THE EFFECT OF PROJECT MANAGEMENT PROCESSES ON PERFORMANCE OF SECONDARY SCHOOLS IN KENYA (A CASE OF NYERI COUNTY)

BY

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The effect of project

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DECLARATION

I declare that this research project is my original work and has not been presented for a degree in any other university for any other award.

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ABSTRACT

The Kenyan Ministry of Education (MOE) has identified “management” as a major challenge to the achievement of national educational goals in secondary schools. Its management has been on the basis of education as a basic social service and in ignorance of an alternative view of education as a production function. The effective and efficient achievement of production functions has historically been through Project management which has continued to evolve creating the image of a universal solution to organisational problems; on the platform of specific techniques for initiating, planning, execution, control and closure processes. This study sought to explore the evolution of project management processes in the current secondary schools administrative practices and how this relates to the Kenya Certificate of Secondary Examination (KCSE) performance. To meet this general objective an experiential survey was carried out in 49 secondary schools of Nyeri County stratified on the basis of gender and financial ability. Data collected was cleaned, coded and analysed by SPSS version 10. The results identified application Initiating, planning, execution, control and closure group processes consistent with those generally accepted by the body of knowledge in project management. This was taken as an indication of the evolution of project management in the education area of application driven by the pressures of efficiency and effectiveness. An analysis of secondary school performance in their KCSE examinations was provided by the provincial educations office. Correlational analysis between the level of application and performance in KCSE showed a movement in the same direction suggesting that an increase in the application of project management processes would result in improved KCSE performance. It was therefore recommended that the secondary schools students programme be managed as a project thereby deliberately applying all the PM processes designed to achieve the educational objectives and not merely to prepare for the Ministry of Educations (MOE) audit exercises. To effectively and efficiently apply these processes, there is need for all teachers to be exposed to the knowledge, skills and techniques of project management and for the design of flexible templates in this application area. Finally, since correlation in this exploratory study is not evidence of causality, it is recommended that a further causal study be undertaken to test the hypothesis that education would be best managed through the application of initiating, planning, execution, control and closure project management processes.
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DEFINITION OF TERMS

Project  A temporary endeavour undertaken to create a unique Product or Service

Project Management  The application and integration of project management Processes of initiating, planning, executing, monitoring & control, and closure.

School performance  The aggregate mean score of Kenya secondary certificate examination.
ABBREVIATIONS

B.O.G  Board of Governors
DB    District Boys
DG    District Girls
DM    District Mixed
K.C.S.E Kenya Certificate of Secondary Education
PB    Provincial Boys
PG    Provincial Girls
P.M.B.O.K Project Management Body of Knowledge
P.T.A Parents Teachers Association
T.S.C Teachers Service Commission
CHAPTER ONE

1.0 INTRODUCTION

1.1.0 Background to the Problem

The evolution of project management has been driven by technological innovations, pressure of population change and the need for effectiveness and efficiency in organisations (Hearkens, 2002). For this reason project management, has been identified as a “response to a need or the solution to a problem” and has produced universally applicable design templates for integrating diverse functions of organisations to enable the focused accomplishment of goals; efficiently, timely and effectively (Brinner & Hastings, 1994). This has produced prospective solutions to a wide range of affairs affecting organisations slowly adding to the list of project management application areas. Educational organisations in their mandate to develop global workforce skills have been bogged down by the issue of efficiency and effectiveness in its management. According to Tony bush (2008), educational management is pluralistic with many competing perspectives resulting in a lack of agreement on the exact nature of the discipline. He explains that there is a key debate as to whether educational management is a distinct field or simply a branch of the wider study of management. Deal & Patterson (1998), in agreement describes the practice of education administration as “best understood by chaos theory”.

In the Kenyan context, the Kenya Education Sector Support Programme (KESSP, 2007) has identified management as a major challenge to the delivery of quality education. In response to this issue, Mwaka, Kegode and Kyalo (2007) among others suggests a reform of educational management from the highly centralised, standardised, and command-driven forms of management to a more decentralised and participatory decision-making,
implementation, and monitoring at lower levels of accountability. A look at the Ministry Of Educations (MOE) five year strategic plan launched in March of 2007 reveals three main strategic thrusts. The first is to expand access to education, the second to improve quality of education and the third to improve the institutional framework and expand capacities for effective delivery and management of educational services. This is consistent with Thawy (2008), who contends that education can be viewed either as a basic social service with indicators identified as under the areas of access, quality and management, (as is the current practice) or as a production function with its component inputs, processes and outputs/outcomes, best served by project management practices. In the current practice of school administration, managers on appointment are taken through a general management course based on the general principles of management and motivated to deal with the contingencies of school administration. They follow guidelines contained in a “head teachers” manual with the process supervised and evaluated by Ministry of education (MOE) inspectors.

