ROLE OF MANAGEMENT IN PERFORMANCE OF ECONOMIC STIMULUS PROJECTS IN EDUCATIONAL INSTITUTIONS, NYERI SOUTH DISTRICT, KENYA.

BY

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2012

DECLARATION

I declare that this research has not been presented for examination for the award of any degree in this university or any other institution of higher learning.

15TH AUG 2012

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This research has been submitted with my approval as the university supervisor

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Department of Extra- Mural Studies,

University of Nairobi

DEDICATION

I dedicate this project report to my son Felix Alvin Muthungu for his unconditional love and moral support.

ACKNOWLEDGEMENT

I am grateful to the University of Nairobi, especially Nyeri Extra-Mural centre for availing the course hence enabling me the opportunity to pursue it. I wish to express my sincere appreciation to my supervisor, Dr. Lillian Otieno for her guidance, expert advice and resourcefulness. I would also like to thank all my colleagues, lecturers and staff of the centre for all the assistance they accorded me in the course of my studies.

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I would also like to acknowledge the District Medical office of Nyeri South district and its entire staff, for enabling the success of this proposal and the intended study. My gratitude also goes to the District Development Officer, Nyeri District, District Educational Officer, Nyeri District and the entire staff of Kenya Institute of Management, Nyeri Branch for their support. I am grateful too to Agnes Mwai of Kenya Methodist University Nyeri Branch, Library Section.

I wish upon all of you God's blessings

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ABBREVIATIONS AND ACRONYMS

BOG	Board of Governors
CDFC	Community Development Fund Committee
CPTC	Constituency Project Tender Committee
DHIT	District Health Implementing Team
DICT	District Infrastructure Coordination Teams
DMOH	District Medical Officer of Health
ESP	Economic Stimulus Program
FMC	Facility Management Committee
HR	Human Relations
LOB	Line of Balance
NEMA	National Environment Management Authority
PEP	Project Execution Plan
PERMIT	Performance Monitoring Technique
PERT	Program Evaluation Review Technique
PHO	Public Health Officer
PROMPT	Project Measurement Technique
PWO	Provincial Works Officer
SPMC	Stimulus Project Management Committee
SIDP	School Infrastructure Development Plan
VE	Value Engineering
WO	Works Officer
WBS	Work Breakdown Structure
URT	Updating, Reviewing and Reporting Technique

ABSTRACT

The purpose of the study was to establish the extent to which specified management issues affected performance of ESP projects in the educational institutions of Nyeri South District. The institutions in which the projects were being implemented included D.E.B Muslim, Kericho, Muhito and Thukuma primary schools. The secondary schools under the programme were Muthuaini, Kihatha, Muruguru, Giakanja, Mukurweini Boys, South Tetu and Kihuthi secondary schools. A descriptive research design was used. Both qualitative and quantitative research methods were applied. The target population included all the project team members of projects under ESP in educational institutions of the two constituencies of Nyeri South District, which are Nyeri Municipality and Mukurweini constituencies. Judgmental and stratified sampling procedures were used. The rationale behind using judgmental sampling was that the extent to which each member of Board of Governors or school committee was involved varied, with some taking key roles, for example the school principal or headmaster. Questionnaire and structured interview guide methods were used for data collection. Stratified sampling was used because different problems could be experienced in different categories of team members. Data was analyzed using SPSS version 20 for windows. The analysis involved descriptive content for qualitative data and descriptive statistics for quantitative data. Results from the analysis were presented using frequency tables. Findings revealed that majority of the projects had been organized into life cycle phases and necessary information concerning the projects had been availed to them. Some project management tools were largely in use for the projects while others were less utilized. Financial management tools were available for most of the projects. However, conformance of actual spending to the budget was on average. On procurement, most of the projects had the materials they needed. Majority of them however did not have a specialized materials manager. Majority of the projects used the earliest start schedule, whereby resources were committed at the earliest possible time. The researcher concluded that project management skills were evident but some important planning tools were missing. This was attributed to inadequate sensitization on the tools' importance. Commitment of stakeholders was found to be high, which was attributed to their being involved in the project from the very beginning in identifying the needs. On finances, the researcher found that the committees made good use of the available funds, and concluded that this was due to the project management skills members were in possession of. On procurement, the researcher concluded that materials managers should be dealing with procurement issues and not project managers. The researcher recommended that all head teachers and principals should be provided with project management skills. Further recommendations were that private institutions of learning should be included in development programmes like ESP, and that identification of projects should be guided by needs and not local politics. It was also recommended that the ministry of finance should monitor allocation and spending to ascertain that money allocated for projects in the national budget is spent as stated in the budget. In addition, procurement of future projects' materials should be left to materials' managers as opposed to project managers. The researcher recommended further research on a larger sample of the ESP because the programme is country wide, and to have other sectors besides education also researched on.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The world economic stimulus has become an important form of financial relief after ongoing global financial recession of 2008. A significant number of countries are facing terrible economic turmoil and are finding it hard to recover from the after effects of this economic catastrophe. World economic stimulus packages are provided by national governments of respective economies at times of financial emergencies (Economy Watch, 2010).

Economy Watch (2010) explains Economic Stimulus as a form of financial assistance provided in ways like tax rebates or funds. There are many reasons as to why economic stimulus can be provided. The most general include averting financial disasters or coming out of a tight corner. Economic stimulus packages are mostly announced by national governments, just when a particular country has faced some sort of economic problem and is trying to come out of it. Economic stimulus can also be used for addressing imbalances in the standards of living of the people. Economic stimulus packages are normally provided to weaker sectors of an economy. The main reason behind such a thought is that during a financial catastrophe, these sectors are the hardest hit and therefore need maximum possible safety. It is expected that these world economic stimulus packages would provide that necessary buffer. This would shield those sectors as much as possible from shock waves of economic collapse.

National government of United Kingdom had announced an economic stimulus package on 24th November 2008. This particular economic stimulus package included a couple of suggestions for betterment of UK economy like increasing expenditures and reducing taxes. This package was aimed at addressing areas such as economic slowdown, loss of jobs, condition of consumers and sorry state of public finances.

Developing countries have regularly faced economic shocks, including those originating from international trade, investment and financial disturbances. These shocks disrupt the functioning of the economy and eventually the growth momentum. The result is long periods of economic instability and stagnation. Hence, configuration of the gap constraints is important for pursuing sustainable economic growth. In configuring those resource constraints, it is important to analyze the influence of factors such as the reliability of foreign capital inflow and strength effects of crowding in and crowding out of public and private investments (Thanoon, Baharumshah, Aziz and Rahman 2005).

A research was carried out by Thanoon et al (2005) on Malaysia as it set out to become a fully developed country by 2020 (VISION 2020). The study found out that Malaysian economy can achieve its target or growth and reduce the burden of foreign capital, and then close the resources gap by encouraging privatization and increasing complementation between private and government investment. Consequently, as the investment climate improves, privatization can be accelerated to further reduce the size and financial burden of the public sector.

A South Africa economic stimulus package had been announced in February 2008. The main purpose of this economic surplus package of South Africa was to make business establishments

spend more by way of introducing attractive incentives. Economic stimulus package in South Africa was more of legislation. It provided business entities in South Africa with rewards that are necessary to increase spending of financial resources. As per that economic stimulus package, South African companies were awarded if they bought assets. However, there was a catch in this South African economic stimulus package. In order to be eligible to receive this benefit companies needed to buy an asset that would have helped them better various aspects of their business such as software. It was expected that as a result of this South Africa economic stimulus package, business establishments would be taking right steps to ensure that they made full use of that particular benefit.

The function of governments is to provide basic services to its citizens. These basic services are water, food, health, and education, as well as creation of business and job opportunities, and security. In order to maintain good service for the public, government needs to ensure that the economy is growing. Between 2003 and 2007, the Kenyan economy was growing quite fast. However, due to government corruption scandals and political unrest which resulted in the 2008 post election violence, business and investment projects collapsed. This was accompanied by prolonged draught which forced the price of food to rise beyond the means of most Kenyans. All these setbacks called for immediate action from the government to restore the economy to its earlier status. Thus, in the 2009/ 10 budget, finance minister launched the Economic Stimulus Program (ESP) to stimulate the growth of the Kenyan economy through rapid creation of jobs and business opportunities all over the country (Government of Kenya, 2009).

Management in all business and human organization activity is simply the act of getting people together to accomplish desired goals. Management comprises planning, organizing, staffing, leading or directing, and controlling an organization (a group of one or more people or entities) or effort for the purpose of accomplishing a goal (Mittal, 2009).

The aim of the Kenyan ESP program is to support local development projects in every constituency. The construction of these projects will create employment and the finished projects will provide essential services, job and business opportunities and enough food at the constituency level. The ESP will support projects in the education, health and sanitation, food production, environment, local government, industrialization and fishery sectors (Government of Kenya, 2009).

Langwen (2011) stated that ESP is in line with the priorities of the VISION 2030. The ESP support would provide for greater monitoring, supervision and evaluation for proposed development activities. During the Stand Up Campaign for the Millennium Development Goals, the then Minister for Cooperative Development stated that in implementing the new constitution, the Government of Kenya will further avail more resources towards MDG related sectors. He said that indeed, the channeling of 15% of the government's budget directly to the counties coupled with devolved funds such as CDF and the Economic Stimulus Package will be a major boost to the attainment of MDGs (Stand up Campaign for MDGs, 2010).

1.2 Statement of the Problem.

Managing in today's environment provides many challenges. There are many situations that challenge the traditional ways organizations have been managed and hence new and unique approaches are required (Smith, 1997). Empirical data on managerial concerns warns us that the level of project failures is high.

Kilkelly (2011) observed that skill gaps play a critical role in the failure of projects. HR specialists, consultants, management- development specialists and trainers need to identify and close such gaps. Despite the availability and uptake of project- management training courses, fundamental skill gaps still remain. Frodell, Josephson and Lindahl (2008) stated that the factors which appeared to have great effect on construction projects are first, the clients' ability to make decisions, second, committed construction and management workforce and, third, competence within construction management. Vanhouka and Vandevoorde (2007) came up with various methods of forecasting a project's final duration and total project costs. However, studies have not been thoroughly done on how management of time and cost affect adherence to schedule and budget.

The studies by Kilkelly (2011), Frodell et al (2008) and Vanhouka and Vandevoorde (2007) have not covered how various critical management issues affect the performance of projects. This study therefore sought to investigate how the management of the projects under Economic Stimulus Program is being carried out and its effect on their performance.

1.3 Purpose of the Study

The purpose of the study was to investigate the role of management on the performance of projects under Economic Stimulus Program in educational institutions of Nyeri South District, Kenya.

1.4 Objectives of the Study

The objectives of the study were as follows;

1. To assess the extent to which application of project management skills influence planning, design and implementation of Economic Stimulus Projects in educational institutions of Nyeri South district.
2. To establish the extent to which involvement of community members affect the performance of Economic Stimulus Projects in educational institutions of Nyeri South district.
3. To assess the ways finances are managed in Economic Stimulus Projects in educational institutions of Nyeri South district.
4. To establish the procurement process of Economic Stimulus Projects in educational institutions of Nyeri South district.

1.5 Research Questions

The study was guided by the following research questions:

1. How does the application of project management skills influence planning, design and implementation of Economic Stimulus Projects in educational institutions of Nyeri South district?
2. How does the involvement of community members affect performance in educational institutions under Economic Stimulus Projects in Nyeri South district?
3. How are finances managed in Economic Stimulus Projects in educational institutions of Nyeri South district?
4. What procurement procedures are applied in Economic Stimulus Projects in educational institutions of Nyeri South district?

1.6 Significance of the Study

The findings of the study will be submitted to the Ministries of Finance and Education. They may form a basis for the improvement of management of the projects currently under Economic Stimulus Program in the educational sector, as well as better management of future National Projects. Researchers in future will also use the findings of the study as a basis for their research work.

1.7 Scope of the Study

The study will cover all the projects under Economic Stimulus Program in educational institutes of Nyeri South District, Central Province, Kenya.

1.8 Limitations of the Study

The study covered only the educational projects under Economic Stimulus Program in Nyeri South District, yet the program is country wide. This limited the degree of generalization of the findings.

1.9 Assumptions of the Study

This study assumed that the respondents would provide reliable and valid data that could be used to make conclusions in relation to the study. There eleven projects in various primary and secondary schools namely D.E.B Muslim, Kericho, Muhito and Thukuma primary schools. The secondary schools under the programme were Muthuaini, Kihatha, Muruguru, Giakanja, Mukurweini Boys, South Tetu and Kihuthi secondary schools.

1.10 Definition of Significant Terms

Bounding Schedule: Early start schedule or late start schedule, which refers to committing of resources as early or as late as possible, respectively.

Community Involvement: Participation of residents of the geographic neighborhood

Economic Stimulus: Financial assistance provided by the government of a country after a disaster or for the purpose of coming from a tight corner

Financial Management: Planning, organizing, directing and controlling financial activities of the enterprise

Procurement: Process by which materials and equipment are availed for the project.

