and control problems before they become insurmountable. It allows projects to be managed better – on time, on budget. Earned Value Management System is not a specific system or tool set, but rather, a set of guidelines that guide a company's management control system.

Christensen (1994) discusses some limitations of the EVM. He finds that EVM has no provision to measure project quality, so it is possible for EVM to indicate a project is under budget, ahead of schedule and scope fully executed, but still have unhappy clients and ultimately unsuccessful results. In other words, EVM is only one tool in the project manager's toolbox. He also

documents that since EVM requires quantification of a project plan, it is often perceived to be inapplicable to discovery-driven or Agile software development projects. For example, it may be impossible to plan certain research projects far in advance, because research itself uncovers some opportunities (research paths) and actively eliminates others.

Another limitation by Christensen (1994) is that traditional EVM is not intended for non-discrete (continuous) effort. In traditional EVM standards, non-discrete effort is called “level of effort" (LOE). If a project plan contains a significant portion of LOE, and the LOE is intermixed with discrete effort, EVM results will be contaminated. This is another area of EVM research. Traditional definitions of EVM typically assume that project accounting and project network schedule management are prerequisites to achieving any benefit from EVM. (Hatry, 1999) Many small projects don't satisfy either of these prerequisites, but they too can benefit from EVM, as described for simple implementations, above. Other projects can be planned with a project network, but do not have access to true and timely actual cost data. In practice, the collection of true and timely actual cost data can be the most difficult aspect of EVM. Such projects can benefit from EVM, as described for intermediate implementations, above, and Earned Schedule. (Hatry, 1999)

As a means of overcoming objections to EVM's lack of connection to qualitative performance issues, the Naval Air Systems Command (NAVAIR) PEO(A) organization initiated a project in the late 1990s to integrate true technical achievement into EVM projections by utilizing risk profiles. (Christensen, 1998) These risk profiles anticipate opportunities that may be revealed and possibly be exploited as development and testing proceeds. The published research resulted in a Technical Performance Management (TPM) methodology and software application that is still used by many DoD agencies in informing EVM estimates with technical achievement. The research was peer-reviewed and was the recipient of the Defense Acquisition University Acquisition Research Symposium 1997 Acker Award for excellence in the exchange of information in the field of acquisition research. (NRC, 2004)

In conclusion, the work of previous researchers shows that Earned Value Management is a better method of program/project management because it integrates cost, schedule and scope and can be used to forecast future performance and project completion dates. It is an “early warning”

program/project management tool that enables managers to identify and control problems before they become insurmountable. It allows projects to be managed better – on time, on budget. (Marshall, 2007)

Earned Value provides the project manager with an objective way of measuring performance and predicting future outcomes. This can enable him or her to report progress with greater confidence and highlight any overrun earlier. Nagrecha (2002) This in turn, enables the management team to make cost and time allocation decisions earlier than would otherwise be the case. It is true that past performance is a good indicator of future performance. Earned Value is a useful tool for predicting the outcome of projects in terms of time to completion, cost to completion and expected final costs.

Despite the fact that studies have found that the technique has a number of disadvantages, including the fact that EVM cannot measure project quality, Christensen (1994)., the advantages largely outweigh the disadvantages. Generally, previous studies have shown that the use of EVM has been seen to have a positive influence on Project Delivery Capability.

2.6.2 Variance Analysis

Spafford (2003) defines the basic concept of a variance as simply the difference between what you expected and what you really received. Kerzner (2006) defines a variance as any schedule, technical; performance, or cost deviation from a specific plan. Variances must be tracked and reported. They should be mitigated through corrective actions and not eliminated through a baseline change unless there is a good reason. The cost variance compares deviations only from the budget and does not provide a measure of comparison between work scheduled and work accomplished. The scheduling variance provides a comparison between planned and actual performance but does not included costs.

Suchan (2007) holds the view that one way to evaluate a project's health is to track the difference between the original project plan and what is actually happening. This gap is better known as variance, a comparison of the intended or budgeted amount and the actual amount spent. Variance analysis is the practice of comparing actual project results to what was planned or

expected. It's a way to quantify how well - or how badly - a project is progressing. In planning for variances, Suchan (2007) holds the view that to determine project variances, you need to have a starting point: this is your baseline. Two key baselines to establish before you can put variance tracking and reporting into play are cost and schedule. But before you can get there, it is important to identify the project scope. Hafeez (2002) defines variance as a measurable change from a known standard or baseline. In other words, variance is the difference between what is expected and what is actually accomplished.

The Wideman Comparative Glossary of Project Management terms v3.1 defines a variance as the difference between a pre-established measure and an actual measure, a discrepancy between the actual and planned performance on a project, either in terms of schedule or cost. The difference between the baseline and scheduled task or resource information. Variances occur when you set a baseline plan and begin entering actual information into your schedule or cost spreadsheet. Any deviation of project work from what was planned. Variance can be around costs, time, performance, or project scope.

Within the realm of project management, Variance analysis is the means by which a group of certain variables (or elements that are subject to change) is broken down into its constituent parts, and the analysis of these parts is, in a way, refined. The goal is to determine the causes of a variance (that is to say, the difference between an expected result and an actual result). (PMI, 2005) A project management team will focus on the variables of scope, cost, and schedule in its variance analysis. The project managers create a plan to manage variances from the triple constraints of scope, schedule and cost. (Hafeez, 2002)

Scope Variance is any deviation from the work to be done. In project management, variance baseline is established by identifying the cost, schedule and scope. Scope defines all the work which needs to be done. The project management team creates a work-breakdown structure (WBS) which is a hierarchical view of all tasks to be accomplished. The cost and schedule is then identified according to the work-breakdown structure (WBS). The cost for each goal or task is estimated sometimes by using an average daily, hourly, monthly or yearly rate. The fixed costs are identified for each goal or task. In addition, the project management workers estimate how

long in days or hours a goal or task is to be accomplished, then they create a time-phased budget to quantify the performance cost. (Suchan, 2007)

After identifying the scope, schedule and cost, the project managers create a plan to manage variances from the triple constraints of scope, schedule and cost. A positive variance means the project is going on ahead of schedule or is under the cost. A negative variance means the project is late or over the cost. Variance tracking is key to project management and needs a logical approach. The project managers identify the variance thresholds and develop a plan in case it happens. Cost Variance is any actual or potential deviation from an intended or budgeted figure. The difference between an actual or estimated cost and an authorized appropriation for the scope of work in a cost class. Variances can be negative (under-run) or positive (over-run) (Wideman, 2002).

Spafford, (2003) discusses that an important aspect of success is to understand costs. He tells the very dramatic story of Andrew Carnegie who built the successful U.S. Steel Company not by building the best steel, but by carefully understanding his cost per pound. At the time, this was a very novel concept. Whereas his competitors guessed as to what they could charge, Carnegie knew exactly how low he could go and still make money. This knowledge meant that he could under-bid competitors and decide when to "walk away from the table" (meaning he knew when to exit the bidding process because he couldn't make a profit).

The term cost variance, also known by the abbreviation of CV, refers specifically to the true measurement of cost performance on a particular project. The cost variance represents the algebraic difference between the earned value of a project (also known by the abbreviation of EV), and the actual cost of the project (also known by the abbreviation AC). The equation to determine the cost variance would be broken down as follows: CV = EV minus AC. If the resulting value for the cost variance is a number greater than zero (or “positive value”), then it is considered to be a favorable cost variance condition. A value that is less than zero, or a resulting “negative” value, represents a cost variance that is considered less than favorable. Because the cost variance is so dependent on the earned value and the actual cost, in order to maintain a

favorable cost variance, it is to the project team's advantage to minimize actual costs to the extent possible. (Suchan, 2007)

Schedule variance can be a difference between intended and actual time or any difference between the projected duration for an activity and the actual duration of the activity. Also, the difference between projected start and finish dates and actual or revised start and finish dates. (Wideman, 2002) It is a quantitative measure used by project management personnel to determine schedule performance during or after the completion of a project. It is calculated using a simple algebraic equation where the earned value (EV) represents the actual amount of time taken to either complete the project or progress to the project's current stage. The planned value (PV) represents the amount of time which reaching the project's current progress should have taken to achieve according to the project management's schedule. Schedule variance (SV) is found by subtracting PV from EV. EV-PV=SV
Schedule variance and its exact number may indicate many possible things to project management. A number approaching zero would indicate that the scheduling and timeframes generated by project management were accurate within a small margin of error. A figure that is well into negative numbers would mean that either project management overestimated the amount of time needed or they overestimated the budget and workforce measured in raw man hours that would necessary to complete the project. This is not a good thing either as it represents an unnecessary expenditure of resources. A schedule variance figure high in positive numbers could represent many things. It could indicate that project management underestimated the amount of time needed to complete the project, or it might indicate that the budget and workforce was insufficient. It could also mean that project management or the workforce suffered setbacks, foreseen or otherwise, which may or may not have been avoidable. (PMI, 2004)

Spafford (2003) focuses on three types of variances which are *Estimate to Planned,* which is the difference between what we quoted and how we actually planned to do the work; *Planned to Actual,* which looks at the difference between how work is planned and how it actually is executed; and *Estimate to Actual,* where, we compare what we quoted to what we actually did. Spafford (2003) concludes that by using variance analysis to identify areas of concern,

management has another tool to monitor project and organizational health. People reviewing the variances should focus on the important exceptions so management can become aware of changes in the organization, the environment and so on. Without this information, management risks blindly proceeding down a path that cannot be judged as good or bad.

Within the realm of project management, the concept of variance analysis is a central one. Variance analysis is the means by which a group of certain variables (or elements that are subject to change) is broken down into its constituent parts, and the analysis of these parts is, in a way, refined. The goal is to determine the causes of a variance (that is to say, the difference between an expected result and an actual result). This kind of narrowed-down analysis can help the project management team identify precisely the factors that affect each element. Because it addresses each aspect contributing to a variance, variance analysis is an effective way to discover the sum causes of a result that differs from the result that was anticipated. (Project-management-knowledge.com, 2006, retrieved 15.10.2012)

A project management team will focus on the variables of scope, cost, and schedule in its variance analysis. Each of these are affected by different factors, and, in order to figure out the nature of the variance as a whole, it is necessary to figure out why, exactly, each of the constituent elements varies from expectation. (PMI, 2005)

2.6.3 Performance Reviews

Software-Quality-Assuarance.org identifies and discusses two types of reviews. The first type is the Progress review which periodically reviews the project's progress, performance, and issues. Progress reviews are reviews on the project to keep stakeholders informed. These project reviews can be informal reviews and may not be specified explicitly in the project plans. Here there is need to regularly communicate status on assigned activities and work products to relevant stakeholders, identify and document significant issues and deviations from the plan, document change requests and problems identified in any of the work products and processes and finally document the results of the reviews, track change requests and problem reports to closure. (software-quality-assurance.org, retrieved 11.02.12)

The second type of review is the Milestone review. This reviews the accomplishments and results of the project at selected project milestones. Milestone reviews are planned during project planning and are typically formal reviews. Reviews are conducted at meaningful points in the project's schedule, such as the completion of selected stages, with relevant stakeholders. Here there is a review of the commitments, plan, status, and risks of the project, identify and document significant issues and their impacts, document the results of the review, action items, and decisions, track action items to closure.