This arrangement has resulted in a state of affairs characterised by failure in national examination, (S P1, 2005). In an effort to improve performance in KCSE; “best practices” have emerged through individual institutional innovations, which are eventually shared in head teachers annual conferences. The application of these practices have continued to produce disparities in the achievement of educational goals in secondary schools that share similar MOE cascaded strategic objectives and uniform management practices as contained in the head teachers manual. The proposition in this study is that the application of general principles of management to the Kenyan secondary school education process under the
framework of education as a basic social service is ineffective and inefficient. A student oriented approach with the education effort viewed as a production function as in Thawy's alternative framework is proposed. Education would then be described as a students "Education project" and project management processes (PMP) applied to the endeavour. The construct is that as it is in the theory and practice of project management in traditional application areas; the application of the knowledge, skills and techniques of PM in the area of education management should result to the achievement of objectives within the constraints of time cost and quality. In this context, the mastery of examinable subjects as indicated in KCSE examination results is viewed as production outputs and the disparities in KCSE results in secondary schools (a product of the level of innovation and application of "best practices") taken as an indication of the project management evolutionary process. This study proposes to establish the effect of project management as evolved in the current secondary school management practices through identification of PMP in practice and correlating with KCSE results.

This exploratory study was carried out in Nyeri County through an experiential survey of secondary school principal teachers. A positive correlation was to suggest the need to fully apply the principles and practices of project management in schools upon further causative studies.

1.2.0 Problem Statement

The Kenyan government recognises education as a key pillar towards national development and has identified education management as a major challenge to this effort, (SP 1, 2005). The ministry of educations strategic plan, launched in March 2007 is grounded on the
framework of education as a basic social service, with its main thrusts on the indicators of access, quality and management. The school system under this framework has been characterised by failure in the national examinations, (K E S S P, 2007). To this end calls have been made to reform educational management from the highly centralised, standardised, and command-driven form, to a more decentralised and participatory decision-making, implementation, and monitoring at lower levels of accountability is suggested. (Mwaka et al., 2007: KESSP, 2007).

An alternative view of education as a production function leads to the proposition that application of project management in school administration is best placed to process inputs into outputs efficiently and effectively as suggested for all production processes by Koskella & Howard (2002). While the main inputs of education including management are relatively identical, as provided, guided and standardised by the ministry of education, examination results have been varied as reported in schools examination rankings. It is proposed that these variations are a product of innovations in the practices of individual secondary school management teams suggesting an emergence of project management processes in the education sector as an application area. While discussing the roles of theory in the evolution of project management, (Koskella, 2000) indicated that innovative practices can be transferred to other sections by first abstracting a theory from that practice and then applying it in the target condition. There is need therefore to establish the extent of which Project management has evolved in the “education application area” and its effect on student performance with a view to providing a standardised school project management guide that would successfully impact on national development.
The purpose of this study therefore was to explore the effect of project management processes on performance of students in secondary schools education.

1.3.0 Objectives of the Study

1.3.1 General Objective

This study sought to explore the effect of the application of project management processes on performance of secondary schools.

1.3.2 Specific Objectives

1. To establish the effect of application of project management initiation processes on the performance of secondary schools in Nyeri County.
2. To determine the effect of application of project management planning processes on performance of secondary schools in Nyeri County.
3. To find out the effect of application of project management execution, monitoring and control processes on the performance of secondary schools in Nyeri County.
4. To determine the effect of application of project management closure processes on performance of secondary schools in Nyeri County.

1.4.0 Research Questions

1. What is the extent of application of project management initiation processes in Nyeri county secondary schools?
2. What is the extent of application of project management planning processes in Nyeri county secondary schools?
3. What is the extent of application of project management execution, monitoring and control processes in Nyeri county secondary schools?

4. What is the extent of application of project management closure processes in Nyeri county secondary schools?

5. What are the performance ratings of Nyeri county secondary schools in achievement of examination results?

6. Is there a significant relationship between the level of application of the processes of project management and student performance in education examination results?

1.5.0 Scope of Study

The study was limited to the boundaries of Nyeri Counties' 164 public secondary schools and topically to the identification of project management processes in the current management practices viewed as an evolution of project management in the education application area. The study design was limited to exploration involving description and measurement of PMP applied. Finally, determination of the existence of relationships with corresponding KCSE performance (mean grades) through correlational analysis.

1.6.0 Significance of Study

The results of the study will be used for benefit as follows:

1.6.1 Students

This study will indicate the suitability of adopting project management in education management ensuring that students meet their career aspirations within expected time scale.
1.6.2 Parents

The application of project management processes in secondary education will ensure that parents receive value for their education efforts within scope and cost.

1.6.3 Policy Makers

The application of a project management framework to the education sector will provide uniformity in management practices and enhance the achievement of national development goals.

1.6.4 Academia

The literature of this study will be reviewed by other researchers in academic institutions and as a basis for further studies.

1.7.0 Assumptions

a) This study assumes that education is unidimensional and that success in the Kenya secondary certificate examinations indicates achievement of educational goals.

b) The teachers are professionally qualified and strictly adhere to established standards and regulations uniformly.

c) That the school management teams understand their respective school environments.

d) That all school managers having gone through the same recruitment and orientation process understand the general principles of management and possess requisite skills there off required to deliver including interpersonal skills.

e) All secondary schools in the same category enjoy similar resources.
f) The interviewees will provide all information without bias or inhibitions.
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1.0 Introduction

As a foundation to this study the following is a review of the underlying principles of project management and education in general. An analysis of the factors which indicate some promise of value addition through integration is carried out to support the concept.