Project Management Skills: Body of knowledge that is generally accepted, provides common project management terminology and standards, and acts as a basic reference for anyone interested in the profession of management

Project Performance: Accomplishment of a project measured against preset known standards of accuracy and completeness

1.11 Summary

This chapter brought out the background and need for economic stimulus. The problem prompting this study has also been stated in this chapter. The chapter also outlines the objectives of the study as envisaged by the researcher and the research questions enumerated. The impact of the way projects get managed has been emphasized. To ensure the study was not negatively affected by other factors, those limitations were identified and solutions to them identified and overcome. The chapter then gives an interpretation of operational terms so that terminologies and concepts are interpreted and understood the same way by the reader.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discussed literature related to role of management on performance of selected economic stimulus projects, educational institutes, Nyeri south district. The literature was obtained from documents, books, journals and internet sources containing information on Economic Stimulus Program, project management, project definition and planning, resource management, risk management, monitoring and control and related activities.

2.2 The Historical Perspective of Economic Stimulus Programme (ESP)

In 2008 and 2009, many types of economic stimulus packages, economic stimulus plans, and economic stimulus bills were introduced, all designed to save or jumpstart something. Economists propound several theories regarding the working of the economy, on the basis of which government officials develop an economic policy. The theory that relates to jumpstarting economy during depression was advocated by Keynes. During the Great Depression of the 1930s, many governments undertook public works projects in order to create jobs and stimulate the economy. The economist John Maynard Keynes provided a theoretical justification in the General Theory of Employment, interest and money, published in 1936.

Keynesian economics advocates a mixed economy - predominantly private sector, but with a significant role of government and public sector – and served as the economic model during the later part of the great depression, world war II and the post economic expansion (1945-1973), though it cost some influence following the stagflation of the 1970s. The advent of the global

financial crisis has caused resurgence in Keynesian thought. In economics, stagflation is a situation in which the inflation rate is high and the economic growth rate slows down and unemployment remains steadily high. It raises a dilemma for economic policy since actions designed to lower inflation or reduce unemployment may actually worsen economic growth.

The theory relates to the study in that in the course of the implementation of ESP project, the private sector is largely involved especially in the projects under the Ministry of Local Government and those under the ministry of industrialization. The public sector is also involved in educational projects and those under the ministry of Health and Sanitation. In both the private and the public sectors, the government is largely involved in planning, implementation, financing etc of the Economic Stimulus Projects. However in the educational sector, the ESP programme deviates from Kenesian theory to a great extent, in the sense that only public institutions of learning were targeted for the programme. Private institutions were left out.

Leaving out of private instutions in the programme is inappropriate because, as was found out by Karmokobis, Mass and Mass (1997), enrollments have accelerated in private schools while they have stagnated in public schools. Karmobis et al (1997) observes that unmet demand for private schools is evidenced by long waiting lists of students that have met the schools admission criteria but for whom there was no room in the school. These studies suggest that private institutions of learning are equally of importance and should be given attention as well in government economic policies like the ESP.

The damages and losses by disasters, such as earthquakes, floods, tornadoes, and other major natural disasters, or man-made disasters, have significant and intense impacts on a region's

economy. In addition, the impacts from the damages will sustain over time, and will spread serious economic effects to other regions. Furthermore, the impacts of disasters are very complex, including not only the negative effects from damages and losses, but also the positive economic effects from the recovery and reconstruction activities (Okuyama, 2004). Kenya experienced such damages during the post election violence and consequently the impact would be expected to sustain over time. The positive effects include the launching of ESP.

The concept Economic Stimulus Program or Package (ESP) of Kenya came into existence and public limelight in the 2009/10 budget speech to parliament. The ksh 22 billion stimulus package tailored around labor – intensive construction projects in the 2009/10 budget is targeted at reviving economic growth which took a down turn in 2008 following a prolonged drought, electoral violence, a rally in oil and food prices and spillover effects of the global economic crisis (Government of Kenya, 2012).

The budget was premised on the theme, 'Overcoming today's Challenges for a better Kenya Tomorrow'. It aimed at urgently jumpstarting the Kenyan economy towards long term growth and development, particularly in the wake of the 2007/08 post-election violence that brutally battered the Kenyan economy and the 2008/09 global economic recession which had astronomical negative shocks on economies, Kenya inclusive. (Government of Kenya, 2009)

The ESP is coordinated by the ministry of finance at the national level. The ministry is responsible for providing overall leadership for the whole program. At the constituency level, projects are managed either by the District Coordination Team for all education projects, or the Stimulus Project Management Committee (SPMC) which manages projects in all the other

sectors. The Stimulus Project Management Committee (SPMC) is responsible for: identifying the appropriate location for the project using provided guidelines; making recommendations for payments in consultation with relevant and technical ministries to the District Accountant, through the Community Development Fund Committee (CDFC); and monitoring the implementation of ESP projects. (Government of Kenya, 2012)

The SPMC is composed of the Member of Parliament as the patron, District Commissioner, District Development Officer, the District Public Works Officer, the CFDC chairperson, CDFC secretary and CDFC treasurer, District Accountant, all departmental heads under whose docket the various projects fall, one person representing religious organizations in that constituency, two women representatives from that constituency, two persons representing the youth and the CDFC Fund Account Manager as the focal point for information regarding ESP projects. Constituency Project Tender Committee (CPTC) is constituted by the CDF Account Manager. The CPTC is responsible for award of all the project contracts in the ESP. (Government of Kenya, 2012).

The education sector program will not be implemented through the SPMC like other sectors, but through the Ministry of Education framework. The ESP funds may be used for the construction of new school buildings or upgrading existing facilities. Funds are disbursed from the ministry of Education to target schools, which shall open a dedicated account for the ESP activities. Selection of projects will be made by the CDF committee. Selection criteria for school projects include: proof of ownership as public land (title deed/ allotment letter); strong community support; high demand for schooling; reliable water and electricity source (except rural school). Primary school projects will be managed by a school management committee which is

responsible for making payments once work is done. The committee should prepare a School Infrastructure Development Plan (SIDP) in conjunction with the community, and make the community level procurement. Secondary school projects will be implemented by the B.O.G. (Board of Governors) which should make community level procurement (Government of Kenya, 2012).

Monitoring of projects will be done by the DICT (District Infrastructure Coordination Teams), composing departmental heads including PWO (Provincial Works Officer), PHO (Public Health Officer),WO (Works Officer), NEMA (National Environment Management Authority), school auditor, Education Officer, District Accountant, Quality Assurance and Standards Officer. This committee will also provide the completion certificates upon project completion. (Government of Kenya, 2012)

The key implementing body for Health and Sanitation projects is the District Health Implementing Team (DHIT) under the leadership of DMOH (District Medical Officer of Health). It identifies dispensaries, supervise works, ascertain delivery of equipment, recruitment and deployment of nurses, and identify community health workers. Each will have a Facility Management Committee (FMC) elected by the community to ensure sustainability. FMC members will be trained. The selection criteria for construction projects will be two health centers to be identified by stakeholders, which should own land not less than two acres, should enjoy catchment of at least 10,000 patients and must have a well established outpatient section. (Government of Kenya, 2012)

The Market Stalls project is meant to address the missing markets and facilitate commerce, trade and rural enterprise development. It is implemented by the Ministry of Local Government in consultation with representatives of all host local authorities, who are to spearhead the implementation. Other parties to get involved include the Resident Engineer and the Project Architect. The Food Production projects will focus on reducing reliance on rain- fed agriculture. It's implemented by the Ministries of Agriculture, Water and Irrigation, Regional Development and Youth Affairs. (Government of Kenya, 2012)

Jua kali sheds projects focus on promoting regional development for equity and social stability, and the establishment of Constituency Industrial Development Centers (CIDC). The implementing body is the Ministry of Industrialization. Fisheries Development (Fish Ponds) project focus on improving nutrition and creating over 120,000 employment and income opportunities. These projects are implemented by the Ministry of Fisheries Development.There was the intent of the project of Information and Communication, which was focused on improving access and capacity for ICT use. It was to be implemented by the Ministry of Information and Communication in Conjunction with the Ministry of Education. However, this project was later scrapped. (Government of Kenya, 2012)

2.3 Rationale for Project Management in Economic Stimulus Projects

Managing organizations in today's environment provides many challenges. Organizational managers constantly find themselves confronted with situations which challenge the traditional ways organizations have been managed and require new and unique approaches (Smith, 1997). In order to register a high rate of success for public projects, the government should ensure that

those assigned the role of managing them are either imparted with adequate project management training and skills, or qualified project managers to be hired to manage them.

Projects should transform an unsatisfactory (existing or future) state to a better state within a certain time, using a limited effort (Cleland and Gareis, 1994). Management by projects provides a disciplined approach to gaining competitive advantage by getting the right product, in time, to market, through designated management of innovation, knowledge and skills. The implementation of strategic management through projects makes the achievement of highest returns possible by optimal utilization of resources available (including time, money and people) more realistic (Svetlana, 1997).

Many people become project managers by accident. Someone assigns them to manage a project because of their areas of expertise, not because they have received any project management training. However, if you manage a project by accident, it'll become a disaster (Richman, 2002). This is clearly shown in the Kenyan ESP projects in that rather than being put under the management of qualified project managers, they are being managed by the functional managers of the organizations concerned, who consequently become project managers by accident.

Richman (2002) says that learning project management skills can help one complete projects on time, on budget and on target. The discipline of project management includes proven strategies for clarifying project objectives, avoiding serious errors of omission, and eliminating costly mistakes. It also addresses the necessary people skills for getting the cooperation, support and resources to get the job done. This signifies the need of all managers to have some skills on managing projects.

Richman (2002) stated that the need for project management is becoming increasingly apparent in the world today. Whitley (2012) pointed out that project management as a management discipline underpins much economic activity. In industries as diverse as pharmaceuticals, software and aerospace, projects drive business. And in the public sector, it is effective project management that translates politicians' promises of new roads, schools and hospitals into gleaming new constructions that improve everyday life.

2.4 The Economic Stimulus Programme (ESP) and Development Policies

Various development policies have been formulated globally to address various development issues of concern. These policies can be classified as global, regional, national or local depending on their coverage. Global policies include Millennium Development Goals while national ones include Kenyan Vision 2030. Projects' objectives should be in line with development policies, and these include the ESP projects.

UNDP Kenya (2004) states that on MDG goal 1 on eradication of extreme hunger and poverty, the Ministry of Agriculture formulated the Strategy for Revitalizing Agriculture (2004-2014) and developed a Strategic Plan (2008-2012) both of which put forward fairly elaborate interventions that could contribute very substantially to improved agricultural productivity at the household level thereby touching positively the food security of the poor. National initiatives such as Njaa Marufuku Kenya, Kilimo Biashara and others under the Economic Stimulus Package are aimed at achieving higher levels of food sufficiency among participating households. If these initiatives are sustained, it is possible that the rate of growth in agriculture will peak at 10% in the medium term as projected, and bring the anticipated outcomes as envisaged in the MDGs.

Hansdo'Orville (2009) states that educational strategies need to be integrated within broader anti- poverty and national development policy frameworks. The fact that child malnutrition and ill- health remain a major obstacle to educational access and achievement for the poor highlights the intricate connections among education, health and social conditions. It underscores the need for stronger inter-sectoral policy coordination. This is in line with the specific activities included under the ESP project implementation in the institutions of learning, some of which focuss on improved health, like the construction of latrines.

2.5 Project Management Skills

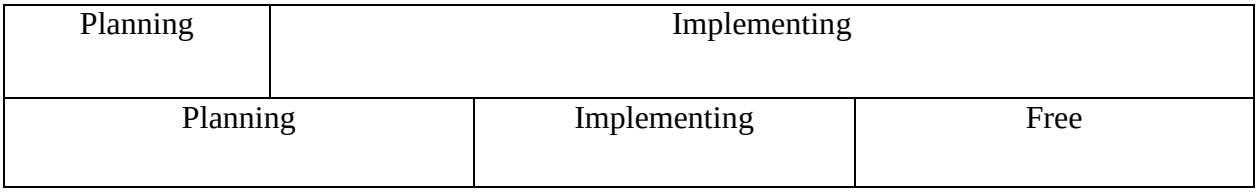
Possession and application of project management skills is important to increase the possibility of projects being successfully completed. The skills include the body of knowledge and standards that are generally accepted in taking a project through its various lifecycle phases which include initiating, planning, executing, monitoring and controlling and closing (Richman, Project management knowledge and skills can help you complete projects on schedule, within budget and in full accordance with project specification (Richman, 2012). The subject of project management has developed over the years into a fairly precise set of techniques, definitions and practices that are applicable to running projects. The secret to successful project management practice is to know when to apply the appropriate techniques at the right stage in a project (Elbeik & Thomas, 2008). It is therefore important for the government to ensure that public projects are planned, implemented and operated in accordance to relevant project skills in each of the projects' phases.

Richman (2012) identified the areas that describe project management's knowledge and practice to include integration management, scope management, time management, quality management and communications management amongst others. Integration management includes processes and activities required to ensure that the various elements of the project are properly coordinated. It includes developing a project charter and plan, directing and managing the project, monitoring and controlling project work, controlling change and closing the project.

The ESP projects should be properly coordinated, adequately planned, monitored and controlled. Webster (1999) pointed out that too many projects are started without sufficient definition or direction, with project managers hoping that matters will clarify as the project progresses. At worst projects are issued during hurried, inadequate corridor briefings. More usually a genuine attempt is made but exactly where the project came from and why it is needed remains unclear. Managers also show considerable reluctance to seek clarification from senior managers about what exactly it is that they are being asked to do. As with much on projects, managers make a start and hope that matters will clarify as they go along. The result of this lack of clarity is significant amounts of expensive rework which emerges well into the project implementation phase. Frustrations run high as budgets and schedules run over to accommodate unnecessary rework, pushing the project beyond time and budget limits. Smith (1997) observed that it is planning and preparation that form the basic tenets of any project management process. Bearing in mind that ESP projects are funded with tax payers' hard earned cash, the government should be a good steward of such funds by ensuring that expensive reworks are avoided, and unnecessary schedule and budget overruns do not occur whatsoever.