The measurement of performance is a tool for both effective management and process improvement. The selection of the right measures depends on a number of factors, including who will use them and what decision they support. Desirable characteristics of performance measures as documented by (NYSOT, 2003) include: Measurable, objectively or subjectively; Reliable and consistent; Simple, unambiguous, and understandable; Verifiable; Timely; Minimally affected by external influence; Cost-effective; Meaningful to users; Relate to mission outcome; and Drive effective decisions and process improvement.

Hatry (1999) documents that the effectiveness of performance measures is also influenced by how well they are integrated into a benchmarking system. The system needs to be both horizontally and vertically integrated. That is the measures need to be balanced to provide a complete assessment of the management of a project and be combinable across projects to assess the performance of the program and across programs to assess the impact of department-level policies and procedures. If any organizational entity can identify a measure that has meaning and identity throughout an organization, such a measure is very valuable and should be the goal of performance measure development.

Butteris (1999) discusses performance reviews and holds that review of performance is an ongoing process, but managers should also schedule a formal process of review - either at the end of the year, the end of a project, or some other interval - to examine an individual's performance in relation to the expectations that were set at the beginning of the performance period. Ukion (2008) states that performance reviews are intended to check the progress of activities against the plan. Review of performance must be done regularly and at the stipulated

review points, to confirm the validity and relevance of the remainder of the plan. There should be an adjustment in the plan if necessary in light of performance, changing circumstances, and new information, but the project must remain on track and within the original terms of reference.

Transparent, pre-agreed measurements must be used when judging performance. Therefore it is essential have these measures in place and clearly agreed before the task begins. Identify, agree and delegate new actions as appropriate. Inform team members and those in authority about developments, clearly, concisely and in writing. Plan team review meetings. Stick to the monitoring systems you established. Probe the apparent situations to get at the real facts and figures. Analyse causes and learn from mistakes. Identify reliable advisors and experts in the team and use them. Keep talking to people, and make yourself available to all. (PMtutor.net retrieved on 19.10.2011)

In its 2005 publication, the Committee for Oversight and Assessment of U.S Department of Energy Project Management writes that the purpose of performance measurement is to help organizations understand how decision-making processes or practices led to success or failure in the past and how that understanding can lead to future improvements. Key components of an effective performance measurement system include these: Clearly defined, actionable, and measurable goals that cascade from organizational mission to management and program levels; Cascading performance measures that can be used to measure how well mission, management, and program goals are being met; Established baselines from which progress toward the attainment of goals can be measured; Accurate, repeatable, and verifiable data; and Feedback systems to support continuous improvement of an organization's processes, practices, and results (FFC, 2004).

At the U.S Department of Energy, qualitative and quantitative performance measures are integrated into existing DOE project management practices and procedures (DOE, 2000). They are used at critical decision points and in internal and external reviews to determine if a project is ready to proceed to the next phase. Project directors and senior managers use them to assess project progress and determine where additional effort or corrective actions are needed. The publication states that despite this, DOE does not receive the full benefit of these measures

because there is no benchmarking system to analyze the data to identify trends and successful techniques or compare actual performance with planned outcomes. For long-term process improvement, it is recommended that project performance measures and benchmarking processes should be used as projects are planned and executed as well as after they are completed. (DOE, 2000)

Taylor (2009) offers good insight on how to conduct effective project status reviews. He writes that once the project is underway regular (usually weekly) project status reviews should be conducted. These reviews are not simply to produce general status information as much as they are intended to identify variances from the project management plan. Having project status metrics will make this easier than simply reviewing the project schedule. As a minimum, project status reviews should address some important topic, including: Presenting the "big picture.", where the project manager gives an overview of the overall project status emphasizing how the project fits into the corporation's strategy; Addressing top project concerns, where the project manager discloses the major concerns and problems of the entire project; Reviewing the accomplishments since last review, where project team leaders summarize their team's accomplishments since the last meeting. This is more for them than it is for the project manager, and gives a much needed sense of accomplishment to those who are buried in the details of everyday work. Abraham Maslow points out how accomplishment (achievement) is a key motivator to most people. (Maslow, 1996)

The main reason for conducting project status reviews is to identify significant variances from the project management plan and to ensure that corrective actions are taken to get back on track; To prevent being caught off guard by potential project risks it is a good practice to examine any near-term risks in order to determine if a prepared response should be implemented. Simply having a risk response prepared will not be adequate if the response is invoked too late; Emphasize the most immediate milestone. (Hatry, 1999) While the ultimate project goal is vital to the project's success, the most immediate milestone is also important. The first major milestone will be an opportunity to show a project's success for the first time; Recognize exceptional performers. Too often a project manager's attention is given to problematic teams and exceptional performers are taken for granted; Encourage and assist lagging performers.

Instead of humiliating lagging performers in the project status review meetings, project managers are wise to encourage and assist them. This may require informal mentoring by the project manager or by one of the high-performance teams. As a result, a salvaged low performer will often develop a high sense of loyalty to a supportive project manager. (Ukion, 2008)

Queensland Government in their August 2011 article *Evaluate project performance* **(**www.tmr.qld.gov.au) discusses end term reviews. The project manager's direct responsibility to the customer ends with the sign off of the handover report. However, the project manager still bears considerable responsibility to the sponsor and the delivery organisation. Performance reviews and the evaluation activity evaluate the project performance against the baselines set at project conception.

In conclusion, the main reason for conducting project status reviews is to identify significant variances from the project management plan and to ensure that corrective actions are taken to get back on track. The review and evaluation activity is particularly important as it evaluates the project performance against the success criteria and key performance indicators established in the concept phase. In addition the review seeks to identify changes to organisational processes and procedures that should be fed back into the strategic, business and project planning processes to improve organisational performance. This activity covers the actions necessary to review and evaluate the project's performance and produce a project completion report. (PMI, 2004)

The purpose of this activity is to: identify and document how the project performed in terms of the success criteria and key performance indicators established in the concept phase, evaluate the organisational processes and procedures used throughout the project, identify where problems occurred, and recommend improvements identify and explain any variance between the initial baseline plan, contract and schedule and their final versions, assess how well the individual management plans performed (risk, safety environment, and so on) and identify procedural modifications that would improve their performance and document the evaluation in a project completion report. The project manager is responsible for this activity in consultation with all stakeholders. (Butteriss, 1999)

2.6.4 Project Management Software (For Scheduling)

Project management software is a term covering many types of software, including estimation and planning, scheduling, cost control and budget management, resource allocation, collaboration software, communication, quality management and documentation or administration systems, which are used to deal with the complexity of large projects. (Project-management-knowledge.com, retrieved 19.10.2011)

There are a large variety of scheduling techniques available to the project practitioner for both determination and presentation. For example, arrow diagramming, logic networks, bar charts, PERT, trending, the use of a variety of software, and so on. (Wideman 2002) In this section, we look specifically at the use of the Project Management Software as a scheduling tool. Project Management Software for scheduling provides the ability to track planned dates versus actual dates and to forecast the effects of changes to the project schedule. (Wideman 2002)

Max Wideman's Glossary of Project Management Terms v3.1 (2002) defines scheduling as the process of converting a general or outline plan for a project into a time-based schedule based on available resources and time constraints. It is also defined as the process of determining when project activities will take place depending on defined durations and precedent activities. Schedule constraints specify when an activity should start or end based on duration, predecessors, external predecessor relationships, resource availability, or target dates.

Stellman & Greene (2006) hold that the project schedule is the core of the project plan. It is used by the project manager to commit people to the project and show the organization how the work will be performed. Schedules are used to communicate final deadlines and, in some cases, to determine resource needs. They are also used as a kind of checklist to make sure that every task necessary is performed. If a task is on the schedule, the team is committed to doing it. In other words, the project schedule is the means by which the project manager brings the team and the project under control. The *project schedule* is a calendar that links the tasks to be done with the resources that will do them. Before a project schedule can be created, the project manager must have a work breakdown structure (WBS), an effort estimate for each task, and a resource list with availability for each resource.

There are many project scheduling software products which can do much of the tedious work of calculating the schedule automatically but before a project manager can use these tools, he should understand the concepts behind the WBS, dependencies, resource allocation, critical paths, Gantt charts and earned value. These are the real keys to planning a successful project. The most popular tool for creating a project schedule is Microsoft Project. (Wideman 2002)

The PMBOK Guide (2004) documents the following stages in creating a project schedule. Allocate Resources to the Tasks - The first step in building the project schedule is to identify the resources required to perform each of the tasks required to complete the project. A resource is any person, item, tool, or service that is needed by the project that is either scarce or has limited availability. One or more resources must be allocated to each task; Identify Dependencies - Once resources are allocated, the next step in creating a project schedule is to identify dependencies between tasks. A task has a dependency if it involves an activity, resource, or work product that is subsequently required by another task. Create the Schedule - Once the resources and dependencies are assigned, the software will arrange the tasks to reflect the dependencies. The software also allows the project manager to enter effort and duration information for each task; with this information, it can calculate a final date and build the schedule. The most common form for the schedule to take is a Gantt chart. It is the responsibility of the project manager to make sure that the project – or in many cases, projects – come in on time and on budget. A single lapse in the management cycle can send the project careening out of control and have significant consequences for the company's bottom line. (Chron.com, retrieved 22.06.12)

Project scheduling tools, also known as project management software, are designed to help organize and manage projects more efficiently. There are many different types of project management tools - some are basic organizers, while others help to plan and track all aspects of a project. There are many advantages and disadvantages of project scheduling tools that one should think about before investing in them. (Brandenberg, 2011)

One of the major benefits of a project scheduling tool is that once all the project information, including deadlines and project phases, are inputted into the software, the program manages the notifications and organizes the tasks for you. The project management software allows for

interchangeability. (Chron.com, retrieved 22.06.12) This is can be a great advantage if the main project manager leaves the company, as his replacement can be brought up to speed very quickly. Another benefit is that the project management tool will remind you about small details and items that can be easily overlooked or forgotten. (Brandenberg, 2011)

Gaebler (2011) documents that the project management software offers complete visibility over your projects. A good software gives users granular insights regarding timelines, budgets and project assets. At the same time, project managers receive dashboard tools that let them see the big picture at a glance. The software provides tracking. When you have several employees working on one project using a collaboration tool, you will actually be able to see who is doing what and when they are doing it. This allows you to see if someone is constantly missing deadlines, as well as can help you identify your top performers. While you want to promote a team atmosphere, project management tools can help you figure out your weak links. Many project management solutions also include modules for tracking time logs and team member schedules. When you're dealing with a project that involves a large number of human assets, the ability to manage and track your personnel can be an important factor in the overall success of the project. (gaebler.com, retrieved 22.06.12)

The cost of project management software can be an advantage or a disadvantage depending on the type of tool you purchase. Project management software is available in two main ways: web-based and desktop software. Web-based project scheduling tools, also known as Software as a Service or SaaS, do not require an upfront investment, such as purchasing a software license. You can simply pay a monthly subscription fee based on the number of users. Desktop software is installed on your network server or on a single user's hard drive. It requires a licensing fee and may cost a lot, depending on the necessary features and scope of the software. Solutions that have been designed to handle complex projects usually include ample features for budget and expense monitoring. The big win for small businesses is that owners and senior leaders gain real time control over project expenditures without having to hire additional project staff or accounting personnel. (Brandenberg, 2011), (Chron.com, retrieved 22.06.12)

According to Gaebler (2011), one of the most significant drawbacks of project management software is that it has the potential to complicate simple projects. If a project manager becomes

so reliant on the application that it becomes a prerequisite for basic office functions, it could produce a work environment that is dominated by chaos and conflict. They also do not allow much room for flexibility, which is necessary in the real world. Projects will inevitably have delays that are out of your control, and you need to be able to make changes and tweaks as necessary. Business projects are highly fluid by nature – they require constant modifications and updating. The team should not become so attached to the software that they are unwilling to make adjustments when needed. (gaebler.com, retrieved 22.06.12)

Timelines, Gantt charts and other features can be used to maintain accountability mechanisms for individual project participants and departments. Since dependent events are commonplace in project management, this limits the possibility of a single individual or department holding up the entire project. (Kerzner, 2006) Hardy project management software applications go the extra mile to facilitate collaboration and communication among project participants and team members. Although this could be accomplished through other mechanisms, centralized collaboration tools streamline the process. Project management solutions offer the possibility of multiple user access. The most sophisticated versions of online (and some desktop) applications can enable access for dozens of users. The collaborative benefits of multi-user access are great. But you'll also need to address access control concerns to avoid unauthorized viewing of sensitive project data. (gaebler.com, retrieved 22.06.12)

Uyttewaal (2000) argues that despite all the advantages of using the project management software, several disadvantages exist. These may apply in general, or to specific products, or to some specific functions within products. It may not suit all projects, it may be inconsistent with the type of project management method, it focuses primarily on the planning phase and does not offer enough functionality for project tracking, control and in particular plan-adjustment. It does not make a clear distinction between the planning phase and post planning phase, leading to user confusion and frustration when the software does not behave as expected.