2.2.0 Project Management

The theory of project management is provided by the transformational view on operations. It is conceptualised as a transformation of inputs to outputs. The principles by which a project is conceptualised suggests decomposing the total transformational process into smaller transformations, tasks and minimising the cost of each task independently. The management part consists of planning, execution and control. The PMBOK states that effective project management requires that the team understands and uses knowledge and skills from at least five areas of expertise. These includes 1. project management body of knowledge 2. Application area knowledge, skills and regulations 3. Understanding the project environment 4. General management and skills and 5. Interpersonal skills. These areas of expertise are integrated in all aspects of the project.

The knowledge of project management is described by the PMBOK guide to consist of the Project life cycle, five project management processes and nine knowledge areas.
Table 2.1 Project Management Integrated Concept

<table>
<thead>
<tr>
<th>Processes through life cycle phases</th>
<th>Project Management Knowledge areas</th>
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<tr>
<td>1. Initiating</td>
<td>1. Integration</td>
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<tr>
<td>2. Planning</td>
<td>2. Scope</td>
</tr>
<tr>
<td>3. Executing</td>
<td>3. Time</td>
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<tr>
<td>5. Closing</td>
<td>5. Quality</td>
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</table>

Inputs: Iteratively applying skills in Output

5. Quality
6. Human resource
7. Communications
8. Risk
9. Procurement

Source: researcher

The management of projects is accomplished through the application and integration of the project management skills, techniques in the knowledge areas through processes that receive inputs and generate outputs.
Table 2.1 Project Management Integration through Iteration of Knowledge 
Area Processes in the Process Groups

<table>
<thead>
<tr>
<th></th>
<th>Initiation</th>
<th>Planning</th>
<th>Execution</th>
<th>Performance &amp; Closure control</th>
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<tr>
<td>Integration</td>
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<td>Scope</td>
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</table>

Key. * indicates the knowledge area processes required in every cycle phase iteratively. 
Source: researcher

Project management has evolved and developed in practice through a number of major projects since the Manhattan project of the 1940's and has consistently a delivered. (Morris, 1997; Engwall, 1995). Its image as a universal solution to organisational problems has been established on the platform of specific techniques for planning, monitoring and control, tried and tested in the operations of traditionally project oriented industries such as defence, aerospace, and construction (Frame, 1998; Maylor, 2001; Young, 1999).

There currently exists a surge of interest in project management that is explained by an
increased recognition of “the project” as a versatile, flexible and predictable work organisation. It has been applied universally as a template for the focused accomplishment of goals efficiently, timely and effectively to achieve customer satisfaction and company benefits. (Briner & Testings, 1994; Clarke, 1999; Cleland & Vireland, 2002; Frame, 1994, 1995; Meredith & Mantel, 2003; Young, 2003). The underlying theory of project management has of late been criticised as not enough to support problems encountered by project managers in the field. The need to introduce alternative theoretical approaches has as a result been suggested. (Koskella & Howell, 2002; Maylor, 2001; Morris, 2004). However as the academic discourse ranges on; novel projects that deviate from the traditional doctrine of project management including the “last planner” in the construction arena and “scrum” in the field of software development have emerged. (Koskella & Howell, 2002b).

Further research in other areas including education will provide an unified theory of project management in its evolutionary journey towards effectiveness and efficiency in the achievement of goals in expanded application areas.

2.3.0 Education

Education is the process by which society deliberately transmits its accumulated knowledge, skills and values from one generation to the other. (Nsuguba, 1977).

Its provision to all, is fundamental to the Kenyan government’s overall development strategy. (SP 1, 2005). This endeavour is carried out through the 8-4-4 system of education comprising of eight years of basic education, four years of secondary and four years of tertiary education. The second level of education (secondary) forms the target of this study and consists of 4000 public and 500 private schools with a total of 850,000 students. The
public secondary schools are further divided into three categories namely: National, provincial and district schools. This is however bound to change in line with new administrative structures proposed in a new constitution promulgated on the 27th of August 2010. The sector is reportedly faced with serious challenges in among other areas quality, relevance and efficiency in the management of educational resources/inputs. (S P I, 2005).

2.3.1 Education Performance

Among the challenges facing education administrators in developing countries is the question as to what constitutes quality education. Professional educators in Africa and indeed elsewhere in the world have yet to present a practical model of continuous assessment which goes beyond reliance on traditional examinations. (Bagunywa, 2006). Many studies and official reports have pointed to the limitations of public examinations as a measure of educational performance, due to the limitations of knowledge and skills they can assess.