Stanton and Hunt (2005) pointed out that when you explore the amount of time spent on planning and on implementing activities, it is not unusual to find that more quality time spent on planning can reduce not only the amount of time spent on implementing, but also the time taken overall. This will then free up time for other activity. This is illustrated in the figure 1:

Figure 1 Quality Time Spent on Planning



The first row of the figure above shows inadequate time spent on planning, resulting to excess time spent on implementation. On the other hand, as portrayed in the second row, quality time spent on planning results to much less time spent on implementation, with even some time freed up overall. It is appropriate for ESP projects to be planned adequately so that they are completed in good time. This will help ensure that the project deliverables start benefiting the target group as soon as possible. For example, if the project involved construction of a library, students start using it in good time.

Monitoring and controlling project work is carried out throughout the project phases. It involves tracking, reviewing, adjusting and controlling progress to meet the project performance objectives (Heldman, 2011). The key things to be monitored and controlled are time (schedule), cost (budget), and scope (performance). These after all encompass the fundamental objectives of the project (Meredith and Mantel, 2012).

Monitoring and controlling can actually be thought of as two separate processes, but because they go hand in hand, they are considered one activity (Heagney, 2012). Control is exercised by comparing where the project work is to where it is supposed to be, then taking action to correct for any deviations from the target. The plan tells where the work should be. Without a plan, you don't know where you should be, so control is impossible by definition. Furthermore, Heagney (2012) says that knowing where you are is done by monitoring progress. In monitoring progress and controlling, an assessment of quantity and quality of work is made using whatever tools are available for the kind of work being done. The result of this assessment is compared to the planned level of work. If actual level is ahead of or behind the plan, something will be done to bring progress back in line with the plan.

Scope Management includes the activities and processes required to ensure that the project includes all the work required – and only the work required to complete the project successfully. It includes scope planning, scope definition, creation of a Work Breakdown Structure, scope verification and scope control. Time management includes the processes and activities needed to ensure timely completion of the project. It consists of activity definition, activity sequencing, activity resource estimating, activity duration estimating, schedule development and schedule control. Communications management includes processes and activities needed to ensure timely and appropriate generation, management and communication of project information. It consists of planning, information distribution, performance reporting and managing stakeholders (Richman 2012)

The scope of the ESP projects should be well managed because the budget is fixed, and failure to finish the planned work with the amount assigned will lead to incomplete projects with funds having run out. Time should also be managed well so that the projects can be delivered fast. Delay would be expensive because it would result to buying materials when inflation is at a higher level. Communications management should also be properly done to ensure the organization structure, authority and responsibilities are clear within the project.

2.6 Community Involvement

Every local school has a neighboring community which it serves. Today, most metropolitan region schools serving low to moderate income neighborhoods need instructional upgrading as well as repairs to buildings and facilities. (Ferguson and Dickens, 1998) This is in line with the activities of the Economic Stimulus Projects, some of which aim at upgrading and repairing already existing facilities for example libraries, dormitories, latrines and classes.

In the same neighborhoods, Ferguson and Dickens (1998) point out that neighborhood social ties and the capacity for collective problem solving are underdeveloped. Further, residents are disproportionately isolated from informal networks that carry information about good economic opportunities. This isolation helps to perpetuate joblessness, financial insecurity and undesirable living arrangements, including fatherless households. This implies that government policies, ESP included should aim at involving neighboring communities rather than isolating them out, so as to provide them with economic opportunities that come alongside such projects. This will upgrade their livelihoods by reducing rates of joblessness and financial insecurity.

Community- driven development is indelible in the development landscape. It is increasingly visible in the policy design of many governments, nongovernmental organizations, and multilateral institutions and features in important debates involving democracy, governance, institutions and decentralization. (Adato et al, 2005). These views are shared by Ferguson and Dickens (1998) who states that when local problems arise, neighbors should have the capacity to collaborate among themselves and with business people, public officials and service providers to solve them. Due to the situations that were prevalent in educational institutions that necessitated them to be targeted in ESP, the community members should be provided with the opportunity to collaborate among themselves and with public officials in various relevant issues like selection of projects, sizes and sites.

The stakeholder relationship behavior includes items concerning identifying stakeholders, building relationships with them, and understanding their desires. Time taken to align stakeholders probably improves communication and reduces rework (Hartman et al, 2002) During planning, the sponsor ensures that stakeholders are identified and their needs are prioritized; relationships are built with both internal and external stakeholders; and, at the end of the formal planning stage, all stakeholders accept the project plan. One way to envision how this impacts the firm's future is to remember that the firm wants to both capitalize upon the current project and secure future work. A good understanding of the needs and wants of various stakeholders will help on both counts (Kloppenborg et al, 2011). Hence, for sustainability purposes, the government needs to ensure stakeholders are identified and involved in the projects right from the start.

Project Management propositions include, listening to the customers and understanding their requirements and expectations of the project outcome, meaning - linking the idea with the reality. As Kaderlan (quoted in Nelson, 1996) notes: “Expectations are like land mines. If you aren’t clear about them, they can explode at the worst possible moment and destroy the trust you have worked so hard to develop.” In turn, the largest single component of such misunderstanding is over how “success” of the project is to be defined. Many professional consultants and project managers think they know what clients want of them, but frequently this differs from what the client truly wants or expects (Stasiowski and Burstein, 1994). It is thus important for the government to involve community members in local public projects like the ESP so that the community can build trust on the government.

The neighborhood should be influential in local political affairs and it should garner its fair share of public goods and services form all levels of government. Neighborhood residents should have the resources and support necessary to acquire and keep jobs within commuting distance that can support them and their families (Ferguson and Dickens, 1998). Local public projects come with their share of opportunities in terms of job opportunities and realized project benefits. The benefits from the ESP educational institutions projects may include increased enrollment. The local community should be able to benefit from all these. The job opportunities availed have an added advantage in that they are within commuting distance for the neighborhoods.

Local schools should educate children well and also serve as places where parents and other citizens come together for community affairs (Ferguson and Dickens, 1998). ESP should serve these purposes in that the improvements made through the project’s deliverables should

contribute towards good teaching. At the same time, the work involved, if community members are involved, will create a forum for parents and other citizens to come together for community affairs, which is an added advantage.

2.7 Financial Management

Project financial management is a process which brings together planning, budgeting, accounting, financial reporting, internal control, auditing, procurement, disbursement and the physical performance of the project with the aim of managing project resources and achieving the project's development objectives (World Bank Report, 1999). Sound financial management is a critical ingredient of project success. Timely and relevant financial information provides a basis for better decisions, thus speeding the physical progress of the project and the availability of funds, and reducing delays and bottlenecks. ESP has a fixed budget, thus the need for proper financial management so as to ensure the cost objectives are met.

Every project management plan includes a cost estimate, a budget or both. Dismore and Irewin (2011) stated that the cost estimate is normally in a table format and includes a summary of costs for each major task or element of the project. Financial management includes systems and procedures for establishing budgets, for reporting financial information, for controlling costs and for managing cash flow.

Project managers are not expected to be financial experts (Wysocki, 2000). Among the support services a Project Support Office (PSO) offers is to provide project managers and clients with analyses and decision advice on how best to manage the project from a financial perspective. This extends to assisting with the preparation of Return on Investment (ROI), Internal Rate of

Return (IRR), breakeven analysis, cost benefit analysis, full costing alternatives, and other analytical reports. Luckily for institutions of learning, there is usually a financial controller or accountant, to whom financial issues can be delegated. The government should ensure that ESP fund management in the delegated to accountants and financial controllers, because these have adequate skills in financial management.

The most straightforward method of estimating cost is to use the Work Breakdown Structure (WBS) and activities schedule (Dismore and Irewin, 2011). Each element of the WBS or each activity in the schedule can have cost associated with it. Therefore the approach is to go down the list of the activities or WBS elements and estimate the cost of each one. Costs are estimated by identifying the resources needed for each activity, in what quantities and at what price. The pricing of the resources depends on the timing, so normally a cost estimate is not finalized until project activities have been scheduled.

Dismore, and Irewin, (2011) pointed out that budgets are cost estimates that have been approved by management and formally established for cost control. Actual costs are compared to budgets as the project is completed, to identify variances and potential problems and to provide information on what the costs will be. The budgeting process includes extensive reviews and revisions of the cost estimates, to arrive at the final budget figures. Financial control includes cash flow management as well as conventional cost control which include standard cost accounting, cost performance reporting, and cost productivity assessment. Cash flow management involves traditional income and expenditure reporting and analysis. On most projects, funding and funds management are critical, representing the timing at which resources

can be scheduled and work accomplished. Cash flow planning and reporting procedures and responsibilities are established in the project management plan, ensuring that funds are available as needed for the project.

Sound project financial management provides the following, from the World Bank report (1999) point of view: essential information needed by those who manage, implement and supervise projects, including government oversight agencies and financing institutions. It also provides the comfort needed by the donor community that funds have been used efficiently and for purposes intended, and a deterrent to fraud and corruption, since it provides internal controls and the ability to quickly identify unusual occurrences and deviations. The government should thus ensure procedures in financial management for the ESP projects are well in place.

2.8 Procurement

Materials managers need to be in full control of purchasing transactions in order to meet project demands in terms of materials specifications and delivery dates. (Torrent, 2008) In this way, they should avoid the transfer of those purchasing transactions to third parties who are unaware of detailed project requirements. Ward (2008), states that the right quantity for equipment is easy and straight forward. However, the right quantities for bulk materials is something that few, if any, organizations can get right – despite the use of computer aided design.

The independent variable, procurement based on Goldreth, E.M. theory of constraints (TOC). This theory adopts the common idiom, “A chain is no stronger than its weakest link”, as a new management paradigm. This means that organizations, processes etc are vulnerable because the weakest person or part can always damage or break them or at least adversely affect the

outcome. The analytic approach with TOC comes from the contention that any manageable system is limited in achieving more of its goals by a very small number of constraints , and that there is always at least one constraint. The theory is related to the study in that the main focus of investigating procurement management in relation to project performance is to identify the various resource constraints and bottle necks, hence the risks that could be resulting to the project not accomplishing its maximum potential in performance.

Overlooking materials management can create serious difficulties on projects. Along with other concerns, it can extend procurement lead time, enlarge materials surpluses, and generate problems with materials availability. (Torrent, D.G., 2008).

An example of the importance of materials management is clearly demonstrated when we look at the cost of equipment and materials related to any major on – shore or off – shore project (Raid, 1999). Historically, the value of these purchases is on average 15 – 25 % of the total costs with deliveries spread over the entire project duration. Good materials management is one of the cornerstones within any project. Materials management within a project generates a considerable amount of information vital to project cost and planning.

Raid, (1999) states that information relating to the acquisition, allocation and distribution of project materials/ equipment play a major role in the process of managerial decision – making. Without the timely supply and control of the right materials, it would be impossible to achieve project objectives successfully. Materials management is therefore a key function in the favorable execution of any project.

Purchasing is a vital function for most projects. Purchasing is also a greedy function, because it consumes time and money in prodigious amounts. (Lock, 2007) Purchased goods and services account for over half the total costs of most projects. Efficient purchasing and supply chain management are essential to avoid serious over – expenditure or delays through shortages and acquisition of goods that are unfit for their intended purpose. Activities for all significant project purchases start well before an order is placed and do not end until the materials have been delivered and put to use.

Lock (2007) points out that the procedures for any purchasing event will depend to a very large extent on the value and importance of the goods. If the project needs a sheet of plywood, the procedure can be as simple as sending someone to the nearest DIY store to buy it with petty cash, without even involving the purchasing department. But most project purchases need far more care and attention to ensure that goods are bought at the right price, of the right quantity, to be available at the right price and the right time. The purchase of a special or expensive piece of equipment or parcel of goods can be regarded as a mini – project itself.

Early commitment of resources to projects result to early completion times for the projects and reduces delays. Chandra (2009) says that in scheduling activities, there are two bounding schedules. These are the early start schedule and the late start schedule. The early start schedule refers to the schedule in which activities are started as early as possible while the late start schedule is arrived at when all activities are arrived at as late as possible. The early start schedule suggests a cautious attitude towards the project and a desire to minimize possibility of delay.

2.9 Project Performance

Project performance is measured in terms of time and cost (Vanhoucke, 2009) Other measures of performance in a project include its conformance with quality standards. The secret to successful project management practice is to know when to apply the appropriate techniques at the right stage in a project (Elbeik & Thomas, 2008). It is therefore important for the government to ensure that public projects are planned, implemented and operated in accordance to relevant project skills in each of the projects' phases.

Many professional consultants and project managers think they know what clients want of them, but frequently this differs from what the client truly wants or expects (Stasiowski and Burstein, 1994). It is thus important for the government to involve community members in local public projects like the ESP so that the community can build trust on the government. For a project to perform well, stakeholders, who include community members should be involved right from the start.

Sound financial management is a critical ingredient of project success. Timely and relevant financial information provides a basis for better decisions, thus speeding the physical progress of the project and the availability of funds, and reducing delays and bottlenecks. ESP has a fixed budget, thus the need for proper financial management so as to ensure the cost objectives are met. (World Bank Report, 1999).