In conclusion, Gaebler (2011) notes that project management software makes it easier for business leaders to stay on top of complex projects. When it comes to tracking progress, monitoring budgets and supervising resources, a good project management software solution is hard to beat. But project management software isn't a panacea. In fact, there are some

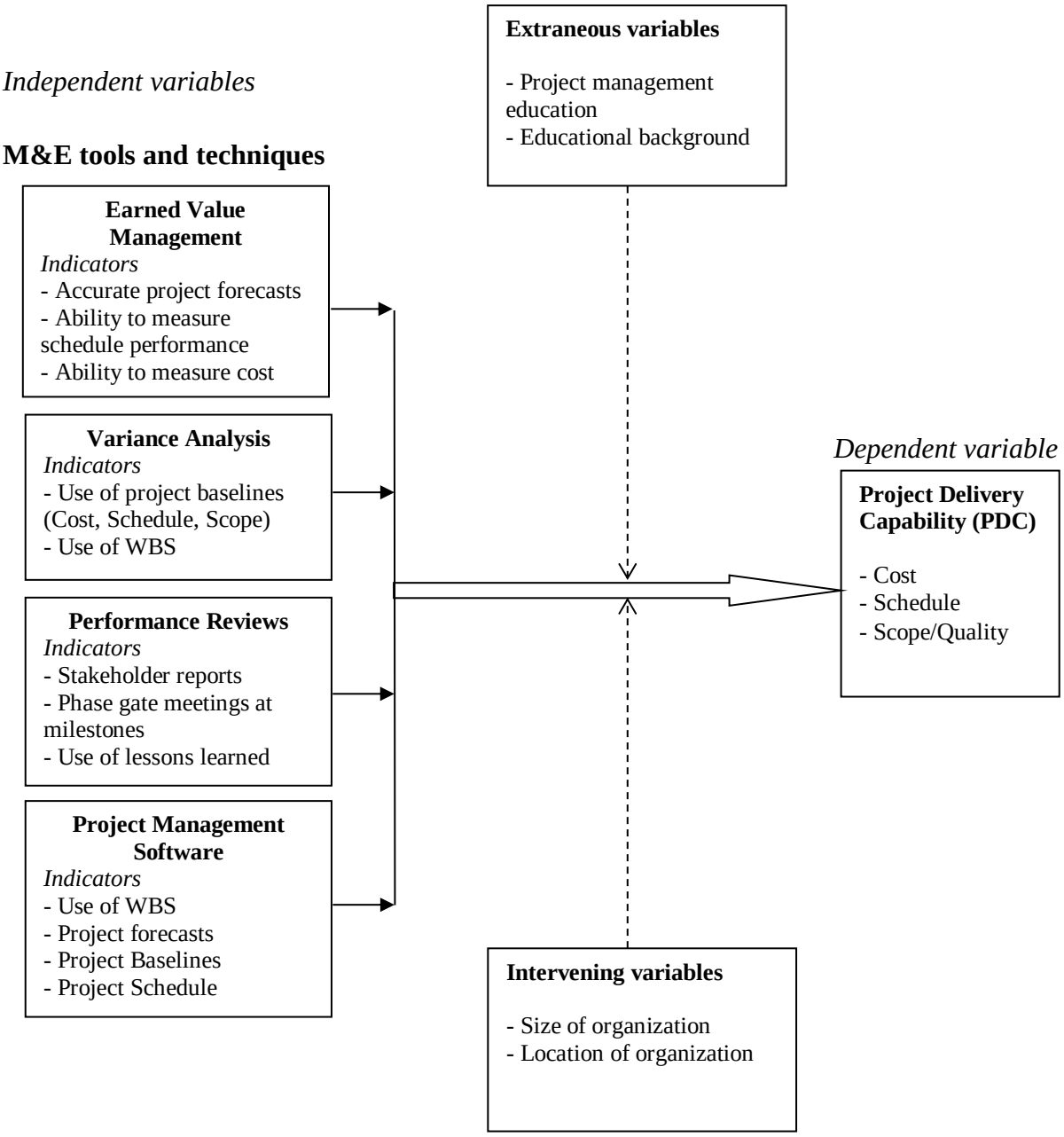
circumstances in which a project management solution can actually hinder the progress of critical projects. Managers and team members need to constantly remind themselves that project management and project execution are two different functions. Once a task or event has been scheduled in the application, there is a tendency for team members to forget about it until they receive an alert that a deadline hasn't been met. Project managers have to look beyond the software to ensure that team members are making progress on their assignments between deadlines. (gaebler.com, retrieved 22.06.12)

In theory, all that is needed to effectively manage projects are a sharp mind and an eye for organization. However, in today's business environment, effective project management requires the application of technological resources, including a first-rate project management software solution. Project management software has a lot of benefits for all sizes of businesses, but to make the most of your software, one needs to be informed about the advantages and disadvantages of using project management software in a complex business environment. (Kerzner, 2006)

2.7 Conceptual Framework

The independent variables in this study were the M&E tools and techniques while the dependent variable in this study was Project Delivery Capability. The Moderating variables identified were Project management education, educational background, size of organization and location of the organization. These variables had a significant contributory or contingent effect on the relationship between the dependent and the independent variable.

Figure 2: Conceptual Framework



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the method that was used for the study and adopts the following structure: research design, target population and sample, population description, data collection methods, research procedures and data analysis methods.

3.2 Research Design

Research design provides a framework for the collection and analysis of data. This study adopted the cross-sectional survey design. A cross-sectional design entails the collection of data on more than one case and at a single point in time in order to collect a body of quantitative or quantifiable data in connection with two or more variables (Bryman & Bell, 2007).

The survey method was considered most appropriate because in this study the respondents were uniquely qualified to provide the desired information.

3.3 Target Population

The target population comprised of all the M&E officers implementing the HIV/AIDS interventions under the Total War Against HIV and AIDS (TOWA) Project in Nairobi and Nyanza regions, Kenya. This was 160. There were many HIV/AIDS interventions in Kenya, but those implemented by NACC were more organized at national level, hence the decision to use them.

NACC has nine regional offices countrywide, one per province, with Rift Valley being split into South Rift and North Rift. The respondents were the M&E Officers implementing the HIV/AIDS interventions in the regional offices. Due to the large number of interventions, and financial constraints, the study selected the two regions with the highest HIV prevalence rates; these were Nyanza and Nairobi.

3.4 Sample size selection and Sampling procedure

There is no general consensus on the exact proportion of the accessible population that should form the sample size. Mugenda and Mugenda (1999) suggest that in descriptive studies ten percent of the survey population is representative enough to generalize characteristics being observed. In this study therefore 25% percent of the population constituted the sample size of 40. This study used both probability and non-probability sampling. The study used purposive sampling and stratified random sampling techniques. Purposive sampling was used to select people with desired qualities while stratified was used to group the samples in strata having similar characteristics. Stratified sampling was used to achieve representation of the main types of HIV/AIDS interventions. The respondents were stratified on the basis of the type of intervention projects they handle. The strata was the priority areas outlined in the Strategic Plans, that is, Prevention of new infections; Improving quality of life; Mitigation of Socio-economic impact; and Provision of support services. This method of sampling ensured the capture of information about the different types of interventions in terms of the priority areas documented in the KNASP. The M&E officers were purposively sampled due to the information they have by the virtue of the positions they hold. Table 3.1 shows the sampling matrix.

Table 3.1
Sampling Matrix

Target Group	Sample size	Population
M&E Officers in the organizations implementing the HIV/AIDS interventions in Nairobi region.	18	72
M&E Officers in the organizations implementing the HIV/AIDS interventions in Nyanza region.	22	88
TOTAL	**40**	**160**

3.5 Methods of data collection

This study used the survey method where respondents were questioned and their responses recorded for analysis. The data collection technique used was both self-administered and researcher-administered questionnaires. The questionnaires were sent to the respondents, who took the time to complete them. The researcher then followed up to clarify and complete the

process. The questionnaire had both open and closed questions to allow for varied responses. The questionnaire was pre-tested before distributing it to the whole sample.

3.5.1 Primary Data Collection Method

These were instruments which were used to collect the required data. One questionnaire was developed by the researcher. The questionnaire had both structured (closed- ended questions) and unstructured questions (open-ended). The researcher used a Likert type scale to measure perception and attitude of the respondent on some issues. Each questionnaire had an identification number for tracking purposes. Respondents were informed in advance of the research to enable them cooperate. A letter of transmittal preceded the questionnaire to briefly described the purpose, the importance and the significance of the study and also assure respondents of confidentiality of information given.

The researcher employed several instruments for data collection, which are described below.

i. Questionnaire

The questionnaire had both structured (closed- ended questions) and unstructured questions (open-ended). The enumerator was taken through the questionnaire explaining each question. The researcher explained the objectives of the study and ensured that the enumerator had an understanding of the questions.

ii. Interview

The researcher administered questionnaire was done by way of interviews. The researcher used face to face interviews. Structured and semi structured as well as in-depth interviews were employed for the study. The researcher had predetermined questions grouped together to address particular objectives of the study. Majority of the questions were unstructured, to enable the researcher gather as much information as possible about the influence of the variables on Project Delivery Capability. The interview method of data collection ensured that the questions were

well understood and it minimized the risk of collecting incomplete and/or wrong information as is common with questionnaires particularly when people do not understand the questions properly. Where necessary, supplementary questions were asked and at other times omitted or the sequence changed where the situation required. This method allowed for freedom in recording responses.

To guarantee accuracy of the interview the researcher:

a. Ensured that interviewers were carefully selected, trained and briefed.
b. Made official field checks to ensure the interviewers were neither cheating nor deviating from instructions given to them.
c. Made effort to create friendly atmosphere of trust and confidence so that the respondents felt at ease.
d. Also participated in interviewing.

3.5.2 Secondary Data Collection and procedure

Secondary data involves the systematic identification, location and analysis of documents containing information related to the influence of M&E tools and techniques on Project Delivery Capability. The purpose of reviewing secondary data was to set a stage for the study and explore the effects of the use of M&E tools and techniques on general project success. This was done through literature reviews, internet browsing, journals and magazines.