However, according to Greeny & Kellahgan (1996, 2001b), their data is amenable to analysis and interpretation about the state of education systems, its achievement and problems. National examinations have therefore continued to be used to provide reliable data on student achievement at national level as a basis for policy development and decision making. National examination results are therefore deemed sufficient to measure achievement of educational objectives for this study. The Kenyan secondary education and in this regard KCSE, is characterised by poor performance. (KESSP , 2005-2010). The factors that have influenced performance in school education have been identified through studies by the United Nations Educational Social and Cultural Organisation (UNESCO) to be student sex, economic status and management.
2.3.2 Education Management

The management of secondary schools is carried out through a board of governors established by the minister. The principal teacher acts as the secretary to the board and oversees the day to day administration of the school. (Education act cap.211 section 10). The board is assisted by a parents teachers association (PTA) elected and established in the school and finally by a student prefect body elected by the students under the teachers supervision. This structure is designed to ensure that a wide range of stakeholders are incorporated into the management of the secondary schools. The minister makes regulations with respect to the conduct and management of the secondary schools generally without due regard to the differences in the individual students aspirations and thus school requirements. This is contained in a school management handbook by the ministry of education. Officers in the directorate of Quality assurance and standards are assigned duties to inspect schools with special regard to the maintenance of standards and compliance with regulations thus set forth. (Education act cap.211). The minister achieves management and control through the permanent secretary, provincial director of education and the board of directors and head teacher/principal at the school level. This centralisation of school management is reported to be a major challenge in the management of school education. (KESSP, 2005-2010)

According to Bagugwa. (2006), one of the most perplexing decisions facing an education administrator in a developing country is that of “determining the order of priorities from a host of competing educational needs”. The daily work of school managers according to Deal & Peterson (1998) is as a result best understood by “chaos theory”. They have continued to address these chaotic challenges through strategic problem solving, critical thinking,
reflective learning and mental-rehearsing. (Twemwegigwe & Bashala, 2008).

This has resulted in the emergence of a wide range of management practices originating from innovations out of a competitive environmental. However while varied results (outputs) are accounted to different practices (processes) the outcome and eventual impact is below expectations. In this regard, the time tested knowledge, skills and techniques of achieving such production function goals (project management) in this area requires to be explored.

2.4.0 Theoretical Background

To lay a foundation to the conceptual framework for the operationalisation of the study, the following is a theoretical definition of variables in the project management and the application area.

2.4.1 Project Management Processes

A project is defined as a temporary endeavour undertaken to create a unique product or service. Project management is the application of knowledge, skills and techniques to the projects. The PMBOK documents that project management is accomplished through processes that receive inputs and generate outputs. A process in this respect being a set of interrelated activities performed to achieve predetermined objectives. The main universally applicable processes are used for initiation, planning, execution, monitoring and control and closure named in cycle phases as follows:
2.4.1.1 Project Initiation

In this phase projects are defined and authorised using project integration knowledge area processes.

2.4.1.2 Project Planning

The project defined at initiation is refined into objectives and activities for the course of to meet project objectives and scope. To this end all nine knowledge area processes of integration, scope, time, cost, quality, human resource, communication, risk and procurement are applied as determined by the project team.

2.4.1.3 Project Execution

People and other resources are integrated in carrying out the project plan. The necessary knowledge area processes to accomplish this objective are Integration, quality, human resource, communications and communications management.

2.4.1.4 Project Monitoring and Control

The purpose of this phase is to measure and monitor planned execution and take corrective actions on variations. To this end all knowledge area processes of integration, scope, time, cost, quality, human resource, communication, risk and procurement are applied as determined by the PM team.

2.4.1.5 Project Closure

The purpose of the closure phase is to formalise the acceptance of the final product and bring
the project to an orderly closure through application of integration, human resource and communications management knowledge area processes.

2.4.2 Project Management Knowledge Areas

The project management knowledge area group processes involved in the project cycle are identified as:

2.4.2.1 Project Integration Management

Processes required to ensure that the various elements of the project are properly coordinated.

2.4.2.2 Project Scope Management

Processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully.

2.4.2.3 Project Time Management

Processes required to ensure timely completion of the project.

2.4.2.4 Project Cost Management

Processes required to ensure that the project is completed within approved budget.

2.4.2.5 Project Quality Management

Processes required to ensure that the project will satisfy the needs for which it was undertaken.

2.4.2.6 Project Human Resource Management

Processes required in making the most effective use of people involved in the project.

2.4.2.7 Project Risk Management

Processes concerned with identifying, analysing, and responding to project risk.
2.4.2.8 Project Procurement Management

Processes required acquiring goods and services from outside the school.

2.4.2.9 Project Communications Management.

Process required to ensure timely and appropriate generation, collection, dissemination, storage and ultimate disposition of project information.

2.4.3 Education

Education is the deliberate transfer of accumulated knowledge skills and values from one generation to the other. This is done in dedicated institutions and phases. In Kenya the 8-4-4 system of education denotes eight years of primary education, four of secondary education and four years of tertiary education. Students attend secondary schools with a view to complete the curriculum designed to prepare for national service in different professions and capacities. In this regard, students have varied, unique talents, capabilities and aspirations who's realisation is dependent on passing the Kenya secondary certificate of education examinations after four years of instruction and within the limits of affordable costs. In this respect Students education fits the definition of a "project" in that their personalities, talents, capabilities and professional aspirations are individually unique and their secondary school phase of instruction is temporary and fixed to four years as budgeted for by the government and parents. The head teachers need to be a project manager in the sense that they lead a groups of students towards specific goals (mastery of specific learning objectives in a course), within the four year period and using limited resources through the application of project management processes to generate the desired outcomes to impact the goals of education.
2.5.0 Conceptual Background

Figure 2.1 Conceptual frameworks on the effect of project management Processes on the level of student education performance

Extraneous Variables
1. Gender
2. Economic status
3. General mgt Skills

Independent variables
Initiating processes
Planning processes
Execution processes
Monitoring and Closing processes

Dependent Variables
Level of Education

Source: researcher

If the project management processes (independent variable) were applied to the student secondary school project, the national goals of education which impact is espoused and measured through examinations (dependent variable), would be successfully achieved with respect to quality, time and budget.