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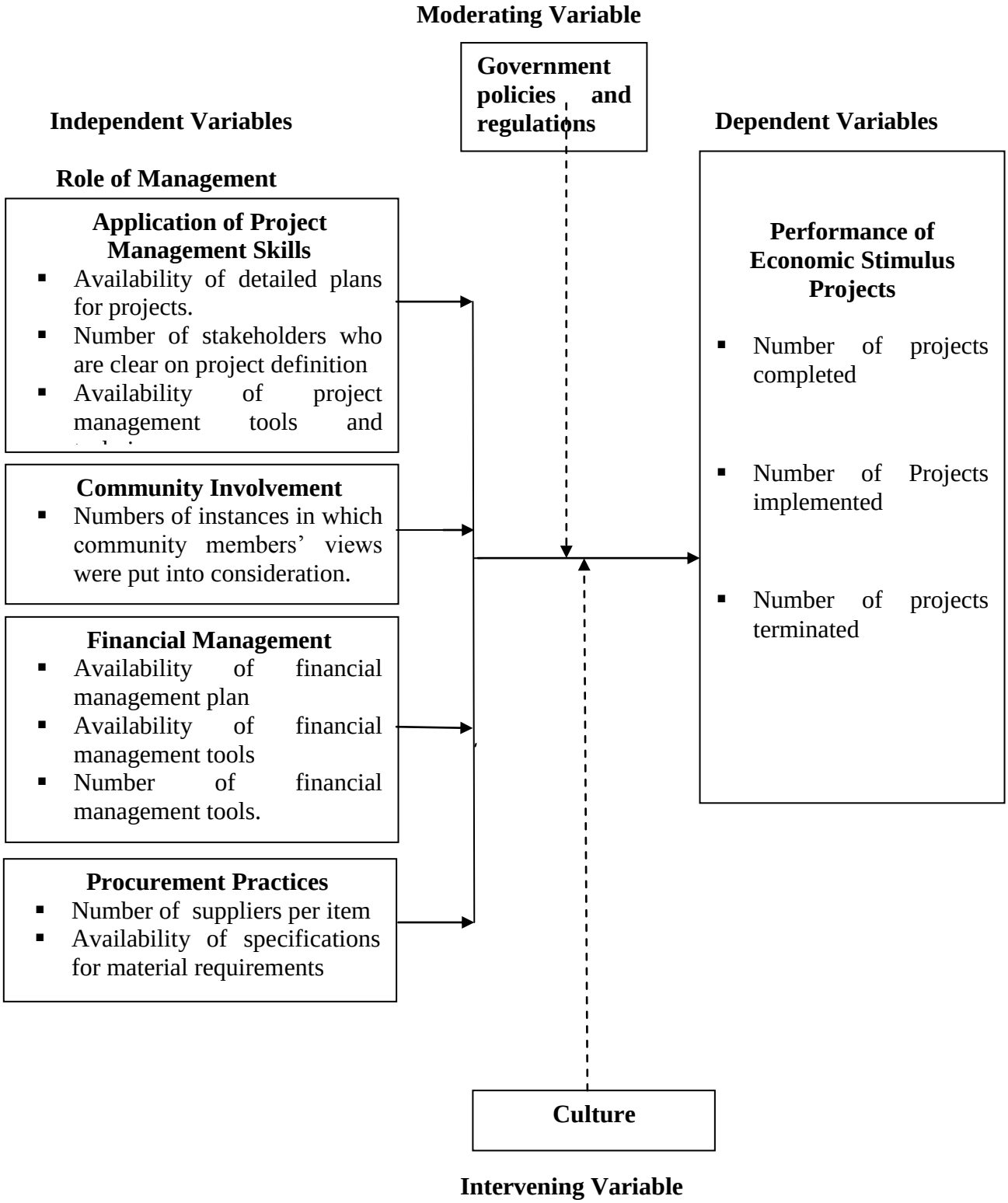
refers to the schedule in which activities are started as early as possible while the late start schedule is arrived at when all activities are arrived at as late as possible. The early start schedule suggests a cautious attitude towards the project and a desire to minimize possibility of delay.

2.10 Conceptual Framework

Figure 2 shows the conceptual framework of the study

Figure 2 Relationships between Variables



The figure above shows the variables of the study. The independent variables include project cycle phases, community involvement, financial management, and procurement. On the other hand, the dependent variable is project performance and sustainability. Government policies and regulations is the moderating variable. Various indicators will be used to collect and measure data concerning the variables. The data obtained will be of a descriptive form which will be measured both qualitatively and quantitatively.

According to the literature reviewed in this chapter, project cycle phases may affect the project's performance positively or negatively. Lack of detailed project plans and lack of appropriate project management tools and techniques adversely affect the project's performance. Therefore, it is important that project planning be done appropriately. This variable will be measured by identifying the types, number and adequacy of the project management tools available for the project.

Community based development is indelible in development projects. The variable will be measured by identifying instances in which community members were involved in the project. Sound financial management is a critical ingredient for project success. The measurement to this variable will be the availability and number of financial management tools. Overlooking materials management can create serious difficulties on projects. This variable will be measured by identifying the skill relevance in human resource, adequacy and quality of equipment and materials as well as the degree of utilization of the project resources.

2.11 Summary

From the literature, reviewed lack of proper planning and project definition results in rework, which makes the projects run behind schedule and incur budget over runs. Monitoring and control of project progress is important in that they are the processes through which one gets to know the extent to which actual performance is in line with the plan, and corrective action is taken for any deviation. Project Management should involve listening to the customers and understanding their requirements and expectations of the project outcome. Sound financial management is a critical ingredient of project success. Materials managers need to be in full control of purchasing transactions in order to meet project demands in terms of materials specifications and delivery dates.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives a detailed outline of how the study was carried out. It describes the research design, the target population, the sample and sampling procedure, research instruments, validity and reliability of instruments, data collection instruments, data analysis and presentation procedure.

3.2 Research Design

In this research, descriptive survey research design was used. In this type of design, variables are not manipulated. They exist or have already occurred. Careful sampling procedures were employed so that generalizations may be extended to other individuals, groups, times or settings. Both qualitative and quantitative research methods were used. The qualitative research focused on gathering non-numerical data, while quantitative research generated numerical data. Ambert (1995) pointed out that, instead of drawing from a large representative sample of an entire population of interest, qualitative research seeks depth rather than breadth. Qualitative researchers seek to acquire in-depth and intimate information about a smaller group of persons.

3.3 Target Population

The target population was all the project team members of projects under Economic Stimulus Program in educational institutes in the four constituencies of Nyeri South district. These are the members of board of governors for secondary schools and the school committee members for primary schools. The constituencies in Nyeri South District are Nyeri Municipality and

Mukurweini. It is a finite population that contains a countable number of sampling units. The projects under the educational sector are four primary schools and seven secondary schools making a total of eleven projects.

Those involved with the management of the projects in each school are Board of Governors (BOG) for secondary schools and school committee members for primary schools. They are 13 in number in each school. In addition, there are 8 site committee members for each project. Then there are 5 officers from the Ministry of Education's Nyeri district involved in the projects. The total population was 257. Table 3.1 shows the schools with Economic Stimulus projects per category and per constituency.

Table 3.1 Schools with Economic Stimulus Projects

Nyeri South District Constituencies	Secondary Schools	Primary Schools
Nyeri Municipality	Muthuaini	D.E.B Muslim
	Kihatha	
	Muruguru	Kericho
	Giakanja	
Mukurweini	Mukurweini Boys	Muhito
	South Tetu	
	Kihuthi	Thukuma

3.4 Sample Size and Sampling Procedures

The sampling design that was used in the study is judgmental sampling and stratified sampling. Here, the researcher selected the sampling units based on their degree of involvement, knowledge about the project, position in the project team, responsibility and authority of the individual. Stratified Sampling was carried out, whereby stratification was done before the sampling. In stratification, members of the population are divided into homogenous sub- groups. The rationale behind this sampling method is that due to the population not being homogenous, different problems could be experienced in different parts of the population. The sample size was 55. This was obtained from project team members of eleven institutions of learning with ESP projects in Tetu and Nyeri Municipality constituencies. These were D.E.B Muslim, Kericho, Muhito and Thukuma primary schools. The secondary schools under the programme were Muthuaini, Kihatha, Muruguru, Giakanja, Mukurweini Boys, South Tetu and Kihuthi secondary schools.

Each category in terms of functional roles in the eleven projects from which target population was obtained formed a separate stratum. There are four categories of the project stakeholders with different roles in the project from which a 20% sample size was obtained in each. In judgment sampling, instead of statistical analysis, the researcher depends on his or her own judgmental analysis to estimate the sample size, its method of selection and confidence level (Gulati and Dube, 2005) The judgment of the researcher here was based on the fact that some individuals were crucial in educational institutions' projects, for example the principal/ headmaster and chairman of the Board of Governors/ school committee. The researcher

estimated the 20% after a pre- assessment over the number of committee members closely involved in the projects, and they averaged at three.

The tables 3.1 and 3.2 show how the samples will be obtained per school, and per category.

Table 3.2 Sample Size per School

Nyeri South District Constituencies	Secondary Schools			Primary Schools		
	Number	Proportion of Population	Sample Size	Number	Proportion of Population	Sample Size
Nyeri Municipality	4	100%	4	2	100%	2
Mukurweini	3	100%	3	2	100%	2

Table 3.2 shows the sample size per school which is based on the proportion of the population. The proportion was 100%.

Table 3.3 Sample Size per Category

Category	Number	Proportion of Population	Sample Size
Site Committee	8	20%	2
Board of Governors (Secondary)	13	20%	3
School Committee Members (Primary)	13	20%	3
Ministry of Education (District Education Office)	5	20%	1

Table 3.3 shows the sample size per category which is based on the proportion of the population. The proportion was 20%.

3.5 Research Instruments

Kothari (2004) points out that questionnaire are the heart of a survey operation. The questionnaire instrument allows greater uniformity of questions hence ensuring greater comparability in the process (Mouly, 1978) thereby providing greater anonymity.

The researcher used structured interview for the officers in the District Education Office. The reason for using the interview guide was to enable indepth information to be obtained. Questionnaire method was used for the B.O.G. members, School Committee Members and Site Committee Members in data collection. Both open ended and closed ended questionnaire were adapted. This ensured data collection from a large number of respondents within a short period of time.

3.6 Pilot Study

The researcher conducted a mini- version of the full- scale study, the pilot study. This was done in Tetu and Othaya constituencies, in institutions that have ESP projects. The two constituencies neighbor Mukurweini and Nyeri Municipality in which the target population was obtained. This served as a feasibility study. It involved specific pre- testing of the questionnaire and the interview guide. Conducting a pilot study increased the likelihood of success in the main study. It served the purpose of providing advance warning about where the main research study could fail, where research protocols may not have been followed or whether proposed methods and instruments were inappropriate or too complicated.

3.7 Instrument Validity and Reliability

Data gathered to measure the variables must be directly relevant and meaningful to those variables. The study ensured that valid and reliable measures were adopted, in order to have faith in the results that were obtained and the conclusions that were drawn from those results.

3.7.1 Instrument Validity

Before administering the research instrument, an expert in research methods was asked to evaluate the instruments' contents and determine its validity. This expert was the research project supervisor.

3.7.2 Instrument Reliability

The test- retest method of measuring instrument reliability was adopted for the study. This is an approach that is used to establish reliability through repeated measurement. Ten individuals were selected from the population, but these were not included in the sample during the study. The instrument was administered to them on two different occasions, in two weeks intervals. Then the results were compared by correlating the sets of scores and calculating a reliability coefficient, which indicated the extent of the relationship between the scores. The coefficient was 0.9119 (see appendix 4); hence the instrument had acceptable test- retest reliability. Test-retest reliabilities are considered to be excellent if they are 0.90 or better and good if they are about 0.80 or better (Hersen, 2004)

3.8 Data Analysis

The researcher analyzed collected data by searching for common themes, meaningful patterns and links. Raw data was edited by examining it in order to detect errors and omissions and to

correct these when possible. The completed instruments were carefully scrutinized to assure that the data was accurate, consistent with other facts gathered, uniformly entered, as completed as possible and had been well arranged to facilitate coding and tabulation. Tabulation was done on the raw data, whereby the data was summarized and displayed in compact form for further analysis. The data was then summarized using descriptive statistics which included measures of central tendency and measures of dispersion. Data was presented using frequency distribution tables.

3.9 Ethical Issues

The ethical and moral issues arising out of the research were put into consideration. As far as confidentiality is concerned, research data was not disclosed to third parties or other parties that could have used such data for their own purposes. Anonymity was also observed by ensuring that a respondent's name and particulars were not disclosed. In addition, participation in the research was voluntary, and participants were at liberty to withdraw from the study at any time without repercussions. In addition, permission to conduct research was sought from the Ministry of Higher Education, Science and Technology, National Council for Science and Technology.

3.10 Operational Definition of Variables.

Operational definitions point the way to how a variable are to be measured (Rubin and Babbie, 2011). According to Ferrate (2011), if researchers' findings are to matter, other researchers must be able to replicate their study. So researchers need to give clear, precise definitions and instructions about how to observe and/ or measure the variables under study. Such definitions and accompanying instructions are called operational definitions.

Table 3.4 shows the operational definitions for the study.