The information gathered from these sources guided the development of research tools, scoping of the entire work and also assisted in drawing recommendations and conclusions.

3.6 Validity of research instruments

Validity refers to the extent to which a measurement does what it is supposed to do. For the purpose of this study the data collection instrument was piloted using eight HIV/AIDS interventions in the Nairobi region. The post pilot adjusted data collection instruments were used to collect data for analysis. The purpose of pretesting is to test the adequacy of the instruments and the suitability of the language used in the instruments. In this case validity was checked by content, criterion and construct validity.

Content validity is a non-statistical type of validity that involves "the systematic examination of the test content to determine whether it covers a representative sample of the behavior domain to be measured". Construct validity refers to the extent to which operationalizations of a construct (e.g. practical tests developed from a theory) do actually measure what the theory says they do. Criterion validity evidence involves the correlation between the test and a criterion variable (or variables) taken as representative of the construct. In other words, it compares the test with other measures or outcomes (the criteria) already held to be valid.

3.7 Reliability of research instruments

Reliability is the consistency or accuracy of the research instrument, in measuring whatever is measured. It is the degree to which an instrument gives similar results for the same individual at different times. Reliability was tested by the **Split-Half Reliability** method. A test is given and divided into halves and are scored separately, then the score of one half of test are compared to the score of the remaining half to test the reliability (Kaplan & Saccuzzo, 2001). Split-Half Reliability is a useful measure when impractical or undesirable to assess reliability with two tests or to have two test administrations (because of limited time or money) (Cohen & Swerdlik, 2001).

The test is first divided into halves. The most commonly used way to do this would be to assign odd numbered items to one half of the test and even numbered items to the other, this is called, Odd-Even reliability. Secondly, find the correlation of scores between the two halves by using the Pearson r formula. Thirdly adjust or reevaluate correlation using Spearman-Brown formula which increases the estimate reliability even more. The longer the test the more reliable it is so it is necessary to apply the Spearman-Brown formula to a test that has been shortened, as we do in split-half reliability (Kaplan & Saccuzzo, 2001).

Spearman-Brown formula

$$r = \frac{2r}{1+r}$$

r = estimated correlation between two halves (Pearson r) (Kaplan & Saccuzzo, 2001).

$$r = 2(0.86)/1+0.86$$

$$= 0.925$$

This indicates a positive high correlation, and the research instrument is therefore considered reliable.

3.8 Operational definitions of variables

An operational definition is a definition that defines the exact manner in which variable is measured (Tuckman 1978). The table 3.2 below indicates the types of variables and how these variables were measured in the course of the research.

The independent variables in this study were the prescribed M&E tools and techniques. Monitoring and Evaluation tools and techniques were those documented by the Project Management Institute's PMBOK Guide. The dependent variable in this study was Project Delivery Capability. The projects to be considered were all HIV/AIDS interventions implemented by NACC under the TOWA Project initiated in 2005. The Moderating variables identified were Project management education, educational background, size of organization and location of the organization.

Table 3.2

Variables and their Measurement

Variables	Indicator	Measure	Scale	Approach	Type of Analysis
Earned Value Management	- Accurate project forecasts - Ability to measure schedule performance - Ability to measure cost performance	-Increased accuracy in project forecasts -Improved activity scheduling -Enhanced cost tracking and financial accountability	Ordinal	Qualitative and Quantitative	Descriptive Correlation analysis
Variance Analysis	- Use of Project baselines (Cost, Schedule, Scope) - Use of WBS	-Improved monitoring of project variances against set baselines -Improved task/cost breakdown resulting in better accountability	Ordinal	Qualitative and Quantitative	Descriptive Correlation analysis
Performance Reviews	- Documented Stakeholder reports - Phase gate meetings at identified milestones - Use of lessons learned	- Improved stakeholder communication and information dissemination -Minutes of meetings clearly indicating decision at phase gate -Improved performance attributable to avoiding repeat mistakes	Ordinal	Qualitative and Quantitative	Descriptive Correlation analysis
Project Management Software	- Use of WBS - Project forecasts - Project Baselines - Project Schedule	- Improved task/cost breakdown resulting in better accountability - Increased use of project forecasts - Improved monitoring of project variances against set baselines - Enhanced tracking of project activities	Ordinal	Qualitative and Quantitative	Descriptive Correlation analysis

3.9 Methods of data analysis

Data analysis helped the researcher in interpreting data, drawing conclusions and making decisions. Data from questionnaires was summarized, edited, coded, tabulated and analyzed. Editing was done to improve the quality of data for coding. Editing involved going through the questionnaires to see if respondents responded to questions and see if there are blank responses.

Tabulation involved counting the number of cases that fall into various categories. A simple tabulation was used. Data analysis was done using (SPSS) Statistical Package for Social Sciences. Qualitative data was analyzed by coding according to variables in the study. Quantitative data was analyzed through the use of descriptive statistics and the results then presented in form of tables.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION & INTERPRETATION

4.1 Introduction

This chapter presents the findings from the research, the interpretation of the data in tables, charts and detailed discussions. The presentation and interpretation was in line with the study's objective. The chapter examines data collected with the aim of drawing relevant conclusions. The principal guiding factor in this section is the study objectives highlighted in earlier in chapter one. The data was interpreted according to the research objectives and the research questions. Appropriate data analysis and presentation techniques are used. The primary objective of the study was to determine the influence of Monitoring and Evaluation tools and techniques on Project Delivery Capability.

4.2 General Information

The study visited various organizations which are involved in implementing HIV/AIDS related projects. They organizations had different offices in the two regions that the study focused on, that is, Nairobi and the Nyanza regions.

4.2.1 Organizations implementing HIV/AIDS interventions

The organizations were located in diverse areas like Chiromo, Pumwani, Langata, Gikomba and Kariobangi in Nairobi, and Siaya and Kisumu in Nyanza. The Organizations that participated in the study were as listed in the table below.

Table 4.1

Organizations implementing HIV/AIDS interventions

	ORGANIZATION NAME	REGIONAL OFFICE	FOCUS AREAS
1	Consortium for Orphans & Vulnerable Children (COVUC)	Chiromo Road, Nairobi Contact person: Consolata K. Kiara	Mitigation, counseling & testing, prevention, care, treatment and support, PMTCT
2	St John's Community Centre	Pumwani, Meru Road, Behind Pumwani Maternity Hospital Contact person: Peter Njuguna	Counseling & testing, prevention, care, treatment & support, behavior change, GBV, psycho-social support, TB control & mgt, education, nutritional assessment
3	Kibera Integrated Community Self-Help Programme (KICOSHEP)	Langata Road, Next to Wilson Airport Contact person: Dr. Ann Owiti	Condom distribution, mitigation, counseling & testing, research, behavior change, GBV
4	Network of African Women Alliance (NAFRIWA)	Kariobangi North, Outering Road Contact person: Programme Coordinator	Counseling & testing, condom distribution, CHBC, research, prevention, behavior change, GBV, harm reduction, TB control & mgt, psycho-social support, education, income generation activities
5	Mother/Child with AIDS Support Organization (MOCASO)	Gikomba, Nairobi Contact person: Joyce Kamondo	Condom distribution, mitigation, CBHC, information services, prevention, care, treatment & support, behavior change, PMTCT, TB control & mgt, psycho-social support, M&E
6	Kenyatta National Hospital (KNH)	Ngong Rd, Nairobi Contact person: Dr James Kiarie	PMTCT, comprehensive care, treatment, testing, sustainable HIV/AIDS & TB prevention, counseling, research

7	Husambae Community Based Organization	Siaya Contact person: Michael Joseph Bole	Condom distribution, counseling & testing, research, CHBC, care, treatment & support, behavior change, communication, PMTCT, GBV, STI, ART, TB control & mgt, M&E, opportunistic infections
8	ACE Africa – Kenya	Siaya Contact person: Site Project Manager	Condom distribution, mitigation, counseling & testing, research, prevention, care, treatment & support, TB control & mgt, pscho-social support, M&E
9	Gender, Environment & Sustainable Development (GESD)	Kisumu Contact person: Mercy W. Nyaga	Mitigation, counseling & testing, information services, mass media, prevention, care, treatment & support, behavior change communication, GBV, TB control & mgt, M&E, policy advocacy, human rights
10	Sisi na Bidii for Future Development	Kisumu Contact person: John Kennedy Ngwena	Condom distribution, information services, prevention, TB control & mgt, psycho-social support, income generation activities
11	Kenya Private Sector AIDS Network (KPSAN)	Kisumu Contact person: Charles Kansi	Mitigation, information services, research, prevention, mgt & coordination, behavior change communication, harm reduction, M&E, policy advocacy
12	Nyanza Provincial General Hospital	Kisumu Contact person: James Oduor	Mitigation, counseling & testing, prevention, care, treatment & support, PMTCT, sustainable HIV/AIDS & TB prevention

4.2.2 Project Duration

The study sought to determine the duration of the various HIV/AIDS interventions to help the researcher gauge the scope of the project. The projects had different durations of implementation. 54% of them had the biggest period 2-4 years of implementation, while those projects that had more than 4 years of implementation comprised of 31% of the projects that participated in this study. Projects that had less than 2 years of implementation had the smallest proportion of 15%.

Table 4.2
Project Duration

Duration	Frequency	Percentage %
0-2yrs	6	15
2-4yrs	22	54
More than 4yrs	12	31
TOTAL	**40**	**100**

4.2.3 Project Cost

The study sought to determine the costs (in Kes)of the various HIV/AIDS interventions. This gave a fairly good indication of the size and scope of the project. In terms of project cost, 42% of the projects had costs that were between 2-5 million Kenya shillings while 40% of them cost the donors over 5 million Kenya shillings. A smaller 17% of the projects had cost that were less than 2 million Kenya shillings.

Table 4.3
Project Cost

Amount(Kes)	Frequency	Percentage
0-2m	7	18
2-5m	17	42
Over 5m	16	40
TOTAL	**40**	**100**

4.2.4 Extent of Implementation of the HIV/AIDS interventions

The extent of project implementation to an extent determines what tools and techniques can be used in the implementation of the project. Among the projects that took part in this study 43% of them were implemented at the national level, while 34% of them were implemented at the

district level. Those that were implemented at constituency level had a 15% score where as other unspecified levels comprised of 8%. This was as shown in the table below.

Table 4.4
Extent of Implementation of the HIV/AIDS interventions

Category	Frequency	Percentage
National level	17	43
Distict level	14	34
Consituency level	6	15
Others	3	8
TOTAL	**40**	**100**

4.3 Monitoring and Evaluation tools and techniques

The research results for the Monitoring and Evaluation tools and techniques under study are as recorded below.

4.3.1 Extent of Earned Value Management Use

Earned Value Management (EVM) was utilized to different extents in the different HIV/AIDS intervention projects. 10% of the respondents did not use it at all while 14% used EVM in a very limited way. 25% used EVM in a limited way. However 51% of the respondents which was more than half used EVM in the implementation of the projects.

Table 4.5
Extent of Earned Value Management Use

Category	Number of respondents	Percentage%
Not used	4	10
Very limited use	6	14
Limited use	10	25
Extensive use	10	25
Very extensive use	10	25
TOTAL	**40**	**100**

4.3.2 Level of management support for the use of Earned Value Management

In some organizations there was very minimal management support for the use of Earned Value Management on the various projects. The study revealed that 58% of the respondents attested to high support by the management for the use of EVM where as 27% of the said that the support

was very low. Some small 15% of the respondents said that there no support at all from the management for the use of EVM of their organizations.