2.5.1 Operationalisation

While the schools operate under similar relative environments there exist wide variations in performance which result from innovations in the individual schools management practices. Best practices are shared in management annual conferences and imitated where applicable. These innovative efforts present a movement in the evolution of education management
under the pressure for efficiency and effectiveness and under the framework that views education as a production function represents the evolution of project management processes in the education application area. While an incidental 100% project management process is not expected out of the evolution so far, a comparative analysis of the current school process and a generic project management process structure should provide a rating as to the current level of application. A measure of the relationship between the level of application of project management processes and performance in KCSE will inform in to the need to design a more enhanced project management process in the national secondary schools education program policy.
CHAPTER THREE
3.0 RESEARCH METHODOLOGY

3.1.0 Introduction
This chapter presents the research design, target population, sampling strategy, data collection instruments and techniques, Data analysis, validity, reliability and ethical considerations.

3.2.0 Research Design
An exploratory and descriptive approach was followed to discover, identify and gauge the extent of generally accepted project management processes applied in school management activities through an experiential survey. Project management processes identified were described and the extent of application determined. The presence of a relationship between level of application and educational performance was determined through correlational analysis.

3.3.0 Target Population
The target population for this study consisted of the 164 public schools in Nyeri County.

3.4.0 Sampling Strategy
The individual secondary school formed a sampling unit. A list of the 164 secondary schools in Nyeri County provided by the provincial director's office formed the sampling frame. With economic status and gender having been identified as important marker variables in
educational research by UNESCO, they formed a basis of stratification in sampling 49 secondary schools as research units.

Table 3.1  Secondary Schools sampling stratified on the Basis of Economic Status and Gender

<table>
<thead>
<tr>
<th>Strata</th>
<th>Number of Units</th>
<th>Units to be sampled (30%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provincial boys (PB)</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Provincial girls (PG)</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>District boys (DB)</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>District girls (DG)</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>District mixed (DM)</td>
<td>123</td>
<td>37</td>
</tr>
<tr>
<td>Total</td>
<td>164</td>
<td>49</td>
</tr>
</tbody>
</table>

Source: researcher

Online random number generator of startrack .com was used to generate the following in the various strata lists.

PB- [9, 6, 7, 13], PG- [13, 4, 8, 11], DB- [3], DG- [2, 5, 9], DM- [21, 71, 14, 66, 60, 64, 12, 45, 94, 46, 67, 55, 90, 58, 04, 70, 19, 51, 78, 92, 95, 16, 60, 50, 08, 72, 84, 23].

3.5.0  Data Collection Instruments and Techniques

This study involved the collection of secondary and primary data.
3.5.1 Secondary Data

The MOE through the provincial directors of education develops a KCSE performance results analysis booklet which is available in the Provincial director’s office. The list of Nyeri district secondary schools, less private and special institutions formed the sampling frame. KCSE mean grades over a three year period were extracted from the same examination result analysis booklet.

3.5.2 Primary Data

A self administered questionnaire was delivered by hand, to provide orientation and record presence of process output indicators to the principal or deputy school administrators. This was followed by personal interviews structured on the questionnaire where processes which produced the outputs indicated on the questionnaires were identified through in-depth inquiries and operationalised clarifications. The questionnaire and subsequent interviews followed the project cycle format where respondents were led through the management activities carried out on students from date of joining school. Themes and insights on the application of project management were indentified from responses.

3.6.0 Data Analysis

The different questions in the project cycle were allocated one mark each and the total entered for comparison within the different strata. Since project management is applied through the integration of management area processes in the various cycles, the resultant data was organised into categories of project management knowledge area processes as provided in the FMBOK and as are applicable to the field of education. The groups were given equal
weight and an overall institutional value entered for all phases. The quantitative data was analysed by SPSS for descriptive statistics including measures of central tendency and dispersion. The Karl Pearson's coefficient of correlation technique was used to determine the presence and nature of relationship between the application of project management processes and KCSE performance mean grades in the various strata.

3.7.0 Validity and Reliability

3.7.1 Validity

The interview format was pre-tested with a teacher administrator who is also a graduate of project management. This served to ensure that the operationalisation of project management during the interview, approach and prompts would produce desired results. The questionnaire elements covered all project management knowledge areas as enlisted in appendix (iii). This ensured that the sum total of knowledge within the profession of project management was covered. However, according to the PMBOK, not all processes described in the “standard for management of a project” apply uniformly on all projects and the project manager is responsible for determining appropriate processes. In this respect some processes in the Kenyan education set-up are strictly undertaken centrally by government organs and did not merit inclusion in the questionnaire. These included the planning of the curriculum by the Kenya institute of education and development of the exam syllabus by the Kenya national examination council categorised as scope definition and development.