Table 3.4 Operational Definition of Variables

Objective	Variable	Indicators	Measurement	Measurement Scale	Analysis
To assess the extent to which application of project management skills influence planning, design and implementation of Economic Stimulus Projects in educational institutions of Nyeri South district.	**Independent** Project management skills	Design	Availability of project design	Ordinal	Descriptive/ quantitative
		project planning tools	Availability of a project charter	Ordinal	Descriptive/ quantitative
			Level of detail of the project charter	Ordinal	Descriptive/ quantitative
			Number of Gantt charts, networks and budget plans available	Nominal	Descriptive/ qualitative
			Level of detail of Gantt charts, networks and budget plans	Ordinal	Descriptive/ quantitative
		Monitoring plan	Availability of monitoring plan	Ordinal	Descriptive/ quantitative
		Monitoring tools	Number of monitoring tools available for cost, time, resources and scope	Nominal	Descriptive/ qualitative
To establish the extent to which involvement	Community involvement	Community involvement plan	Availability of community involvement plan	Ordinal	Descriptive/ quantitative

of community members affect the performance of Economic Stimulus Projects in educational institutions of Nyeri South district.		Community members involved in the project	Number of community members involved in the project.	Nominal	Descriptive/ qualitative
			Level of involvement by the community members in the project	Ordinal	Descriptive/ qualitative
To determine how financial management of projects under Economic Stimulus Program affect the projects' performance in educational institutes of Nyeri South district	Financial Management	Financial Management plan	Availability of financial management plan	Ordinal	Descriptive/ qualitative
		Financial Management tools	Number of Return on Investment (ROI), Internal Rate of Return (IRR), breakeven analysis, cost benefit analysis, and full costing alternatives available for the project	Nominal	Descriptive/ qualitative
			Level of detail of Return on Investment (ROI), Internal Rate of Return (IRR), breakeven analysis, cost benefit analysis, and full costing alternatives	Ordinal	Descriptive/ qualitative

			available for the project		
To establish how the procurement process of projects under Economic Stimulus Program affect the projects' performance in educational institutes of Nyeri South district	Procurement	Materials specifications	Availability of materials specifications for the project	Ordinal	Descriptive/ qualitative
		Equipment specifications	Availability of equipment specifications for the project	Ordinal	Descriptive/ qualitative
		Suppliers	Availability of supplier list for project materials	Ordinal	Descriptive/ qualitative
			Availability of supplier list for project equipment	Ordinal	Descriptive/ qualitative
		Sourcing	Number of suppliers per material item	Nominal	Descriptive/ quantitative
			Number of suppliers per equipment	Nominal	Descriptive/ quantitative
	<u>Dependent</u> Performance	Timeliness and adherence to budget	Number of projects behind schedule and with budget over- runs	Nominal	Descriptive/ quantitative
		Project success/ failure rate	Number of successful/ failed projects.	Nominal	Descriptive/ quantitative

3.11 Summary

In this research study, descriptive research design was used to investigate into the role of management on the performance of projects under Economic Stimulus Program in educational institutions of Nyeri South District, Kenya. Stratified Random Sampling method was used for sampling purposes, whereby the population was divided into homogeneous sub-groups and then a simple random sample was taken from each sub-group. In the collection of data, the researcher used structured interview and questionnaire methods. The instruments were evaluated by various experts to determine their validity, and they were also being pre- tested to ensure reliability. The raw data was edited and summarized using descriptive statistics. The ethical and moral issues arising out of the research were put into consideration.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter analyses and presents the data that was collected and offers interpretation of the results from findings collected from the sampled respondents. The prime objectives of the study were to establish the role of management in performance of economic stimulus projects in educational institutions. These are the schools in Nyeri South district in which Economic Stimulus Projects are on- going. Questionnaires were administered to selected Board of Governors and School Committee members from secondary and primary schools respectively. The selection of respondents was carried out on judgmental basis based on the extent to which a member was involved in the project. For example, the school's principal or headmaster had to be included and other members who were actively involved. An interview was also carried out to the district education officer who participates in the affairs of ESP in the district

Quantitative data was analyzed using frequencies, means and percentages and presented in form of tables. Qualitative data was presented by means of narration. All the analysis was done in respect to the four objectives mentioned in chapter one.

4.2 Response Rate

The researcher distributed 55 questionnaires to all the potential respondents as detailed in table 3.3.

Table 4.1 Response Rate

Institutions	Questionnaires Administered	Questionnaires Return	Percentage Return Rate	Response Rate per Questionnaire Returned
D.E.B Muslim	5	5	100%	100%
Kericho	5	5	100%	100%
Muhito	5	5	100%	100%
Thukuma	5	5	100%	100%
Muthuaini	5	5	100%	100%
Kihatha	5	5	100%	100%
Muruguru	5	5	100%	100%
Giakanja	5	5	100%	100%
Mukurweini Boys	5	5	100%	100%
South Tetu	5	5	100%	100%
Kihuthi	5	5	100%	100%
Total	55	55	100	100

All the questionnaires were returned filled which represents a return rate of 100%, with 100% response rate per questionnaire as well. This shows a high response rate from the respondents. This is shown in table 4.1

4.3 Distribution of Questionnaires by Category

The following table shows how questionnaires were distributed by category.

Table 4.2 Distribution of Questionnaires by Category

Category of Respondent	Frequency (n)	Percentage %
Site Committee Members	22	40
Board of Governors	21	38
School Committee Members	12	22
Total	55	100

Table 4.2 indicates that out of the 55 respondents, 22 were site committee members representing overall response of 40%. The Board of Governors from secondary schools represented 38% of response rate being 21 in number, while the remaining 22% were the school committee members from the primary schools in the study, who were 12 in number.

4.4 Socio-demographic Characteristics

The following is the distribution of the respondents by age and gender.

Table 4.3 Gender of Respondents

Item	Category	Frequency (n)	Percentage %
Gender	Male	43	71%
	Female	18	29%
	Total	61	100%

Gender representation affects the degree of development. If one gender group is underrepresented, then development cannot be wholly realized. Findings show that the female gender is underrepresented. Table 4.3 indicates that 71% of all the respondents were male while their female counterparts accounted for only 29%. This shows that the female gender is under-represented.

Table 4.4: Age of Respondents

Item	Category	Frequency (n)	Percentage %
Age	20-30	9	15%
	31-40	18	29%
	41-50	25	41%
	51 and above	9	15%
	Total	61	100%

The age of an individual may affect his level of experience and physical ability required to accomplish various tasks. The very young may be highly inexperienced, and are better off in schools and colleges gaining knowledge and skills than in such development projects. This would prepare them for being future rather than present leaders. On the other hand, the very old may be physically not up to standard for the physical activities required in a project. Though they may be experienced, their management styles may be a little bit outdated. However, in my opinion, the youth aged between 31-40 years have a great wealth of modern technology and management styles as compared to their counterparts aged between 40 and above. Yet the findings reveal that majority of the management team falls in the later group. 41% of the total respondents were aged between 41 and 50 years while those aged 50 years and above accounted

for 15%. 29% of the study population was aged between 31 and 40 years. This is shown in table 4.4

These statistics highlight an already identified problem in Kenya and more so in public institutions; the problem of ill involvement of the women and the youth. These two groups have been marginalized in many aspects chief among them being unemployment and representation in government. However, the new constitution seeks to address this problem whereby the youth will be represented and no more than two-thirds of appointments in public offices will be from one gender (GOK, 2010).

4.5 Respondents' Academic Qualifications

No human beings are able to survive properly without education. In my opinion, it is only by the means of education that one's potential can be used to maximum extent. It enhances one's level of thinking, working and decision making. One gets to learn how to interact with others, and how to act in different situations. Studies have shown time and again that the ways of the well educated are way ahead of the illiterate.

The following is the distribution of the respondents by their academic qualifications

Table 4.5 Academic Qualifications

Item	Category	Frequency	Percentage
Academic Qualification	Primary	0	0
	Secondary	1	1
	Certificate	6	11
	Diploma	21	38
	Bachelor's degree	25	47
	Master's degree	2	3
	Total	55	100

Findings reveal in Table 4.5 that majority of the respondents had at least a diploma, which accounted to 88%. Specifically, 47% of the respondents held a bachelor's degree while 38% of them had a diploma in different fields of education. 11% had a certificate and 3% had graduated with a master's degree. Only 1% of the study population had secondary school education as their highest level of education. These were probably some of the parents or ordinary citizens who were involved in the project implementation since professionals employed by the government in learning institutions and who were involved in the projects are required to have achieved high academic qualifications.

4.6 Respondents' Role in the Project

When a project involves many people, it is important to lay out the team members' roles in the project so as to clarify responsibilities. The researcher sought to find out the roles played by different team members; whether they were only team members or they had specific roles.

The following is a distribution of the roles that the respondents played in the project.

Table 4.6: Respondents' Role in the Project

Item	Category	Frequency	Percentage
Role in the project	Project sponsor	2	3%
	Team Member	47	87%
	Project Manager	6	10%
	Total	55	100%

87% of the interviewed subjects revealed that they had been selected to be in the project committee but did not hold any administrative role in that project. 10% however were the project managers of the projects in question while 3% were project sponsors to the particular schools in the study. This signifies that the projects had their team members organized into specific roles. This is shown in table 4.6.

4. 7 Characteristics of Educational Institutions, Nyeri South District

Project identification stage should put into consideration that all categories of areas covered are well represented. The study sought to establish the allocation of projects for primary schools in relation to their secondary school counter parts. In addition, distribution as per the location of the projects was also looked into.

The following is a distribution of the educational institutions of the study by level and location

Table 4.7 Educational Institutions' Characteristics

Item	Category	Frequency (n)	Percentage %
School type by level	Secondary	7	64%
	Primary	4	36%
School type by location	Rural	9	82%
	Urban	2	18%

Findings reveal that 64% of allocation went to secondary schools, while only 36% was allocated to primary schools, as shown in table 4.7. What this means is that during the selection of the ESP projects, the importance of primary education was highly underestimated.

Due to social and economic problems in urban centers in Kenya, urban schools face numerous challenges. In my opinion, urban children are more likely to be faced by economic challenges for example, being homeless, coming from single parent households due to eroding culture in urban centers, overcrowding, insecurity amongst others, as compared to their rural counterparts. Due to the fact that economic and social background affects a child's performance, urban schools deserve a lot of support. The researcher sought to find out the extent to which urban schools were represented in the ESP. Findings reveal that only 18% of the educational institutions were of urban setting the remaining 82% are rural, as shown in table 4.3. This distribution is biased towards urban institutions of learning.

The researcher sought to find out the criterion that was used to select institutions' beneficiaries of the programme. A respondent revealed that the criterion that was used to select the urban schools was the accesibility to the main road while the pupil: desk ratio had to have been high to show that the school had a high enrollment. For the rural schools, priority was given to the schools with a high poverty index in terms of availability and quality of infrastructure and also water. The schools were also required to have high number of pupils.

4.8 Project Management Skills

Project management skills include the skills needed to plan, manage and successfully deliver a project within the constraints of time, cost, scope and quality. This section looks at the said skills from the perspectives of project cycle phases, project planning, time management, quality management and monitoring and control of projects.

4.8.1 Project Lifecycle Phases

The attention that a particular project receives is not uniformly distributed throughout its life span. At particular phases of project, depending on the requirement of that phase, appropriate attention has to be paid. It is thus important to have the project organized into various lifecycle phases. The study therefore sought to find out if the projects had been organized into lifecycle phases.

The following table shows life cycle phases and project specifications

Table 4.8 Life Cycle Phases and Project Specifications

Question	Response		
	Yes	No	I don't know
Has the project been organized into lifecycle phases?	87%	11%	2%
Have all the necessary information on project specifications been availed to you	92%	4%	4%

Table 4.8 indicates that 87% of the respondents disclosed that the project had indeed been organized into lifecycle phases. An even bigger percentage, 92% confirmed that all the necessary information on project specification had been availed to them. This reveals that public officers are aware of the importance of organizing projects into work phases. Qualitative data however revealed that some adjustments were made to plans during actual implementation of the project, when need arose. This is in line with Kerzner (2009), who says that the life- cycle phase approach of project management is not an attempt to put handcuffs on the project manager, but to provide a methodology for uniformity in project planning. He explains that the best way to implement life-cycle phases is by preparing checklists of activities that should be considered in each phase. These checklists are for consistency in planning. The project manager can still exercise his own initiatives within each phase.

4.8.2 Availability and Adequacy of Project Planning Tools

The following table shows availability of project planning tools.

Table 4.9 Availability of Project Planning Tools

Tool	Availability	
	Yes	No
Work Breakdown Structure	100%	0
Gantt Chart	92%	8%
Network plans	47%	53%
LOG Frame	21%	79%

While project management skills are obviously important for project managers, the methods and tools that project managers use can be helpful for everyone. For the tools to be helpful, they need to be detailed and adequate for their use. The study sought to find out the extent to which project planning tools were used and their level of adequacy.

The study, as shown in table 4.9 established that all the projects had a work breakdown structure as well as a Gantt chart. However, very few projects employed the network plans and LOG flames. Only 47% and 21% of the respondents confirmed that network plans and LOG frames were available in the projects in which they were members of. This is shown in table 4.6. According to Haugan (2002) the Work Breakdown Structure, Gantt charts and activity networks

are the key tools used in planning and scheduling of projects. This shows that the projects carried out were not fully equipped with project planning tools. The study ascertained lack of adherence to the original plan, in that money meant for one secondary school was divided up amongst four secondary schools. This means that the projects could not be fully implemented in accordance to the plans.