Table 4.6
Level of management support for the use of Earned Value Management

Category	Number of respondents	Percentage%
High	14	35
Very high	9	23
Low	7	17
No support	6	15
Extremely low	4	10
TOTAL	**40**	**100**

4.3.3 How the project team obtained project forecasts

The process of obtaining project forecasts was done manually on some projects, 24%. A majority of respondents, at 76% said their organizations employed an external expert.

4.3.4 Accuracy of project forecasts

The use of Earned Value Management enhanced the accuracy of project forecasts extensively. As shown in the figure below 72% of the respondents agreed to this, as attributed to by 46% and 26% with very extensive and extensive respectively.

Table 4.7
Accuracy of project forecasts

Category	Number of respondents	Percentage%
Very extensive	18	46
Extensive	10	26
Limited	6	15
Very limited	3	8
No enhancement	2	5
TOTAL	**40**	**100**

4.3.5 Measurement of schedule performance

There was no measurement of schedule performance on some projects, as attested to by 25% of the respondents. Some organizations employed an external consultant whose work was to monitor the schedule. This percentage stood at 73%. The other 2% did not respond to this question.

4.3.6 EVM and activity scheduling

The use of Earned Value Management improved activity scheduling significantly. 60% of the respondents attested to extensive improvement of activity scheduling resulting from the use of EVM. 15% found the improvement to be limited, while 14% found the improvement of activity scheduling to be very limited. 11% of the respondents found that EVM had no effect at all on activity scheduling.

Table 4.8
EVM and activity scheduling

Category	Number of respondents	Percentage%
Very extensive	16	40
Extensive	8	20
Limited	6	15
Very limited	6	14
No enhancement	4	11
TOTAL	**40**	**100**

4.3.7 Measurement of cost performance

Most respondents, 90% said that they used the budget as a guide to monitor and control costs. There was no measurement of cost performance on some projects, as attested to by 5% of the respondents. Some organizations employed an external consultant whose work was to monitor the costs. This percentage stood at 5%.

4.3.8 EVM and financial accountability

The use of Earned Value Management would extensively enhance cost tracking, and ultimately improve financial accountability in HIV/AIDS interventions. 40% of the respondents did confirm that the boost would be very extensive and 20% said that the boost would be extensive. However 14% of the respondents said that EVM would have very limited effect on cost tracking and hence financial accountability, while the other 11% said that there would be no enhancement at all. This is as shown in the table below.

Table 4.9
EVM and financial accountability

Category	Number of respondents	Percentage%
Very extensive	16	40
Extensive	8	20
Limited	6	15
Very limited	6	14
No enhancement	4	11
TOTAL	**40**	**100**

4.3.9 EVM and Project Delivery Capability

As shown in table below more extensive and better use of Earned Value Management would enhance Project Delivery Capability on the intervention projects that participated in the study. This was affirmed as 80% of the respondents said that Project Delivery Capability would extensively be enhanced by the use of Earned Value Management. 5% said the enhancement would be limited, 9% said that the enhancement was very limited while 6% said that there was no enhancement.

Table 4.10
EVM and Project Delivery Capability

Category	Number of respondents	Percentage%
Very extensive	24	60
Extensive	8	20
Limited	2	5
Very limited	4	9
No enhancement	2	6
TOTAL	**40**	**100**

4.3.10 Extent of Variance Analysis Use

There was very limited use of Variance Analysis as opposed to other tools of Monitoring and Evaluation. 25% of the respondents said that they had not used Variance Analysis at all, 25% said they had used it in a limited way, while 26% said that they had used it in a very limited manner. However 14% of the respondents had used it very extensively while 10% had used it just extensively. This is as represented in the figure below.

Table 4.11
Extent of Variance Analysis Use

Category	Number of respondents	Percentage%
Not used	4	10
Very limited use	6	14
Limited use	10	25
Extensive use	10	25
Very extensive use	10	25
TOTAL	**40**	**100**

4.3.11 Level of management support for Variance Analysis use

The level of management support for the use of Variance Analysis was high. 35% of the respondents recorded high support while another 23% recorded very high support. 17% and 10% of the respondents said the level of support was low and extremely low respectively. Another 15% said there was no support at all from the management for the use of Variance Analysis.

Table 4.12
Level of management support for the use of Variance Analysis

Category	Number of respondents	Percentage%
High	14	35
Very high	9	23
Low	7	17
No support	6	15
Extremely low	4	10
TOTAL	**40**	**100**

4.3.12 Variance Analysis and Project Baselines

The HIV/AIDS intervention projects' management teams had established and adopted various project baselines. This was affirmed by 75% of the respondents. Among the various project baselines used, Cost baseline was the most popular with 33% of the respondents using it, followed by Schedule baseline with 30%, while Scope baseline had a 25% score. In some instances all the baselines were used, as attested to by 12% of the respondents. See the table below.

Table 4.13
Variance Analysis and Project Baselines

Did the project team establish project baselines for this HIV/AIDS intervention project?

Category	Number of respondents	Percentage %
Yes	30	75
No	10	25
TOTAL	**40**	**100**

If yes, which ones did the project team use?

Category	Number of respondents	Percentage %
Scope baseline	10	25
Schedule baseline	12	30
Cost baseline	13	33
All the above	5	12
TOTAL	**40**	**100**

4.3.13 Tracking variances from the baselines

Variances were tracked by use of set baselines, as attested to by 95% of the respondents. Baselines were adjusted as the need arose throughout the project. In some organizations, 5%, variances were not tracked at all.

4.3.14 Variance Analysis and Project variances

The use of Variance Analysis in projects would help to improve the ability to monitor project variances against the set baselines. As shown in the figure below 32% of the respondents said the use of Variance Analysis would result in extensive improvement, while 28% said very extensive project improvement. Only 18% of the respondents said it would result in limited improvement while 8% said there would only be very limited improvement in the ability to monitor project variances against the set baselines.

Table 4.14
Variance Analysis and Project Variances

Category	Number of respondents	Percentage%
Not used	6	15
Very limited	3	8
Limited	7	18
Extensive	13	32
Very extensive	11	28
TOTAL	**40**	**100**

4.3.15 Work breakdown Structure

Different projects teams employed the Work Breakdown Structure in their various HIV/AIDS intervention projects. 80% of the respondents did agree that they had from time to time used the Work Breakdown Structure. Only 20% of the respondents did not use it, as shown in the table below.

Table 4.15
Work Breakdown Structure
Did the project team employ the use of a Work Breakdown Structure?

Category	Number of respondents	Percentage%
Yes	32	80
No	8	20
TOTAL	**40**	**100**

4.3.16 Cost Breakdown Structure

The Cost Breakdown Structure was a notch more popular than the Work Breakdown Structure with 83% of the respondents saying that they actually used it in their HIV/AIDS intervention projects. Only 17% of the respondents did not use it.

Table 4.16
Cost Breakdown Structure
Did the project team employ the use of a Cost Breakdown Structure?

Category	Number of respondents	Percentage%
Yes	33	83
No	7	17
TOTAL	**40**	**100**

4.3.17 Work and Cost Breakdown Structure and Accountability

The use of both the Work and Cost Breakdown Structures would improve task and cost breakdown resulting in better accountability. As shown in the table below 40% of the respondents attested to very extensive and better accountability, while 35% did confirm the resulting extensive accountability. 10% and 8% of the respondents said the use of the Breakdown Structures would result in limited and very limited accountability respectively. Only some 5% of the respondents who did not confirm the accountability since they had not used the techniques.

Table 4.17
Work and Cost breakdown Structure and Accountability

Category	Number of respondents	Percentage%
Not used	2	5
Very limited	3	8
Limited	4	10
Extensive	14	35
Very extensive	16	40
TOTAL	**39**	**100**

4.3.18 Variance Analysis and Project Delivery Capability

More extensive use of Variance Analysis would enhance Project Delivery Capability in the long run. This was in the view of 82% of the respondents. 8% of the respondents said there would only be limited enhancement of Project Delivery Capability through better use of Variance Analysis. 5% expected only very limited enhancement and another 5% had not used Variance Analysis.

Table 4.18
Variance Analysis and Project Delivery Capability

Category	Number of respondents	Percentage%
Very extensive	2	5
Extensive	2	5
Limited	3	8
Very limited	16	40
No enhancement	17	42
TOTAL	**40**	**100**

4.3.19 Extent of Performance Reviews use

Performance reviews were used to a large extent as revealed by the findings from the study. 65% of the respondents confirmed extensive and very extensive use. Only 15% of them did not make use of the reviews. Those who made limited and very limited use accounted for 20% of the respondents.

Table 4.19
Performance Reviews extent of use

Category	Number of respondents	Percentage%
Not used	6	15
Very limited use	4	10
Limited use	4	10
Extensive use	12	30
Very extensive use	14	35
TOTAL	**40**	**100**

4.3.20 Level of Management Support for use of Performance Reviews

Performance Reviews helped in giving the management an accurate picture of the project progress. 66% of the respondents attested to high and very high levels of management support for the use of Performance Reviews. 23% of the respondents recorded low and extremely low level of support from management while 10% of the respondents said that there was no support at all from the management for the use of Performance Reviews.

Table 4.20
Level of management support for the use of Performance Reviews

Category	Number of respondents	Percentage%
High	14	36
Very high	12	30
Low	6	15
No support	4	10
Extremely low	3	8
TOTAL	**39**	**100**

4.3.21 Project Progress Briefs and Impact

The study revealed that stakeholder progress briefings were done at the onset of the projects and more briefs as and when the projects were ongoing. However the briefs were done at different times and according to the demand by different projects handlers. 50% of the briefs were called on a need to know basis, while others were done on weekly basis (20%). Others were done at the onset of the different phases (20%), while 10% of the respondents did not have progress briefs at all. The stakeholder progress briefings were deemed as a benefit since they reminded the participants of their overall project goal and objectives and kept the project team on top of the project tasks.

Table 4.21
Project Progress Briefs and Impact

Category	Number of respondents	Percentage%
Weekly briefs	8	20
Need to know basis	20	50
At phase gates	8	20
Never had briefings	4	10
TOTAL	**40**	**100**

4.3.22 Contribution of stakeholder briefings to the ultimate success of the project

Stakeholder briefings served to keep all stakeholders aware of the project progress. Everyone knew what was expected of them as roles and responsibilities were clearly established. It was very evident when to proceed because things were going as per plan, or when to make changes in the plan before proceeding. There was brainstorming and sharing of ideas. Ultimately, majority of the respondents attested to greater chance of project success due to greater ownership of the project by all stakeholders.

4.3.23 Documentation of lessons learned

The results of the study revealed that 82% of the respondents documented the lessons learned while 18% did not.

Table 4.22
Documentation of lessons learned

Were lessons learned on this project documented?

Category	Number of respondents	Percentage%
Yes	33	82
No	7	18
TOTAL	**40**	**100**

4.3.24 Effect of lessons learned from previous projects on PDC

Sometimes lessons learned were not documented, as attested to by 18% of the respondents. Where documented, sometimes they were never referred to. Where they were used, there was evident prevention of recurring mistakes, ultimately improving PDC on future projects.

4.3.25 Performance Reviews and Project Delivery Capability

The use of Performance Reviews was very important in enhancing Project Delivery Capability. This was confirmed by 85% of the respondents who revealed that more extensive or better use of performance reviews would have extensive impact on Project Delivery Capability. Only 15% of the respondents said that the impact would be limited.