3.7.2 Reliability

To ensure that same results were dependable, the interviews were schedule at the
convenience of respondents and at desired comfortable venues. Enough time was provided to get exhaustive responses and reduce chances of rush blind answers.

3.8.0 Ethical Considerations

The criterion for appointment/promotion to the administrative positions in secondary schools has been shrouded in mystery. Most of the administrators, who did not go through a transparent competitive interview recruitment process, lacked the confidence to publicly discuss administrative issues especially where the performance of their institutions were not considered good. The mention of an institutions' name in this report would be easily related to the administrators and as a result interviews were accepted on the strict basis of confidentiality. This would avoid what was described as unspecified consequences by the provincial administration in the event that negative insights were reported. The names of institutions and their administrators have therefore been omitted from this report.
CHAPTER FOUR

4.0 DATA ANALYSIS AND FINDINGS

4.1.0 Introduction

This chapter discusses data analysis and findings from a questionnaire of forty items including open ended questions clarified through an interview where applicable. The purpose of the study was three fold. First, to identify practices in the management of secondary schools that are consistent with those generally accepted by the body of knowledge in project management as processes, secondly assess the level of application and subsequently correlate with performance in KCSE. A survey questionnaire was presented to the management of the sampled secondary schools and clarifications of open ended questions made over short interviews. Results from questionnaire part A was tabulated and analysed for a description of respondents characteristics. Responses to part B were coded and analysed relative to research objectives. The researcher used the Statistical Package For Social Sciences Program (SPSS) for data analysis on the distribution of project management processes in the different strata and the relationship of overall process application with KCSE performance through correlation. Project management knowledge areas as integrated in the cycle phases were used to conceptualise the application of project management and the application documented. The same Program was used to generate scatter plots and histograms.

4.2.0 Background Information

4.2.1 Response Rate

There was a 100% response rate with all sampled schools administrators accepting the
invitation to participate. Clarification on answers to open ended questions was done in a short interview. A total of 49 school administrators were interviewed out of which 4 were of Provincial Boys category, 4 Provincial Girls, 1 District Boys, 3 District Girls and 37 District Mixed.

4.2.2 Secondary Schools Environmental Characteristics

Questions in section covered the respondents name, sample units name, school status, number of streams, students, teaching and non teaching staff. Though not central to the study, this data helped to conceptualise the environment and formulation of conclusions. The schools reported a distribution of between 1 and 4 streams with an average of 42 students per class. The student to teacher ratio varied from between 16:1 to 20:1 while non teaching support staff averaged 21:1 as shown in table 4.1.

<table>
<thead>
<tr>
<th>Item</th>
<th>PB</th>
<th>PG</th>
<th>DB</th>
<th>DG</th>
<th>DM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student teacher ratio</td>
<td>20:1</td>
<td>18:1</td>
<td>17:1</td>
<td>19:1</td>
<td>16:1</td>
</tr>
<tr>
<td>Students per class</td>
<td>47</td>
<td>44</td>
<td>37</td>
<td>38</td>
<td>42</td>
</tr>
<tr>
<td>Student :Support staff ratio</td>
<td>26:1</td>
<td>26:1</td>
<td>20:1</td>
<td>22:1</td>
<td>13:1</td>
</tr>
<tr>
<td>KCSE performance</td>
<td>6.3</td>
<td>6.2</td>
<td>4.9</td>
<td>4.1</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Source: (Research Data, 2012)

4.3.0. Initiation Group Processes

4.3.1. Identification of Initiation Group Processes

Questions designed to elicit processes that recognise the start of a new project or phase in
current school management practices were presented to the respondents and a distribution depicted in figure 4.1. These questions dealt only in the overall change control knowledge area and therefore distribution also depicted the level of application.

Figure 4.1 Identification, Distribution and Application of Initiation Group Processes

![Bar Chart](image)

Source: (Research data, 2012)

Figure 4.1 indicates that initiation processes were identified in all strata of schools with highest application mean scores of 49% in Provincial Boys and the lowest at 15% District Boys secondary schools. The low scoring majority relied entirely on the syllabus as provided by KNEC and KIE as their basic guide to execution while the high performers carried out parallel initiation activities customised to their unique objectives and often coming up with school strategic plans. Overall average application was 29.6% with a standard deviation of
This shows that while the application is low there is very little variation indicating that initiation processes are potent inputs in the education system and should be fully applied.