Despite the revelation that not all the projects were equipped with the necessary project planning tools, the adequacy of the available tools was found to be high. The following table shows adequacy of project planning tools.

Table 4.10 Adequacy of Project Planning Tools

Item	Adequacy		
	Adequate	Fairly Adequate	Inadequate
Work Breakdown Structure	93%	5%	2%
Gantt Chart	86%	10%	4%
Network plans	52%	43%	5%
LOG Frame	57%	40%	3%

Table 4.10 indicates that 93% of the respondents had adequate Work Breakdown Structures for their projects, while 86% said that the Gantt charts were adequate. For the schools or projects where the network plans were available, 52% said they were adequate and only 47% of the

respondents who participated in a project that employed a LOG frame said the tool was adequate. This means that the project planning tools were perceived to be adequate by the respondents.

4.8.3 Deviations From Project Plans In Terms of Time

Time and the management of time is an important issue in projects. Time pressures have become a common place and people are struggling desperately to cope with and find time for the demands placed on them. Time management relates to activity management and involves defining what tasks need to be done, and establishing a realistic way in which to do them. The researcher sought to find out if the project had been started as scheduled.

Table 4.11 Deviations from Project Plans in Terms of Time

Item	Category	Frequency	Percentage
Response	Yes	37	67
	No	18	33
	Total	55	100

From the findings, the respondents indicated that majority of the projects had started as scheduled. According to table 4.11, 67% of all the projects in the study had started on the intended date of commencement and only 33% of them begun later. Findings revealed that all projects needed to have started by July of 2009. When asked why the projects delayed majority of the responses blamed the relevant authorities for taking too long to approve budgets and tenders. Some respondents also added that some of the monies intended for the projects were

sent late and when they arrived they were short of the budget. It was further established from the study that monies meant for projects and especially for secondary schools arrived late and were re-evaluated; money meant for one school was subdivided to four schools. However, money meant for primary schools was given in full amounts as had been budgeted for.

4.8.4 Status of the Project in Terms of Completion

The researcher sought to find out the progress of the project in relation to the shcedule by the time of the study.

Table 4.12 Status of the Project in Terms of Completion

Item	Category	Frequency	Percentage
Status of the project	Completed	13	23
	Ahead of schedule	6	11
	On-Schedule	25	45
	Slightly behind schedule	8	15
	Largely behind schedule	3	6
	Total	55	100

From the findings, it was established that 45% of the respondents rated their projects as being on schedule while 23% said they had completed the projects, 15% admitted they were slighlthy behind schedule while 11% said they were ahead of schedule. This is shown in table 4.12. Findings revealed that all projects should have been completed and shut by July of 2012. This date was adhered to despite the fact that majority of the projects, especially those of secondary

schools were incomplete then. These incomplete projects were to be completed by the school using its own funds. By the time of the research, the schools whose projects were incomplete by the scheduled end date were proceeding with the remaining work using their own funds. However, this was challenging due to inadequacy of such funds, hence resulting to some of projects being behind shedule. The researcher also observed that during the subsequent budgets after 2009 / 2010 budget, and more so the recent 2012 budget, no more money was allocated to the ESP programme.

4.8.5 Quality Specifications for the Projects

The researcher was interested in finding out whether there were any quality specifications for the project and whether they were being adhered to.

Table 4.13 Quality Specifications for the Projects

Questions	Responses	
	Yes	No
Were there any quality specifications for the project?	100%	0%
If yes, are the quality specifications being adhered to so far?	100%	0%

Table 4.13 indicates that the projects in the study had quality specifications and the same were being adhered to at the time of the study. From the study, it was established that training on project planning was done for the B.O.Gs and school committee members, which was organized at Kenya Institute of Education (K.I.E.). This included the principals and headmasters of the

institutions, who were then instructed to go train the parents and the rest of the concerned community. This means that the concerned stakeholders were well equipped with the required information to manage the projects. The study further found out that the committees were handed a proposal from the Ministry of Education detailing how such projects should be carried out. This included such items as quality specifications.

4.8.6 Monitoring and control

Table 4.14 Monitoring and control

Item	Category	Frequency	Percentage
Response	Yes	53	96
	No	2	4
	Total	55	100

Table 4.14 shows that 66% of the repondents were of the opinion that the monitoring and contol process and reporting was objective. 11% said it was very objective and 19% said it was fairly objective. This shows that the study participants were satisfied with the monitoring and control process. Heagney (2012) says that monitoring and control can actually be thought of as two separate processes but because they go hand in hand, they are considered as one activity. He adds that monitoring and control enables the project team to know where they are. He opines that this is important because the result of this assessment is compared to the planned level of work. If

actual level is ahead of or behind the plan, a corrective action will be carried out to bring the actual performance back in line with the project objectives.

Table 4.15 Quality of monitoring and control activities

Item	Category	Frequency	Percentage
Quality of M&E reports	Very objective	6	11
	Objective	36	66
	Fairly objective	10	19
	Subjective	2	3
	Very subjective	1	1
	Total	55	100

From the findings as shown in table 4.15,66% of the repondents were of the opinion that the monitoring and contol process and reporting was objective. 11% said it was very objective and 19% said it was fairly objective. This shows that the study participants had faith in the monitoring and control process. Heagney (2012) says that monitoring and control can actually be thought of as two separate processes but because they go hand in hand, they are considered as one activity. He adds that monitoring and control enables the project team to know where they are. He opines that this is important because the result of this assessment is compared to the planned level of work. If actual level is ahead of or behind the plan, a corrective action will be carried out to bring the actual performance back in line with the project objectives.

4.8.7 Project Deviations from Plans

The study sought to find out if the respondents were able to establish deviations from plans in projects. To do this the respondents were asked about the speed at which they were able to identify deviations of projects rom plans. The findings of the study are shown in figure 9.

Table 4.16 Project deviations from plans

Item	Category	Frequency	Percentage
Project Deviation from plans	They never get established	3	6
	Long after they occur	1	1
	Shortly after they occur	17	30
	Immediately they occur	29	54
	Before they occur	5	9
	Total	55	100

Table 4.16 reveals that 54% , the majority were able to establish deviations immediately after they occurred, 30% said they were able to establish deviations shortly after they occurred. 9% said deviations were established before they occurred. The study attributed this to fairly inadequate montoring and control procedures as identified earlier in the research. This was ascertained by the absence of LOG frames in majority of the projects, which is a major monitoring and control tool. According to Torrent (2008) Monitoring and control of project progress is important in that they are the processes through which one gets to know the extent to which actual performance is in line with the plan, and corrective action is taken for any

deviation. Deviations are better established before they occur so as to provide the project team with adequate time to respond to them.

4.9 Community Involvement

Educational institutions are meant to serve a given society within the community. Given this fact, the community should be allowed an opportunity to shape their destiny by being involved in matters concerning their development. This section looks at community involvement from the perspectives of availability of a community involvement plan and commitment of community members to the project.

4.9.1 Availability of Community Involvement Plan

Table 4.17 Availability of community involvement plan

Question	Responses	
	Yes	No
Have the project users, beneficiaries and other interested citizens been identified?	96%	4%
Have the project's users, beneficiaries and other interested citizens' views been sought during the project's planning and implementation?	92%	8%
If yes above, have the said users, beneficiaries and other interested citizens' views affected decision making concerning the project planning implementation?	78%	12%

The study findings reveal that 96% of the respondents, the project users, beneficiaries and other interested community members had been identified. 92% confirmed that views of the named

parties had been sought and 78% said that the views of the said parties affected decision making concerning the project planning and implementation. This is shown in table 4.17. Qualitative data revealed that these decisions included influence of purchase of materials from locals, as well alteration of the original size of the project, and the original site. Findings further revealed that the community was being involved in the projects for example the contractor had to be from the constituency in question and the laborers employed were local. The community members were consulted during the sensitization process for the needs of the school which they would have liked to see solved. When asked whether the community members were able to obtain the ESP projects' information upon request, a respondent said that the community members could access this information whenever they wanted since it was a government programme and the money being used was tax payer's money.

4.9.2 Commitment of Community Members to the Project

Table 4.18 Commitment of Community Members to the Project

Item	Category	Frequency	Percentage
Commitment of community members	Very high	5	10
	High	34	61
	Average	13	24
	Low	2	3
	Very low	1	2
	Total	55	100

When asked to rate the commitment of community members to the project, majority of the respondents felt that the commitment was high. According to table 4.18 above, 61% said the involvement was high 10% rated it as very high while 24% rated the same as average. This implies a relatively high degree of commitment.This may be due to the expectations that community members had on the benefits they expected to reap from the successful implementation of ESP in their educational institutions. These included improved performance for the students and facilitation of health, hygiene, safety and security issues in the institutions.

4.10 Financial Management

This section deals with issues pertaining to the financial management of the projects under investigation.

4.10.1 Financial Management Tools

Table 4.19 Financial Management Tools

Question	Response	
	Yes	No
Is there a financial plan for the project?	100%	0
Is there a budget for the project?	100%	0
Is there any contigency for the project cost?	97%	3%
Are there any financial records for the projects?	100%	0%

The researcher sought to find out whether in the course of project planning, the projects had financial plans, budgets and contingency plans. Findings reveal that these items were largely available. According to table 4.19i, above, financial plans and budgets were available in all the projects while contigencies for the project costs were available in 97% of the projects. A respondent revealedd that when the money was allocated for the schools a plan was drawn and a budget of how the monies would be used to meet the needs of the school. He explained that the schools were instructed to open an account for the ESP funds where the chairman of the school committee members or B.O.G, the headmaster/principal and a parent's representative were the signatories to the account. He added that the financial records were to be kept by the bursar since he is the financial officer of the school. Sound financial management is a critical ingredient of project success. Timely and relevant financial information provides a basis for better decisions, thus speeding the physical progress of the project and the availability of funds, and reducing project completion time.

4.10.2 Budget's Conformance with the Actual Spending

Table 4.20: Budget's Conformance with the Actual Spending

Item	Category	Frequency	Percentage
Budget Conformity with actual spending	Very high	10	21
	High	42	76
	Average	1	1
	Low	1	1
	Very low	1	1
	Total	55	100

The researcher requested the respondents to rate the budgets' conformance with the actual spending. According to table 4.20, the majority of the respondents were of the opinion that the actual spending was in line with the budget. 76% said the conformance was high with 21% saying it was very high. This shows that project planning on the area of budgeting and adherence to the same was carried out well.

4.11 Procurement of Materials

This section looks at issues to do with procurement of materials which were used in the projects under study.

4.11.1 Availability of Required Materials and Equipment

Table 4.21 Availability of Required Materials and Equipment

Item	Category	Frequency	Percentage
Response	Yes	45	82
	No	10	18
	Total	55	100

The researcher sought to find out from the respondents if they received all the materials they needed for the projects. 82% said yes, as shown in table 4.21. When asked how they ensured that the procurement of materials and equipment needed for the project implementation was carried out under the principles of the right quality, the right price, reasonable lead times and the right quantity, a respondent explained that tendering was done which was for labour and materials as

opposed to contracting the whole work. This ensured that the project manager and team did not loose control of the work, like would have been the case if they had contracted out the whole project.

4.11.2 Party Responsible for Direct Purchasing for the Projects

Table 4.22 Party Responsible for Direct Purchasing for the Projects

Item	Category	Frequency	Percentage
Party responsible for direct purchasing for the projects	Project manager	37	67%
	Materials manager	16	30%
	Others	2	3%
	Total	55	100%

According to the respondents, it was the project manager who was mostly involved in the direct purchasing for the projects. Table 4.22 reveals that the project manager was involved in 67% of the projects while the materials manager was involved in 30% of the of them.This is contrary to the rules of project planning which give the work of procurement to a materials manager. According to Torrent (2008), materials' managers need to be in full control of purchasing transactions in order to meet project demands in terms of materials specifications and delivery

dates. He adds that in this way, they should avoid the transfer of those purchasing transactions to third parties who are unaware of detailed project requirements.

4.11.3 Availability of Equipment's and Materials Specifications

Table 4.23: Equipment and Materials Specifications

Item	Category	Frequency	Percentage
Response	Yes	37	67
	No	18	33
	Total	55	100

According to figure 14, the equipment and materials specifications were available in most schools during project planning. 67% of the respondents said that the specifications were present. Such minor details about procurement are usually ignored but they end up being very important determinants of success or failure of a project. An example of the importance of materials management is clearly demonstrated when we look at the cost of equipment and materials related to any major on – shore or off – shore project (Raid, 1999). Historically, the value of these purchases is on average 15 – 25 % of the total costs with deliveries spread over the entire project duration. Good materials management is one of the cornerstones within any project. Materials management within a project generates a considerable amount of information vital to project cost and planning.

4.11.4 Bounding Schedules

Table 4.24: Bounding Schedules.

Item	Category	Frequency	Percentage
Bounding schedule	Earliest start schedule	38	70
	Latest start schedule	17	30
	Total	55	100

The researcher sought to find out the bounding schedule employed by the schools in the study. According to table 4.25, 70% used the earliest start schedule while 30% used the latest start schedule. In other words resources were committed at the earliest start time of activities. This is a good trend as it avoids unnecessary delays. In any case infrastructure materials costs are high and their prices are fluctuating by the day. As Lock (2007) observes, efficient purchasing and supply chain management are essential to avoid serious over – expenditure or delays through shortages and acquisition of goods that are unfit for their intended purpose. Activities for all significant project purchases start well before an order is placed and do not end until the materials have been delivered and put to use.