Table 4.23
Performance reviews and Project Delivery Capability

Category	Number of respondents	Percentage%
Very extensive	26	65
Extensive	8	20
Limited	4	10
Very limited	2	5
No enhancement	0	0
TOTAL	**40**	**100**

4.3.26 Extent of Project Management Software use

The extent of use of the Project Management Software for scheduling was different from project to project. 30% of the respondents said that they had a limited use of the software while 45% of them used the software extensively. Another 25% of the respondents had little or no knowledge about the use of such software.

Table 4.24
Extent of Project Management Software Use

Category	Number of respondents	Percentage%
Not used	4	10
Very limited use	6	15
Limited use	12	30
Extensive use	8	20
Very extensive use	10	25
TOTAL	**40**	**100**

4.3.27 Level of Management Support for the Project Management Software

66% of the respondents attested to high and very high levels of management support for the use of the Project Management Software. 23% of the respondents recorded low and extremely low

level of support from management while 10% of the respondents said that there was no support at all from the management for the use of the Project Management Software.

Table 4.25
Level of management support for the use of Project Management Software

Category	Number of respondents	Percentage%
High	14	36
Very high	12	30
Low	6	15
No support	4	10
Extremely low	3	8
TOTAL	**39**	**100**

4.3.28 Work Breakdown Structure

75% of the respondents said that they had made use of the Work Breakdown Structure in project tasks. Only 25% of the respondents did not use it, as shown in the table below.

Table 4.26
Work Breakdown Structure
Did the project team make use of a Work Breakdown Structure on project tasks?

Category	Number of respondents	Percentage%
Yes	30	75
No	10	25
TOTAL	**40**	**100**

4.3.29 Project Schedule generation

The study revealed that the Project Schedule was mainly generated by experts using the different software. Some respondents said that this was generated by the donors and/or or the management without their input. They only got the final schedule and had to work with stringent timelines already set.

4.3.30 Project Management Software and Schedule Creation

The use of the Project Management Software would improve the process of schedule creation. The improvement would be very extensive as attested to by 35% of the respondents, extensive as

attested to by 25% of the respondents, limited 25% of the respondents and 15% very limited. No respondent said there would be no improvement.

Table 4.27
Project Management Software and schedule creation

Category	Number of respondents	Percentage%
Very extensive	14	35
Extensive	10	25
Limited	8	20
Very limited	8	20
No improvement	0	0
TOTAL	**40**	**100**

4.3.31 Project Management Software and Performance Tracking

The use of the Project Management Software would enhance tracking of project activities, making it easier to handle the projects. Some 68% of the respondents said the enhancement would be extensive, while 30% of the respondents said that there would be a limited enhancement in tracking of project activities. There were a 2% of the respondents that had not used the software. This was as shown in the figure below

Table 4.28
Project Management Software and Performance Tracking

Category	Number of respondents	Percentage%
Very extensive	15	38
Extensive	12	30
Limited	8	20
Very limited	4	10
No enhancement	1	2
TOTAL	**40**	**100**

4.3.32 Project Management Software and Progress Monitoring

The use of the Project Management Software would improve the monitoring of the projects' progress. The improvement would be extensive as attested to by 60% of the respondents while 40% of the respondents felt that the improvement on progress monitoring was actually limited.

Table 4.29
Project Management Software and progress monitoring

Category	Number of respondents	Percentage%
Very extensive	14	35
Extensive	10	25
Limited	8	20
Very limited	8	20
No improvement	0	0
TOTAL	**40**	**100**

4.3.33 Project Management Software and Project Delivery Capability

The study revealed that more extensive or better use of the Project Management Software would enhance Project Delivery Capability to varying degrees. 70% of the respondents felt that there would be an extensive enhancement, while 25% of them foresaw only limited enahancement of Project Delivery Capability. This was however not the case with some 5% of the respondents who did not see any impact of the Project Mangement Software on Project Delivery Capability. This is as shown in the table below.

Table 4.30
Project Management Software and Project Delivery Capability

Category	Number of respondents	Percentage%
Very extensive	18	45
Extensive	10	25
Limited	6	15
Very limited	4	10
No enhancement	2	5
TOTAL	**40**	**100**

4.4 Other Monitoring & Evaluation tools and techniques

There were other Monitoring and Evaluation tools and techniques that were employed by different projects coordinators and managers. As in the figure below the tools were such as impact assessment questionnaires (18%), feedback from target groups (17%), sample effect indicators (5%), incident report forms (15%), evaluation assessments (12%), benchmark tests (10%), time analysis among others. However it was important to note that all these highlighted M&E tools were basically administered in form of questionnaires.

Table 4.31
Other M&E tools

M&E Tool in use	Percentage%
Impact assessment tools	18
Feedback from target groups	17
Sample effect indicators	5
Incident report forms	15
Evaluation assessments	12
Questionnaire administration	10
Benchmark tests	10
Cost expenditure assessment	8
Analysis of time duration	5
TOTAL	**100**

4.5 Correlation Analysis

The results of the correlation analysis are presented in the tables below. The Descriptive Statistics table gives the mean, standard deviation, and number of observations (N) for each of the variables specified. For example, the mean of the Earned Value Management variable is 4.2000, the standard deviation of the Variance Analysis variable is 1.08131, and there were 40 observations (N) for each of the four variables.

Table 4.32

Descriptive Statistics

	Mean	Std. Deviation	N
Earned Value Management	4.2000	1.22370	40
Variance Analysis	4.1000	1.08131	40
Performance Reviews	4.4500	.87560	40
Project Management Software	3.9500	1.21845	40

Source: Research data, (2012)

The Correlations table gives the values of the specified correlation tests, in this case, Pearson's r. Each row of the table corresponds to one of the variables. Each column also corresponds to one of the variables. SPSS compares each combination of variables, including a variable and itself. That is what gives the diagonal line of 1s, with the figures on either side of this diagonal being mirror images.

Taking the example of the second row and third column cell, there are three numbers in these cells. The top number is the correlation coefficient, in this case 0.915. This tells us that the correlation between Earned Value Management and Variance analysis is high. The middle number is the significance of this correlation, that is the *p* value, in this case .000. The significance tells us whether we would expect a correlation that was this large purely due to chance factors and not due to an actual relation. In this case, it is improbable that we would get an r this big if there was not a relation between the variables. A *p* value of less than 0.5 means that the correlation is significant. The bottom number, 40 in this case, is the number of observations that were used to calculate the correlation coefficient.

By the same interpretation, the correlation between Earned Value Management and Performance Reviews is 0.967, and the p value is .000; the correlation between Earned Value Management and the Project Management Software is 0.936, and the p value is .000 and so on.

Table 4.33

Correlations

		Earned Value Management	Variance Analysis	Performance Reviews	Project Management Software
Earned Value Management	Pearson Correlation	1	.915**	.967**	.936**
	Sig. (2-tailed)		.000	.000	.000
	N	40	40	40	40
Variance Analysis	Pearson Correlation	.915**	1	.899**	.938**
	Sig. (2-tailed)	.000		.000	.000
	N	40	40	40	40
Performance Reviews	Pearson Correlation	.967**	.899**	1	.935**
	Sig. (2-tailed)	.000	.000		.000
	N	40	40	40	40
Project Management Software	Pearson Correlation	.936**	.938**	.935**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	40	40	40	40

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Research data, (2012)

4.6 Summary

As evident from the correlation analysis, all the four variables; Earned Value Management, Variance Analysis, Performance Reviews and Project Management Software, have a high positive correlation to each other. All the values for the correlation coefficient are close to 1. This correlation has been found to be significant due to the low *p* values exhibited. All the *p* values are less than 0.5 which is the normal threshold for judging significance. This tells us that the correlation exhibited is not by chance, but due to an actual relation between the four variables Earned Value Management, Variance Analysis, Performance Reviews and Project Management Software.

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the findings of the study in a summarized state, deriving conclusions from the findings and further suggesting recommendations on the way forward. It also gives suggestions for further research.

5.2 Summary of Findings

The study had four main objectives which were:- to determine how the use of Earned Value Management in HIV/AIDS interventions influences Project Delivery Capability; to determine if the use of Performance Reviews in HIV/AIDS interventions influences Project Delivery Capability; to determine how the use of Variance Analysis in HIV/AIDS interventions influences Project Delivery Capability and to determine if the use of the Project Management Software (for scheduling) in HIV/AIDS interventions influences Project Delivery Capability.

The study interacted with various HIV/AIDS intervention projects that were based in Nairobi and Nyanza regions of the country. All the organizations that participated in the study had ongoing projects on the ground. The HIV/AIDS intervention projects had different durations depending on the project organization, purpose, donor and the target groups. The projects also had various levels of implementation ranging from national, district, and constituency among others. 54% of the projects under study had a project duration of between 2-4 years, with 42% of the projects having cost between 2 and 5 million Kenya shillings. As far as implementation level goes, 43% of the HIV/AIDS interventions were implemented at national level.

The use of Earned Value Management as a Monitoring & Evaluation tool was prevalent among 51% of the projects under study. A smaller 10% of those interviewed had never used it at all and it was noted that this response was obtained from smaller HIV/AIDS interventions that were mainly implemented at local levels. 58% of the respondents attested to high support by the management for the use of Earned Value Management. 72% of those interviewed said that the

use of Earned Value Management enhanced the accuracy of project forecasts extensively. 60% said that its use also improved activity scheduling significantly. EVM was also found to extensively enhance cost tracking, and ultimately, improve financial accountability in HIV/AIDS interventions, as attested to by 60% of the respondents. Ultimately, 80% of the respondents said that more extensive and better use of EVM would enhance Project Delivery Capability on the HIV/AIDS intervention projects.

There was very limited use of Variance Analysis as opposed to other Monitoring & Evaluation tools and techniques. Only 24% of the respondents had used it extensively or more. More than half, 51%, had only used it in a limited or very limited way. This was found to be due to lack of exposure and training on this particular Monitoring & Evaluation tool. The level of management support for the use of this tool was high, with 58% of the respondents recording high support. 75% of the respondents used project baselines on the projects they implemented. The most popular baseline in use was the Cost Baseline, with 33% of the respondents using it, as opposed to 30% who used the Schedule Baseline and 25% who used the Scope Baseline. 12% of the respondents attested to using all the three baselines. The use of Variance Analysis would help improve the ability to monitor project variances against set baselines, as attested to by 60% of those interviewed. 80% of those interviewed employed the Work Breakdown Structure in their various projects, while 83% used the Cost Breakdown Structure. 75% of those interviewed said the use of these breakdown structures would result in extensive and better accountability. In the long run, 82% of the respondents felt that more extensive use of Variance Analysis would enhance Project Delivery Capability.

Performance Reviews were largely used on the HIV/AIDS intervention projects, with 65% of the respondents confirming extensive and very extensive use. A small 15% of the respondents did not make use of the reviews, and it was noted that this was mainly on small projects implemented at local levels. 66% of the respondents attested to more than high levels of management support for the use of performance reviews. The study revealed that project briefs were held at different stages of the project, with 50% of these briefs being held on a need-to-know basis. 10% of those interviewed reported having no project briefs at all on the projects they

implemented. 85% of those interviewed revealed that more extensive use of Performance Reviews would enhance Project Delivery Capability.

The use of Project Management Software for scheduling varied from project to project. 45% of the respondents had used the software extensively, while 25% of them had little or no knowledge of the use of such software. 66% of the respondents attested to high and very high levels of management support for the use of the Project Management Software. 68% of the respondents said that the use of the software would enhance the tracking of project activities, making it easier to handle the projects. 60% of the respondents felt the use of the software would improve the monitoring of project progress. The study revealed that 70% of the respondents felt that more extensive and better use of the Project Management Software would enhance Project Delivery Capability.