4.3.2. Relationship between the Application of Initiation Group Processes and KCSE Performance.

To determine the existence of a relationship if any between the overall of initiation processes application scores and KCSE mean grades a scatter plot was established as shown in figure 4.2.
Figure 4.2  KCSE Mean Grades and Initiation Processes Application Scores

Source: (Research Data 2012)

Figure 4.2 shows little relationship at lower KCSE scores and positively increasing with high KCSE scores. This is attributed to an even application of the syllabus as the only integrated management control process. This corresponds with evenly low KCSE scores and increasing with increased innovations in this phase. A Pearson’s correlation coefficient of positive 0.801 at 0.01 significant figures on a two tailed test was returned by SPSS analysis. This is indicative of a strong relationship between KCSE performance and the application of initiation group processes. A significance level 0.01 suggests that there is only a 1% chance of this relationship existing by chance. Therefore while the relationship is not necessarily causative there is a significant possibility that the more initiation group processes are applied, the higher the results in KCSE performance.
4.4.0. Planning Group Processes

4.4.1. Identification of Planning Group Processes

Questions designed to identify processes that produce a consistent and coherent document to guide the execution and control of school student projects were presented. The 18 processes are: Scope planning (SP), Scope definition (SD), Activity sequencing (AS), Duration estimation (DE), Schedule development (SD), Resource planning (RP), Cost estimation (CE), Cost budgeting (CB), Quality planning (QP), Organisational planning (OP), Communications planning (CP), Staff acquisition (SA), Risk identification (RI), Risk analysis (RA), Risk quantification (RQ), Resource planning (RP), Procurement planning (PP), and Solicitation Planning (SP). The results indicate average application scores of 65%, 64%, 44%, 47% and 33% for PB, PG, DB, DG and DM consecutively. These processes were identified and application rated as shown in table 4.2 and figure 4.3. The results show an overall application mean score of 51% with PBs scoring the highest at 65% and District mixed the lowest at 33%. The high levels of application is attributed to the fact that most of the planning processes are an expectation of the teaching profession and therefore evenly applied. This as well answers for the low standard deviation of 0.14 where Innovation and knowledge of project management are not prerequisites for application of professionally required practices like lesson planning and subject schemes of work. However evolving non standard practices/methods were identified with the high application scores and included; Preparation of strategic plans in a few schools whereas the others relied on an annual action plan in the form of a school calendar based on MOE term dates, agreement between students, teachers and parents on career paths and subsequent subject combinations and university cut-off points during form one induction serving for scope statements, Scope definition in the
scheme of work prepared with regard to two months KCSE revision constrain on syllabus coverage, a rudimentary network diagram was used to schedule topic dependencies identified by experienced (expert) teachers which are reportedly inconsistent with the KIE syllabus. In some schools, the English grammar syllabus is given more lessons during form one to as a dependence to comprehension of other non familiar subject. As presented in figure 4.3 .Scope, procuring and solicitation planning processes reported the highest relative application at 11% whereas no evident risk analysis and quantification processes was identified in the sampled schools.
### Table 4.2 Distribution of Planning Phase Processes

<table>
<thead>
<tr>
<th></th>
<th>SP</th>
<th>SD</th>
<th>AS</th>
<th>DE</th>
<th>SD</th>
<th>RP</th>
<th>CE</th>
<th>CB</th>
<th>QP</th>
<th>OP</th>
<th>SA</th>
<th>CP</th>
<th>RI</th>
<th>RA</th>
<th>RQ</th>
<th>RP</th>
<th>PP</th>
<th>SP</th>
<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB</td>
<td>1</td>
<td>0.75</td>
<td>0.5</td>
<td>0.75</td>
<td>0.50</td>
<td>1</td>
<td>0.75</td>
<td>0.63</td>
<td>0.85</td>
<td>0.55</td>
<td>0.83</td>
<td>0.35</td>
<td>0.63</td>
<td>0</td>
<td>0</td>
<td>0.63</td>
<td>1</td>
<td>1</td>
<td>0.65</td>
</tr>
<tr>
<td>PG</td>
<td>1</td>
<td>0.63</td>
<td>0.25</td>
<td>0.63</td>
<td>0.60</td>
<td>0.88</td>
<td>0.88</td>
<td>0.75</td>
<td>0.85</td>
<td>0.40</td>
<td>0.90</td>
<td>0.30</td>
<td>0.75</td>
<td>0</td>
<td>0</td>
<td>0.75</td>
<td>1</td>
<td>1</td>
<td>0.64</td>
</tr>
<tr>
<td>DB</td>
<td>1</td>
<td>0.5</td>
<td>1</td>
<td>0.50</td>
<td>0.30</td>
<td>0.50</td>
<td>0.50</td>
<td>0.30</td>
<td>0.20</td>
<td>0.50</td>
<td>0.20</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.44</td>
</tr>
<tr>
<td>DG</td>
<td>1</td>
<td>0.5</td>
<td>0</td>
<td>0.33</td>
<td>0.30</td>
<td>0.83</td>
<td>0.83</td>
<td>0.50</td>
<td>0.57</td>
<td>0.27</td>
<td>0.60</td>
<td>0.20</td>
<td>0.50</td>
<td>0</td>
<td>0</td>
<td>0.50</td>
<td>1</td>
<td>1</td>
<td>0.50</td>
</tr>
</tbody>
</table>
Figure 4.3 The Application of Planning Group Processes in sampled secondary schools.

Source: (Research Data, 2012)

4.4.2 Relationship between the Application of Planning Group Processes and KCSE Performance Scores

To determine the presence of a relationship if any between planning group processes and KCSE mean scores, a scatter plot figure 4.4 was established. This plot shows a positive relationship where KCSE mean grades increase with increase in Planning Processes application scores. A positive Pearson’s correlation of 0.903 at 0.01 significant figures was reported in a two tailed test by SPSS vicariate analysis further confirming the high strength
of the corresponding relationship. This strong positive correlation suggests that the higher the application of planning group processes higher the performance in KCSE exams. While this hypotheses is not necessarily causative the relationship has 99% possibility of not happening by chance.