4.12 Project Performance

Various indicators are used to measure project performance which include time, quality and cost. Findings on time management revealed that 67% of the projects started as scheduled. This means adherence to time is adequate. 70% of the projects also applied early start schedule in their

choice of bounding schedules as earlier stated. This type of schedule ensures commitment of resources to the project as early as possible, which gives adequate time to react to any unexpected occurrences. On cost, 76% of respondents confirmed that their projects had a high conformance of actual spending to budget. This shows efficiency in managing finances for the project. 100% of the projects confirmed to having quality specifications for the projects and adhering to them.

4.13 Summary

This chapter has assessed how application of project management skills in planning, design and implementation of projects affect the projects' performance. It has also assessed the extent to which community members are involved in the projects as well as how finances are managed. It has also looked into procurement procedures in the projects. Findings have revealed that some important project management skills lack in the projects. This confirms the conceptual framework in that the project adherence to schedule is found to be rampant. Community involvement is adequate and results to commitment of community members to the project. Financial plans are available for the projects. Procurement is carried out not by materials' managers but by project managers, thus inappropriate procedures like sole sourcing are found in some projects.

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECCOMMENDATIONS

5.1 Introduction

This chapter deals with summary of the findings and discussion of those findings. It then gives the recommendations based on responses from the respondents. This is in relation to project management skills, community involvement, financial management and project procurement. The chapter also looks at the conclusions and recommendations as deduced from the study findings. Finally the chapter points out the areas the researcher thought would require further research in related fields.

5.2 Summary of major findings

The way projects are managed determines to a large extent the outcome and end result of the project. The study set out to seek how projects under ESP in educational institutions are managed, and how the management affects their performance. Conclusions and recommendations have been arrived at based on findings. It is hoped that these will make useful contributions towards improving management of the ongoing ESP projects and future national projects as well.

5.2.1 Project Management Skills

Findings revealed that 87% of the respondents confirmed that the projects had been organized into lifecycle phases. 92% also said that all the necessary information had been availed to them. All the projects had a work breakdown structure as well as a Gantt chart. However only 47% and

21% of the respondents respectively confirmed that network plans and LOG frames were available in the projects in which they were members of. 67% of all the projects in the study had started on the intended date of commencement and only 33% of them begun later. 45% rated their projects as being on schedule while 23% said they had completed the projects, 15% admitted they were slighlthy behind schedule while 11% said they were ahead of schedule. The projects in the study had quality specifications and the same were being adhered to at the time of the study. Monitoring and control activities were established in 96% of the projects under investigation.

5.2.2 Community Involvement

According to 96% of the respondents the project users, beneficiaries and other interested citizens had been identified. 92% confirmed that views of the named parties had been sought and 78% said that the views of the interested parties affected decision making concerning the project planning and implementation. When asked to rate the commitment of the community members involved in the process, 71% of the respondents felt that the commitment was high.

5.2.3 Financial Management

Financial plans and budgets were available in all the projects while contigencies for the project costs were available in 97% of the projects. The researcher requested the respondents to rate the budgets' conformance with the actual spending. 76% said the conformance was high with 21% saying it was very high.

5.2.4 Procurement

82% of the respondents confirmed that they had all the materials they required in the project planning process. According to the respondents it was the project manager who was mostly involved in the direct purchasing for the projects as opposed to the materials manager. 67% of the respondents said that the equipment and materials specifications were present. Only 33% of the respondents confirmed to using computer aided design to their planning. 70% used the earliest start schedule while 30% used the latest start schedule. In other words resources were committed at the earliest start time of activities in most of the projects.

5.3 Discussion of Findings

5.3.1 Project Management Skills

The study revealed that majority of the projects (87%) had been organized into lifecycle phases. Likewise, a large percentage, 92% of the projects had the necessary information on project specifications availed to the team members. According to Kerzner (2009), organizing the project into lifecycle phases enhances control of the project in that at the end of each phase, there is a meeting of the project manager, sponsor, senior management, and even the customer, to assess the accomplishments of the completed lifecycle phase and to get approval of the next phase. In my opinion, all public projects should be organized into life cycle phases to enable better project control.

As far as availability of project planning tools is concerned, findings revealed that all the projects had Work Breakdown Structures constructed for them. Majority of them (92%) had Gantt Charts

as well. However, only a few, 47% had Network Plans, and an even smaller percentage, 21% had LOG frames available for the projects. Haugan (2002) says that the Work Breakdown Structure, Gantt Charts and Activity Networks are the key tools used in planning and scheduling of projects. Meredith and Mantel (2012) affirmed that they could cite firm after firm that incurred great expense and major losses because the planning process was inadequate for the tasks undertaken.

Studies concerning project schedule and budget revealed that 21% of the projects had schedule slippages, with 15% being slightly behind schedule and 6% largely behind schedule. Findings revealed that money meant for primary schools was availed as planned in the national budget, but that meant for each secondary school was divided into four secondary schools. Consequently, studies revealed that majority of the projects that adhered to schedule dates were the primary rather than the secondary schools. According to Meredith and Mantel (2012), the key things to be monitored and controlled are time (schedule), cost (budget) and scope, for it is they that encompass the fundamental objectives of the projects. In my opinion, project schedule and budget plans should be keenly done and the same adhered to strictly.

Studies revealed that all projects had quality specifications which they adhered to. Majority of them (96%) had monitoring and control activities established prior to the commencement of the project. However, it seems a significant number of the projects (91%) had monitoring procedures that were not very effective, for they only identified problems after they had occurred. According to Meredith & Mantel (2012), monitoring the risks found in the risk management plan keeps the

project manager and project team alert to specific risks and thus lowers the probability of surprises.

5.3.2 Community Involvement

The findings reveal that the community was involved in a majority of the projects. 96% of the respondents affirmed that the project users, beneficiaries and other interested community members had been identified. 92% confirmed that views of the named parties had been sought and 78% said that the views of the said parties affected decision making concerning the project planning and implementation. These views were shared by the D.E.O who also confirmed that the community was being involved in the projects for example the contractor had to be from the constituency in question and the laborers employed were local. The D.E.O further explained that the community members were consulted during the sensitization process for the needs of the school which they would have liked to see solved. When asked whether the community members were able to obtain the ESP projects' information upon request, a respondent said that the community members could access this information whenever they wanted since it was a government programme and the money being used was tax payer's money. Adato et al (2005) says that community- driven development is indelible in the development landscape.

5.3.3 Financial Management

The researcher sought to find out whether in the course of project planning, the projects had financial plans, budgets and contingency plans. Findings reveal that these items were largely available. Financial plans and budgets were available in all the projects while contigencies for

the project costs were available in 97% of the projects. The D.E.O. through an interview said that when the money was allocated for the schools they had to draw a plan and a budget of how they would use the monies to meet the needs of the school. He explained that the schools were instructed to open an account for the ESP funds where the chairman of the school committee members or B.O.G, the headmaster/principal and a parent's representative were the signatories to the account. He added that the financial records were to be kept by the bursar since he is the financial officer of the school. Sound financial management is a critical ingredient of project success. Timely and relevant financial information provides a basis for better decisions, thus speeding the physical progress of the project and the availability of funds, and reducing delays and bottlenecks. According to World Bank Report (1999), Project Financial Management is a process which brings together planning, budgeting, accounting, financial reporting, internal control, auditing, procurement, disbursement and the physical performance of the project with the aim of managing project resources and achieving the project's development objectives. In my opinion, projects should make use of all the available financial control tools.

5.3.4 Procurement

Findings revealed that 82% of the projects received all the materials they needed for the project. When asked how they ensured that the procurement of materials and equipment needed for the project implementation was carried out under the principles of the right quality, the right price, reasonable lead times and the right quantity, a respondent explained that tendering was done which was for labour and materials as opposed to contracting the whole work. In my opinion, this was appropriate because it ensured that the project manager and team did not loose control

of the work, like would have been the case if they had contracted out the whole project. According to Raid (1999), good materials management is one of the cornerstones within any project. Materials management within a project generates a considerable amount of information vital to project cost and planning.

The study revealed that the project manager was the one who was mostly involved in the direct purchasing for majority of the projects (67%). Only in 30% of the projects where the materials manager was involved, with the remaining 3% enganging parties other than the project manager and materials manager in purchasing for the project. This is contrary to the rules of project planning which give the work of procurement to a materials manager. According to Torrent (2008), materials' managers need to be in full control of purchasing transactions in order to meet project demands in terms of materials specifications and delivery dates. He adds that in this way, they should avoid the transfer of those purchasing transactions to third parties who are unaware of detailed project requirements. In my opinion, purchasing for projects should be carried out by a materials manager because he is a specialist in the field of purchasing and hence is likely to be more efficient in the same.

The researcher sought to find out the bounding schedule employed by the schools in the study. The study revealed that 70% of the respondents used the earliest start schedule in their project while 30% used the latest start schedule. In other words resources were generally committed at the earliest start time of activities. This is a good trend as it avoids unnecessary delays. In any case infrastructure materials costs are high and their prices are fluctuating by the day. As Lock (2007) observes, efficient purchasing and supply chain management are essential to avoid

serious over – expenditure or delays through shortages and acquisition of goods that are unfit for their intended purpose. Activities for all significant project purchases start well before an order is placed and do not end until the materials have been delivered and put to use.

5.4 Conclusions

5.4.1 Project Management Skills

From the findings, it was identified that the entire project members were trained on basic project management skills, and the community was also sensitized on identifying needs for their schools. The researcher concluded that the project management skills were evident in most of the planning such as lifecycle phases, quality specifications as well as monitoring and control. However on the project planning tools, some important tools such as network plans and LOG frames were missing. The researcher attributed this to inadequate sensitization on the importance of such tools.

5.4.2 Community Involvement

Not only was community involvement in the projects high, but the commitment of thecommunity members was also found to be extremely high. The researcher concluded that this phenomenon was due to the involvement of all stakeholders from the very beginning in identifying the needs. When the community is involved in the problem identification, they appreciate the project and whatever is being done to correct the problem. These findings are in line with a lot of studies which have found that most community projects fail due to poor problem identification and ill-involvement of the community. High community involvement has also been linked with

reducing cases of corruption, misappropriation and proliferation of funds. It also eases maintenance and sustainability of the project.

5.4.3 Financial Management

Finance and financial management is the core of many community projects. Several studies have concluded that failure in development in third world countries such as Kenya was not solely due to lack of funds but the management of the available funds. Qualitative data revealed that every primary school that qualified in the Economic Stimulus Programme received 3.5 million as scheduled. From the study, it was established that initially, every secondary school was intended to receive a sum of Kshs. 30 million but politics interfered and the money ended up being divided up to four schools. This led to the delay of delivery of funds and incompleteness of the affected projects due to lack of funds as budgeted. However the researcher found that the committees made good use of the available funds. The researcher attributed this to the project management skills held by the committee members.

5.4.4 Procurement

On procurement, the researcher found that the project materials were available in good time and equipment and materials specifications were available in most schools. The researcher also noted that in most of the projects, it was the the project manger who was mostly involved in the direct purchasing for the projects as opposed to the materials manager. This was contrary to good practices since project planning demands that a materials manager be chosen to deal with

procurement. The researcher attributed this to lack of undersatnding on how important specialized skills are to a project.

5.5 Reccommendations

The following are the recommendations of the researcher

i. The government should ensure all officers accorded the role of managing public projects get provided with adequate training on skills required for a project to be managed successfully. A better approach would be to hire qualified project managers so that they specialize on managing the projects without being distracted by their routine activities. Private institutions of learning should not be left out in development programmes, more so the Economic Stimulus Programme. They should be awarded a certain percentage of the finances as well, because they also play a key role in educational needs of the society. Identification of projects should be guided by needs and not local politics. Studies have always proven beyond doubt that involvement of politics always ends up disastrous.

ii. Institutions in which projects are implemented should involve neighboring community members in all phase of the project, starting from its identification, all the way to its implementation, close out and maintenance. They should seek out for their views, and ensure they let the said views influence them a great deal in their decisions concerning the projects

iii. The ministry of finance should monitor allocation and spending to ascertain that money allocated for projects in the national budget is spent as stated in the budget.

iv. Institutions should delegate procurement of materials for projects to materials manager so that the procurement procedures can be carried out in a skillful and professional manner. This would enhance efficiency in procurement.

5.6 Suggestions for Further Research

Following are suggestions for further research:

i. Role of sensitization of project management tools and techniques on the performance of project managers and project team members of Economic Stimulus Projects.

ii. Factors influencing community participation in Economic Stimulus Projects.

iii. Factors influencing financial efficiency on Economic Stimulus Projects.

iv. Role of procurement procedures on performance of Economic Stimulus Projects.

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APPENDICES

APPENDIX 1 TRANSMITTAL LETTER

Ann Margaret Wangui Kinyua

P.O. Box 465

NYERI.

Dear Respondent,

I am a student of University of Nairobi in my final year, pursuing a master's degree in project planning and management. I am conducting an academic research on role of management of selected projects under Economic Stimulus Program on the projects' performance. The selected projects are the educational institutes under ESP in Nyeri South District, Kenya.

I am kindly requesting you for your assistance in responding honestly to all the items in the questionnaire.

All information given will be treated confidentially and will be used only for the intended purpose. Your co-operation and assistance will be highly appreciated.