There were also other M&E tools and techniques in use in the HIV/AIDS interventions. The respondents recorded the use of impact assessment questionnaires (18%), feedback from target groups (17%), sample effect indicators (5%), incident report forms (15%), evaluation assessments (12%), benchmark tests (10%), time analysis among others.

5.2Discussion of findings

Appleton, (1996) documents that Monitoring and Evaluation systems can be an effective way to: provide constant feedback on the extent to which the projects are achieving their goals, identify potential problems at an early stage and propose possible solutions, monitor the accessibility of the project to all sectors of the target population, monitor the efficiency with which the different components of the project are being implemented and suggest improvements, evaluate the extent to which the project is able to achieve its general objectives, provide guidelines for the planning of future projects, influence sector assistance strategy and improve project design. Monitoring and Evaluation tells you whether you are on track to reach your objectives, and whether or not the project achieved or contributed to the desired impact. Monitoring the progress of the project allows you to adapt the program as needed to ensure that you attain your objectives. It is

necessary to plan for monitoring and evaluation when you design your program; this will help you both to design an effective program and ensure that you plan (and budget) for appropriate monitoring and evaluation activities. (Jennings & Swiss, 2001)

5.3.1 Earned Value Management and Project Delivery Capability (PDC)

Earned Value Management (EVM), is a project management technique for measuring project performance and progress in an objective manner. Because EVM has the ability to combine measurements of scope, schedule and cost, in a single integrated system, Earned Value Management is able to provide accurate forecasts of project performance problems, which is an important contribution for project management. (Project-management-knowledge.com, retrieved 12.05.12)

Christensen, (1998) discusses the use of Earned Value by the American defense contracting community when the government issued the Department of Defense (DoD) and NASA Guide to PERT/Cost in 1963. In 1967 the DoD established the Cost/Schedule Control Systems Criteria (C/SCSC) to standardize contractor requirements for reporting cost and schedule performance on major contracts. The C/SCSC concept has been consistently applied for over 30 years and has set the standard for major government systems acquisitions. Owing to its huge success, other government agencies in United States and in other nations such as Australia, Canada and Sweden have adopted similar earned-value criteria in management of their major system acquisitions.

In 1995, private industry as represented by the National Security Industrial Association (NSIA) was allowed to assess the utility of the earned-value criteria. After a long study, NSIA subcommittee came up with its version of the criteria, the industry standard was called the Earned Value Management System (EVMS). The DoD endorsed this major development in December 1996. (Nagrecha, 2002)

Robert Marshall, in his 2007 article in the Journal of Contract Management defines Earned Value Management (EVM) as a project management technique for measuring project performance and progress in an objective manner. He says that EVM has the ability to combine

measurements of scope, schedule, and cost in a single integrated system. Earned Value Management is notable for its ability to provide accurate forecasts of project performance problems. Early EVM research showed that the areas of planning and control are significantly impacted by its use; and similarly, using the methodology improves both scope definition as well as the analysis of overall project performance. More recent research studies have shown that the principles of EVM are positive predictors of project success. (Christensen, 1998)

Earned Value Management (EVM) was utilized to different extents in the different HIV/AIDS intervention projects. Although there was limited use and support use of EVM, there were clear benefits to those few organizations that used it. First, use of EVM enhances the accuracy of project forecasts, as is shown in Table 4.7. The ability to obtain more accurate project forecasts means that the project management team is better placed to plan ahead and make the necessary adjustments to the project plan. This ultimately enhances the chances of delivering a successful project. The use of EVM also improves activity scheduling significantly, as indicated in Table 4.8. Improved activity scheduling ensures optimum resource utilization and prevents unnecessary waste. It also saves time and leads to better project organization, thus enhancing Project Delivery Capability. The use of EVM also enhances cost tracking and ultimately improves the financial accountability on the project, as shown in Table 4.9. The ability to properly track costs ensures that the project stays within budget, thus contributing positively to Project Delivery Capability. Generally, the use of EVM enhances Project Delivery Capability, as indicated in Table 4.10.

5.3.2 Variance Analysis and Project Delivery Capability (PDC)

Spafford (2003) defines the basic concept of a variance as simply the difference between what you expected and what you really received. Kerzner (2006) defines a variance as any schedule, technical; performance, or cost deviation from a specific plan. One way to evaluate a project's health is to track the difference between the original project plan and what is actually happening. This gap is better known as variance, a comparison of the intended or budgeted amount and the actual amount spent. Variance analysis is the practice of comparing actual project results to what was planned or expected. It's a way to quantify how well - or how badly - a project is progressing. (Suchan, 2007). A variance is a measurable change from a known standard or

baseline. In other words, variance is the difference between what is expected and what is actually accomplished. (Hafeez, 2002)

Spafford, (2003) discusses that an important aspect of success is to understand costs. He tells the very dramatic story of Andrew Carnegie who built the successful U.S. Steel Company not by building the best steel, but by carefully understanding his cost per pound. At the time, this was a very novel concept. Whereas his competitors guessed as to what they could charge, Carnegie knew exactly how low he could go and still make money. This knowledge meant that he could under-bid competitors and decide when to "walk away from the table" (meaning he knew when to exit the bidding process because he couldn't make a profit).

Variance analysis involves setting up project baselines against which the progress of the project will be compared as the project proceeds. The use of baselines helps the project management team to track changes and thus improves the ability to monitor project variances against set baselines, as indicated in Table 4.13. The Scope baseline ensures that only the work approved in the project plan actually gets done. It prevents scope creep which can lead to cost and time overruns. The Schedule baseline ensures that all project tasks are done at the allocated time. This serves to avoid unnecessary delays that could derail the project. The Cost baseline ensures that the project stays within the approved budget. The use of all these baselines greatly contributes to project success. Baselines help the project team to identify variances from the project plan, the causes of these variances, and what needs to be done to get the project back on track. The use of the Work Breakdown Structure and the Cost Breakdown Structure improves task and cost breakdown, resulting in better accountability on the project, (Table 4.17) and ultimately improving the chances of project success. Generally, the use of Variance analysis enhances Project Delivery Capability, as indicated in Table 4.18

5.3.3 Performance Reviews and Project Delivery Capability (PDC)

The measurement of performance is a tool for both effective management and process improvement. The selection of the right measures depends on a number of factors, including who

will use them and what decision they support. Desirable characteristics of performance measures as documented by (NYSOT, 2003) include: Measurable, objectively or subjectively; Reliable and consistent; Simple, unambiguous, and understandable; Verifiable; Timely; Minimally affected by external influence; Cost-effective; Meaningful to users; Relate to mission outcome; and Drive effective decisions and process improvement.

Hatry (1999) documents that the effectiveness of performance measures is also influenced by how well they are integrated into a benchmarking system. The system needs to be both horizontally and vertically integrated. That is the measures need to be balanced to provide a complete assessment of the management of a project and be combinable across projects to assess the performance of the program and across programs to assess the impact of department-level policies and procedures. Ukion (2008) states that performance reviews are intended to check the progress of activities against the plan. Review of performance must be done regularly and at the stipulated review points, to confirm the validity and relevance of the remainder of the plan. There should be an adjustment in the plan if necessary in light of performance, changing circumstances, and new information, but the project must remain on track and within the original terms of reference.

At the U.S Department of Energy, qualitative and quantitative performance measures are integrated into existing DOE project management practices and procedures (DOE, 2000). They are used at critical decision points and in internal and external reviews to determine if a project is ready to proceed to the next phase. Project directors and senior managers use them to assess project progress and determine where additional effort or corrective actions are needed. The Queensland Government in their August 2011 article ***Evaluate project performance*** **(**www.tmr.qld.gov.au) discusses end term reviews. The project manager's direct responsibility to the customer ends with the sign off of the handover report. However, the project manager still bears considerable responsibility to the sponsor and the delivery organisation. Performance reviews and the evaluation activity evaluate the project performance against the baselines set at project conception.

The main reason for conducting project status reviews is to identify significant variances from the project management plan and to ensure that corrective actions are taken to get back on track. The review and evaluation activity is particularly important as it evaluates the project performance against the success criteria and key performance indicators established in the concept phase. In addition the review seeks to identify changes to organisational processes and procedures that should be fed back into the strategic, business and project planning processes to improve organisational performance. This activity covers the actions necessary to review and evaluate the project's performance and produce a project completion report. (PMI, 2004)

Performance Reviews help in giving the management an accurate picture of the project progress. Stakeholder briefings ensure that all stakeholders are always aware of the current state of the project. Briefs can be done at different stages of the project, as shown in Table 4.21. Project briefs done at kick-off ensure that there is a common understanding among all stakeholders about responsibilities and expectations. As the project progresses, briefs keep stakeholders aware of the current state of affairs and it keeps the project tem on top of project tasks. In conclusion, the use Performance reviews enhances Project Delivery Capability, as indicated in Table 4.23.

5.3.4 Project Management Software (for scheduling) and Project Delivery Capability (PDC)

Project management software is a term covering many types of software, including estimation and planning, scheduling, cost control and budget management, resource allocation, collaboration software, communication, quality management and documentation or administration systems, which are used to deal with the complexity of large projects. (Project-management-knowledge.com, retrieved 19.10.2011). There are a large variety of scheduling techniques available to the project practitioner for both determination and presentation. For example, arrow diagramming, logic networks, bar charts, PERT, trending, the use of a variety of software, and so on. In this report, we look specifically at the use of the Project Management Software as a scheduling tool. Project Management Software for scheduling provides the ability to track planned dates versus actual dates and to forecast the effects of changes to the project schedule. (Wideman 2002)

Max Wideman's Glossary of Project Management Terms v3.1 (2002) defines scheduling as the process of converting a general or outline plan for a project into a time-based schedule based on available resources and time constraints. It is also defined as the process of determining when project activities will take place depending on defined durations and precedent activities. Schedule constraints specify when an activity should start or end based on duration, predecessors, external predecessor relationships, resource availability, or target dates. The most popular tool for creating a project schedule is Microsoft Project.

Stellman & Greene (2006) hold that the project schedule is the core of the project plan. It is used by the project manager to commit people to the project and show the organization how the work will be performed. Schedules are used to communicate final deadlines and, in some cases, to determine resource needs. They are also used as a kind of checklist to make sure that every task necessary is performed. If a task is on the schedule, the team is committed to doing it. In other words, the project schedule is the means by which the project manager brings the team and the project under control. The *project schedule* is a calendar that links the tasks to be done with the resources that will do them. Before a project schedule can be created, the project manager must have a work breakdown structure (WBS), an effort estimate for each task, and a resource list with availability for each resource.

The use of the Project Management Software aids in schedule generation, which shows how tasks are dependent and reliant on one another. It helps the project team to know which task comes before which, after, or which tasks need to be done concurrently. The Project Management Software enhances the tracking of project activities, making it easier to handle the projects as shown in Table 4.28. The Software enables performance tracking. It also improves the monitoring of the project's progress, as indicated in Table 4.29. At a glance, the user can tell how much of an activity is complete, and how much is yet to be done. The Software also aids the creation of the Work Breakdown Structure, which breaks down the project activities in simpler more manageable task for ease of execution. All these components of the Software influence Project Delivery Capability positively, as indicated in Table 4.30.

5.4 Conclusion

The results of this study revealed that several Monitoring & Evaluation tools and techniques were in use in the various HIV/AIDS interventions in the two selected regions. All these tools and techniques had a positive impact on Project Delivery Capability. In accordance with the objectives of the study, it was noted that the various HIV/AIDS interventions adopted all the tools and techniques the study had sought to examine.

There was limited use of the Earned Value Management (EVM) technique, despite it having some significant benefits. These include enhanced accuracy of project forecasts, improved activity scheduling, enhanced cost tracking, and ultimately improving financial accountability and Project Delivery Capability. Variance analysis was only in use partially among the interventions studied. The study showed that various aspects of variance analysis such as generation of important baselines like costs, schedule and scope baselines, were in use. There was a commendable use of work and cost breakdown structures, and this led to more accountability in the interventions. Performance Reviews was the most widely used and accepted tool and technique among those that the study sought to examine. The study revealed that Performance Reviews helped in giving the management an accurate picture of the project progress. Briefs at the onset of projects ensured common understanding of responsibilities and expectations among stakeholders, and briefs as the project was ongoing served to keep all stakeholders appraised and up to date. As revealed the study the use performance reviews was very important enhancing Project Delivery Capability. The Project Management Software was used for various functions such creation of the work breakdown structure, generating project schedule, tracking project performance, tracking of projects activities among others. All these functions had a positive influence on Project Delivery Capability.

The study also highlighted other important Monitoring and Evaluation tools and techniques in use in HIV/AIDS interventions in Kenya. These included Impact assessment questionnaires, feedback from target group, sample effect indicators, incident report forms, evaluation assessment's, benchmark tests and time analysis.

5.5 Recommendations

The study made the following recommendations:

Increase training and awareness on Monitoring and Evaluation processes and procedures

The staff concerned with Monitoring and Evaluation of interventions should undergo proper training on M&E processes and procedures. The National AIDS Control Council whose mandate it is to oversee the execution of HIV AIDs intervention projects should advocate for the training. There should also be periodic refresher courses for the staff to keep them updated in their fields. In the course of the study, the researcher encountered M&E officers whose training was far outdated and obsolete. Many Monitoring and Evaluation officers had no knowledge of the latest trends in their fields. As such, these officers were seriously hampered in the execution of their duties. Training is therefore expected to significantly improve their performance.

Enforce existing structures and procedures

Organizations implementing HIV/AIDS interventions need to enforce the existing structures and procedures concerning project implementation and in particular, monitoring and evaluation. In the course of the study, the researcher found that in many organizations, set Monitoring and Evaluation processes were not necessarily being used. There was also poor supervision and lack of a coordinated way of project evaluation. This means that the organizations were not living up to their full potential as far as monitoring and evaluation efforts go.

Document and use lessons learned

Some organizations were found to be repeating the same mistakes over and over. This was partly attributable to the failure to document lessons learned on previous projects. Lessons learned serve as a reference point as the organization moves from project to project. They help an organization to analyze a project and what went wrong and what needs to be encouraged. Documenting lessons learned prevents an organization from reinventing the wheel with every project. The documentation also provides some continuity in case a certain person leaves an organization, the documents remain as a guide to any incoming staff.

Tailormake Monitoring and Evaluation solutions to local setting

Some Monitoring and Evaluation tools and techniques need to be adapted to suit the local setting and local projects. Tools like the Project Management Software seems too foreign to local Monitoring and Evaluation officers. This software is available but was not in its optimum use by most of interviewed organizations.

5.6 Suggestions for further study

There is need to study the Monitoring & Evaluation tools and techniques in use on other types of projects outside the health sector, for example, manufacturing. This would give useful comparisons and insight about the different M&E tools and techniques in use in different industries.

There is need to study the other tools and techniques used in the other parts of the Project Life Cycle in HIV/AIDS interventions. M&E is only one part of the Project Life Cycle, and the shortcomings in the M&E department may actually have been carried forward from a previous project stage.

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APPENDICES

APPENDIX I: LETTER OF TRANSMITTAL

To
The M&E Office,
P. O Box 22345-00100,
Nairobi.
10/07/2012

Dear Sir/Madam

RE: REQUEST FOR PARTICIPATION IN SURVEY

The undersigned is conducting a study on the influence of Monitoring & Evaluation tools and techniques in HIV/AIDS interventions on Project Delivery Capability (PDC).

This study is expected to help in judging whether HIV/AIDS programmes and interventions are achieving their intended aims, and provide a basis for decision making that is truly evidence based.

In this regard, I request you to complete the attached questionnaire. A follow up visit will be made by the researcher to finalize the questionnaire completion. This will be one month after the dispatch date. Your cooperation will certainly contribute to the success of this study.

Rest assured that the information gathered will be held in strict confidence.

Thank you very much.

Yours faithfully,

Prudence Matasyoh.

Researcher

APPENDIX II: QUESTIONNAIRE

THE INFLUENCE OF MONITORING AND EVALUATION TOOLS AND TECHNIQUES ON PROJECT DELIVERY CAPABILITY (PDC): THE CASE OF HIV/AIDS INTERVENTIONS IN KENYA

Below is a self-administered questionnaire, please tick (√) the appropriate answer or give a suitable response in the space provided.

PART I: BACKGROUND INFORMATION

Name (optional)			
Organization name			
Regional office			
Title of Project			
When project was implemented			
PROJECT DURATION		**PROJECT COST**	
0-2 yrs		Kes 0-2m	
2-4yrs		Kes 2-5m	
More than 4 yrs		Kes over 5m	
EXTENT OF IMPLEMENTATION			
National Level			
District Level			
Constituency Level			
Other (please specify)			

PART II: MONITORING AND EVALUATION TOOLS AND TECHNIQUES

Please answer the following questions.

SECTION A: EARNED VALUE MANAGEMENT

1. To what extent was Earned Value Management used on this particular HIV/AIDS intervention project?

It was not used	
Very limited use	
Limited use	
Extensive use	
Very extensive use	

2. What was the level of management support for the use of Earned Value Management on this project?

No support	
Extremely low	
Low	
High	
Very high	

3. How did project team obtain project forecasts during the implementation of this project?

4. In your opinion, would the use of Earned Value Management on this project enhance the accuracy of project forecasts?

No enhancement	
Very limited	
Limited	
Extensive enhancement	
Very extensive enhancement	

5. How was schedule performance measured on this particular HIV/AIDS intervention?

6. In your opinion, would the use of Earned Value Management on this project improve activity scheduling?

No improvement	
Very limited	
Limited	
Extensive improvement	
Very extensive improvement	

7. How was cost performance measured on this particular HIV/AIDS intervention?

8. In your opinion, would the use of Earned Value Management on this project enhance cost tracking and ultimately, financial accountability?

No enhancement	
Very limited	
Limited	
Extensive enhancement	
Very extensive enhancement	

9. In your opinion, would more extensive (or better use) of Earned Value Management enhance Project Delivery Capability (PDC) on this project?

No enhancement	
Very limited	
Limited	
Extensive enhancement	
Very extensive enhancement	

SECTION B: VARIANCE ANALYSIS

10. To what extent was Variance Analysis used on this particular HIV/AIDS intervention project?

It was not used	
Very limited use	
Limited use	
Extensive use	
Very extensive use	

11. What was the level of management support for the use of Variance Analysis on this project?

No support	
Extremely low	
Low	
High	
Very high	

12. Did the project team establish project baselines for this HIV/AIDS intervention project?

Yes No

13. If yes, which ones did the project team use?

Scope baseline	
Schedule baseline	
Cost baseline	
All the above	

14. How did the project team track variances from these baselines?

15. In your opinion, would the use of Variance Analysis on this project improve the ability to monitor project variances against the set baselines?

No improvement	
Very limited	
Limited	
Extensive improvement	
Very extensive improvement	

16. Did the project team employ the use of a Work Breakdown Structure?

    Yes No

17. Did the project team employ the use of a Cost Breakdown Structure?

    Yes No

18. In your opinion, would the use of Work Breakdown Structure and the Cost Breakdown Structure improve task and cost breakdown, resulting in better accountability?

No improvement	
Very limited	
Limited	
Extensive improvement	
Very extensive improvement	

19. In your opinion, would more extensive (or better use) of Variance Analysis enhance Project Delivery Capability (PDC) on this project?

No enhancement	
Very limited	
Limited	
Extensive enhancement	
Very extensive enhancement	

SECTION C: PERFORMANCE REVIEWS

20. To what extent were Performance Reviews used on this HIV/AIDS intervention project?

It was not used	
Very limited use	
Limited use	
Extensive use	
Very extensive use	

21. What was the level of management support for the use of Performance Reviews on this project?

No support	
Extremely low	
Low	
High	
Very high	

22. In the course of this project, how often were stakeholders briefed on project progress?

Never	
Weekly	
On a need to know basis	
At phase gates	

23. In your opinion, what was the contribution of these stakeholder briefings to the ultimate success of the project?

24. Were lessons learned on this project documented?

Yes No

25. How did lessons learned from previous projects affect the Project Delivery Capability on this particular project?

26. In your opinion, would more extensive (or better use) of Performance Reviews enhance Project Delivery Capability (PDC) on this project?

No enhancement	
Very limited	
Limited	
Extensive enhancement	
Very extensive enhancement	

SECTION D: PROJECT MANAGEMENT SOFTWARE (FOR SCHEDULING)

27. To what extent was the Project Management Software used on this particular HIV/AIDS intervention project?

It was not used	
Very limited use	
Limited use	
Extensive use	
Very extensive use	

28. What was the level of management support for the use of Project Management Software on this project?

No support	
Extremely low	
Low	
High	
Very high	

29. Did this project make use of a Work Breakdown Structure on the project tasks?

    Yes No

30. How was the project schedule for this project generated?

31. In your opinion, would the use of the Project Management Software on this project improve the process of schedule creation?

No improvement	
Very limited	
Limited	
Extensive improvement	
Very extensive improvement	

32. During the course of this project, how did the project team track project performance?

33. In your opinion, would the use of the Project Management Software on this project enhance tracking of project activities?

No enhancement	
Very limited	
Limited	
Extensive enhancement	
Very extensive enhancement	

34. In your opinion, would the use of the Project Management Software on this project improve the progress monitoring?

No improvement	
Very limited	
Limited	
Extensive improvement	
Very extensive improvement	

35. In your opinion, would more extensive (or better use) of Project Management Software enhance Project Delivery Capability (PDC) on this project?

No enhancement	
Very limited	
Limited	
Extensive enhancement	
Very extensive enhancement	

APPENDIX III: INTERVIEW SCHEDULE

- What other Monitoring and Evaluation tools and techniques were employed on this project?
- Is the use of these tools and techniques supported by the management?
- What determines what set of tools and techniques to use on any particular project?
- In your opinion, did these tools influence Project Delivery Capability on this project?

APPENDIX IV: ADULT HIV PREVALENCE BY PROVINCE IN 2005

PREVALENCE				
Province	**Number HIV+**	**Total**	**Male**	**Female**
Nairobi	188,000	10.0%	7.9%	12.0%
Central	116,000	5.0%	2.1%	7.9%
Coast	94,000	6.1%	5.1%	7.0%
Eastern	86,000	3.4%	1.3%	5.4%
North Eastern	13,000	2.0%	1.4%	2.6%
Nyanza	251,000	10.8%	8.4%	13.2%
Rift Valley	182,000	4.1%	2.8%	5.4%
Western	95,000	4.7%	3.7%	5.6%
Total	1,024,000	5.9%	4.0%	7.7%