Thank you in advance.

Yours faithfully,

Ann Margaret Wangui Kinyua

APPENDIX 2 QUESTIONAIRE

You are kindly requested to fill in the questionnaire as honestly and objectively as possible. It seeks to examine the impact of management of selected projects under Economic Stimulus Program on the projects' performance. The selected projects are the educational institutes in Nyeri South district, Kenya.

Please give as much details as possible where appropriate, and tick (✓) to fill in the spaces where applicable.

The questionnaire is made up of five parts.

Your response will be treated with confidentiality and will be used only for the intended research.

A: Bio Data

1. Gender:

   Male ☐ Female ☐

2. Age of respondent:

   20-30 years ☐ 31-40 years ☐ 41-50 years ☐ 51 and above ☐

3. Educational level:

   Primary level ☐ Secondary level ☐ college/ University level ☐

4. Do you have any other training?

   Yes ☐ No ☐

   If yes, please specify_____

5. What is your role in the project?

   Project Manager ☐

   Project Team Member ☐

   Project Sponsor ☐

Others (specify) _____

6. Indicate the educational institution type to which the project belongs.

Primary School ☐

Secondary School ☐

7. Indicate the location of the educational institution

Urban ☐

Rural ☐

B: Project Management Skills

1. Has the project been organized into lifecycle phases?

Yes ☐ No ☐

2. Have all the necessary information on project specification been availed to you?

Yes ☐ No ☐

3. Indicate whether each of the following project planning tools are available for the project:

Work Breakdown Structure	Yes	☐	No	☐
Gantt chart	Yes	☐	No	☐
Network Plans	Yes	☐	No	☐
LOG frame	Yes	☐	No	☐

Other available tools (specify) _____

4. How can you rate the level of detail in each of the project planning tools available for the project?

	Adequate	Fairly adequate	Inadequate
Work Breakdown Structure	☐	☐	☐
Gantt chart	☐	☐	☐

Network Plans	☐	☐	☐
LOG frame	☐	☐	☐
Others (specify) _____	☐	☐	☐

5. What was the planned start date for the project? _____

6. Did the project start on the date stated above?

   Yes ☐ No ☐

7. If no,

   a) What date did the project start? _____

   b) What are the reasons as to why the project did not start during the planned start date?

   _____

8. What is the planned project end date? _____

9. What is the status of the major project milestones in relation to the planned schedule of activities?

   Ahead of schedule ☐

   On schedule ☐

   Slightly behind schedule ☐

   Behind schedule to a larger extent ☐

10. Were there any quality specifications for the project?

    Yes ☐ No ☐

11. If yes, are the quality specifications being adhered to so far?

    Yes ☐ No ☐

12. If no, give reasons as to why the quality specifications are not being adhered to.

    _____

13. What is the status of the project as at now? (Tick all that apply to the project)

    Completed ☐

On schedule ☐

On budget ☐

Behind schedule ☐

With budget over- runs ☐

Ahead of schedule ☐

With budget under- runs ☐

Failed/ terminated ☐

14. Have formal monitoring and control activities been established for the project?
Yes ☐ No ☐

15. Indicate the degree to which each of the following project parameters are monitored and controlled.

Time:	Excellent	☐
	Good	☐
	Average	☐
	Poor	☐
	Very poor	☐
Cost:	Excellent	☐
	Good	☐
	Average	☐
	Poor	☐
	Very poor	☐
Quality:	Excellent	☐
	Good	☐
	Average	☐
	Poor	☐
	Very poor	☐
Scope:	Excellent	☐
	Good	☐

Average ☐

Poor ☐

Very poor ☐

16. On average, how soon are you in a position to establish deviations from plans?

Before they occur ☐

Immediately they occur ☐

Shortly after they occur ☐

Long after they occur ☐

They never get established ☐

17. How would you rate the degree of reporting on data gathered during monitoring?

Very objective ☐

Objective ☐

Fairly objective ☐

Subjective ☐

Very subjective ☐

18. Indicate the frequency of reporting per month by the following categories

Lower level personnel: once ☐

Twice ☐

Thrice ☐

Four times ☐

Five times and above ☐

Higher level personnel: once ☐

Twice ☐

Thrice ☐

Four times ☐

Five times and above ☐

19. Indicate the level of detail of reports prepared by each of the following category:

Lower level personnel:	Very detailed	☐
	Detailed	☐
	Fairly detailed	☐
	Sketchy	☐
	Very sketchy	☐
Higher level personnel:	Very detailed	☐
	Detailed	☐
	Fairly detailed	☐
	Sketchy	☐
	Very sketchy	☐

20. Indicate whether each of the following monitoring and control tools are available for the project:

Work Breakdown Structure	Yes	☐	No	☐
Gantt chart	Yes	☐	No	☐
Network Plans	Yes	☐	No	☐
LOG frame	Yes	☐	No	☐
Progress reports	Yes	☐	No	☐

Other available tools (specify) _____

21. Have any deviations from plans been established so far in each of the following project parameters?

Time	☐
Cost	☐
Quality	☐
Scope	☐

22. Briefly describe the impact each of the deviations from plans identified above had/ would have had on project objectives.

Time _____

Cost _____

Quality _____

Scope _____

23. Describe the corrective action that was taken for each of the deviations from plans identified above.
Time _____

Cost _____

Quality _____

Scope _____

24. Suggest ways in which project management skills can be improved. _____

C: Community Involvement

1. Have the project's users, beneficiaries and other interested citizens been identified?

Yes ☐ No ☐

2. If yes, give a brief description of who the project's users, beneficiaries and other interested citizens are.

_____

3. Have the project's users, beneficiaries and other interested citizens' views been sought during the project's planning and implementation?

Yes ☐ No ☐

4. If yes, have the said users, beneficiaries and other interested citizens' views affected decision making concerning the project planning and implementation?

Yes ☐ No ☐

5. If yes, give a brief description of such instances.

_____

6. Have the clients' expectations of the project been established?

Yes ☐ No ☐

7. If yes, give a brief description of the clients' expectations of the project.

_____

8. How would you rate the status of the clients' expectations of the project so far?

Exceeded ☐

Met ☐

Slightly met ☐

Not met ☐

9. Give a reason for your answer above.

_____

10. How would you rate the level of commitment the citizens have on the project?

Excellent ☐

High ☐

Satisfactory ☐

Low ☐

Totally lacking ☐

11. Give a reason for your answer above.

_____

12. What, if any, is the present role of end users, beneficiaries and interested citizens on the project?

_____

13. What, if any, is the anticipated future role of end users, beneficiaries and interested citizens on the project?

_____

14. What measures have been put in place to prepare end users, beneficiaries and interested citizens for their roles on the project, both in the present and for the future of the project?

_____

15. Suggest ways in which community involvement in projects can be improved.

_____

D: Financial Management

1. Is there a financial plan for the project?

Yes ☐ No ☐

2. Are the following financial management tools available for the project?

Return on Investment (ROI) ☐

Internal Rate of Return (IRR) ☐

Breakeven Analysis ☐

Cost Benefit Analysis ☐

Full Costing Alternatives ☐

Analytical Reports ☐

3. Is there a budget for the project?

Yes ☐ No ☐

4. Briefly describe how you carry out budget estimates for the project. _____

5. How can you rate the budget's conformance with the actual spending?

High negative variance ☐

Negative variance ☐

Neutral ☐

Positive variance ☐

High positive variance ☐

6. Is there any contingency for the project cost?

Yes ☐ No ☐

7. Are there any financial records for the project?

Yes ☐ No ☐

8. Name the records. _____

9. What is the planned project budget? _____

10. What, according to the planned project budget is the approximate amount of money that should have been spent for the amount of work accomplished so far? _____

11. What is the actual amount spent so far? _____

12. Give reasons for the discrepancy (if any), observed in the actual and planned budget figures above. _____

13. Give suggestions on how project financial management can be improved? _____

_____

E: Procurement

1. How is procurement managed for the project?

Sole- sourcing prevails ☐

There is second- sourcing of all procured parts ☐

2. Have all the required materials and equipment for the project been availed?

Yes ☐ No ☐

3. Under whose responsibility is the direct purchasing for the project?

Project Manager ☐

Materials Manager ☐

Other third parties (name them) ☐

_____

4. Are equipment's and materials' specifications, technical and functional, available to guide in purchasing?

Technical Specifications

Yes ☐ No ☐

Functional Specifications

Yes ☐ No ☐

5. Are computer aided designs used when formulating specifications for equipment and materials?

Yes ☐ No ☐

8. Which bounding schedule do you apply for the project?

Earliest start schedule (resources committed at earliest start time of activities) ☐

Latest start schedule (resources committed at latest start time of activities) ☐

Others (specify) _____

APPENDIX 3

INTERVIEW GUIDE FOR DISTRICT EDUCATION OFFICER

1. Was the selection criteria for educational projects under Economic Stimulus Program met?

   _____

2. What ESP sensitization activities were undertaken? _____

   _____

3. Was the project adequately defined and the same communicated to all stakeholders? __

   _____

4. Was reasonable effort taken to ensure that project plans were drawn and with all the necessary details? _____

   _____

5. Were the funds for implementing the projects availed adequately as per the schedule and planed amount? _____

   _____

6. To what extent have you ensured that the procurement of materials and equipment needed for project implementation is carried out under the principles of the right quality, the right price, reasonable lead times and the right quantity? _____

   _____

7. Are the projects being monitored as they get implemented? _____

   _____

8. How often do you obtain reports on the projects' progress? _____

   _____

9. What information do you usually expect to be included in the project progress reports? __

   _____

10. How do you go about taking corrective action in cases where the project's actual performance deviates from the planned performance? _____

    _____

11. To what extent did you ensure that only the right project team members and other project workers were recruited for the projects? _____

_____

12. Were the project team members trained on matters relevant to the projects' implementation? _____

_____

13. What benefits so far in your opinion, has the society obtained from the project? _____

_____

14. What are the expected future benefits of the project to the society? _____

_____

15. In your opinion, do you think the project will be completed on scheduled time, on allocated budget, within the set scope and planned performance requirements? _____

_____

16. Are community members able to obtain information on ESP projects upon request? _____

17. Do you allow for flexibility and change in plans where need arises during project implementation? _____

_____

18. Which motivational measures have you put in place to ensure commitment to project objectives and eventual project success? _____

_____

19. Who will manage the project upon completion? _____

_____

20. Is the project useful/ relevant to project beneficiaries? (Elaborate) _____

_____

21. What are the long term benefits of the project? _____

22. What challenges have you faced so far in the course of the projects' planning and implementation? _____

23. In your own opinion, suggest ways in which project cycle phases can be improved. _____

24. How can community involvement for the projects be improved? _____

25. Suggest ways in which project financial management can be improved. _____

26. How, in your opinion can procurement for the project be improved? _____

_____

Thank you for your participation

APPENDIX 4

CO-RELATION COEFFICIENT CALCULATIONS

Correlation Co-efficient Definition:
A measure of the strength of linear association between two variables. Correlation will always between -1.0 and +1.0. If the correlation is positive, we have a positive relationship. If it is negative, the relationship is negative.

Formula:

Correlation Co-efficient :
Correlation(r) =[$N\Sigma XY - (\Sigma X)(\Sigma Y) / Sqrt([N\Sigma X^2 - (\Sigma X)^2][N\Sigma Y^2 - (\Sigma Y)^2])$]
where
N = Number of values or elements
X = First Score
Y = Second Score
ΣXY = Sum of the product of first and Second Scores
ΣX = Sum of First Scores
ΣY = Sum of Second Scores
ΣX^2 = Sum of square First Scores
ΣY^2 = Sum of square Second Scores

Correlation Co-efficient Example: To find the Correlation of

X Values	Y Values
50	2.1
51	2.6
52	2.8
53	3
55	3.1

Step 1: Count the number of values.
N = 5

Step 2: Find XY, X^2, Y^2
See the below table

X Value	Y Value	X*Y	X*X	Y*Y
50	2.1	50 * 2.1 = 105	50 * 50 = 2500	2.1 * 2.1 = 4.41
51	2.6	51 * 2.6 = 132.6	51 * 51 = 2601	2.6 * 2.6 = 6.76
52	2.8	52 * 2.8 = 145.6	52 * 52 = 2704	2.8 * 2.8 = 7.84
53	3	53 * 3 = 159	53 * 53 = 2809	3 * 3 = 9
55	3.1	55 * 3.1 = 170.5	55 * 55 = 3025	3.1 * 3.1 = 9.61

Step 3: Find ΣX, ΣY, ΣXY, ΣX^2, ΣY^2.

$\Sigma X = 261$

$\Sigma Y = 13.6$

$\Sigma XY = 712.7$

$\Sigma X^2 = 13639$

$\Sigma Y^2 = 37.62$

Step 4: Now, Substitute in the above formula given.

Correlation(r) =[$N\Sigma XY - (\Sigma X)(\Sigma Y)$ / Sqrt($[N\Sigma X^2 - (\Sigma X)^2][N\Sigma Y^2 - (\Sigma Y)^2]$)]

= ((5)*(712.7)-(261)*(13.6))/sqrt([(5)*(13639)-(261)^2]*[(5)*(37.62)-(13.6)^2])

= (3563.5 - 3549.6)/sqrt([68195 - 68121]*[188.1 - 184.96])

= 13.9/sqrt(74*3.14)

= 13.9/sqrt(232.36)

= 13.9/15.24336

= 0.9119