Figure 4.4 Scatter Plot on Planning Group Processes and KCSE Mean Grades

Source: (Research Data, 2012)

4.5.0 Execution Group Processes

4.5.1 Identification of Execution Group Processes

Questions on the execution group phase were designed to identify the 5 generally accepted processes which include; Quality assurance (QA), Team development (TD), Information
distribution (ID), Solicitation (S) and source selection (SS). The results as shown in table 4.3 and figure 4.5 indicate a high overall mean application of 75% with all schools using a check-list of sorts in the form of a template for solicitation, source selection and quality assurance processes ready for the directorate of quality assurance audit. This answers for the low standard deviation of 0.14 as the variation from expectations is minimal. While the check-lists for solicitation and source selection were standard, there was some variation in the application of quality assurance processes. Some schools applied the minimum requirements while others exhibited regular performance results analysis and made use of the results to effect requisite changes. PB as a result scored the highest at 93% and DM the lowest at 57%. This high level of application is attributed to the fact that external audit is expected in cost, quality and procurement management processes, and therefore guiding templates are used to ensure that things are done right. Solicitation and source selection processes reported the highest application scores at 100% application on account of the presence of templates and expectation of external audit while team development scored lowest at 36% mainly attributed to the financial aspect of the exercise not budgeted for by the employer (TSC).
Table 4.3  Distribution of Execution Group Processes

<table>
<thead>
<tr>
<th></th>
<th>QA</th>
<th>TD</th>
<th>ID</th>
<th>S</th>
<th>SS</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB</td>
<td>0.93</td>
<td>0.70</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>PG</td>
<td>0.85</td>
<td>0.50</td>
<td>0.93</td>
<td>1</td>
<td>1</td>
<td>0.86</td>
</tr>
<tr>
<td>DB</td>
<td>0.30</td>
<td>0.30</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0.72</td>
</tr>
<tr>
<td>DG</td>
<td>0.43</td>
<td>0.20</td>
<td>0.80</td>
<td>1</td>
<td>1</td>
<td>0.69</td>
</tr>
<tr>
<td>DM</td>
<td>0.36</td>
<td>0.08</td>
<td>0.43</td>
<td>1</td>
<td>1</td>
<td>0.57</td>
</tr>
<tr>
<td>Mean</td>
<td>0.57</td>
<td>0.36</td>
<td>0.83</td>
<td>1</td>
<td>1</td>
<td>0.75</td>
</tr>
</tbody>
</table>

Source: (Research Data, 2012)

Figure 4.5 Application of Execution Group Processes

Source: (Research Data, 2012)
4.5.2. Relationship between the Application of Execution Group Processes and KCSE Performance

To determine the presence of a relationship a scatter plot was established as presented on figure 4.6.

**Figure 4.6 Scatter Plot on Execution Group Processes and KCSE Mean Grades**

![Scatter Plot on Execution Group Processes and KCSE Mean Grades](image)

Source: (Research Data, 2011)

Figure 4.6 indicates a positive relationship with increase in the application of execution phase processes corresponding with an increase in KCSE scores. A Pearson’s correlation coefficient of 0.918 at 0.01 significant figures was entered on an SPSS two tailed test. This suggests that if all execution phase processes were designed for the diverse functions of education
application area; as attempted for Cost, Quality and Procurement management higher KCSE performance scores would be expected at 99% confidence levels.

4.6.0 CONTROL GROUP PROCESSES

4.6.1 Identification of Control Group Processes

Questions were administered designed to identify the 8 processes generally accepted and applied in the control phase which include Integrated change control (ICC), scope verification (SV) & change control (SCC), performance monitoring (PM) & reporting (PR), risk monitoring (RM) and Contract administration (CA). The distribution is presented in table 4.4 and application depicted in figure 4.7. As indicated the processes were fairly well distributed with a mean application of 49.2%. PB scored the highest application at 67% and DM the lowest at 28%. Contract administration process scored the highest application scores at 100% with all schools using a check-list /template in readiness for MOE audit. The same applied for cost and performance reporting processes with application scores of 68% each. This explains the low levels of variation in application showing a standard deviation of 0.16.
Table 4.4 Distribution of Control Group Processes

<table>
<thead>
<tr>
<th>ICC</th>
<th>SV</th>
<th>SCC</th>
<th>SC</th>
<th>CC</th>
<th>PM</th>
<th>PR</th>
<th>RM</th>
<th>CA</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB</td>
<td>0.15</td>
<td>0.85</td>
<td>0.50</td>
<td>0.93</td>
<td>0.60</td>
<td>0.88</td>
<td>0.60</td>
<td>1</td>
<td>0.67</td>
</tr>
<tr>
<td>PG</td>
<td>0.23</td>
<td>1</td>
<td>0.23</td>
<td>0.75</td>
<td>0.53</td>
<td>1</td>
<td>0.70</td>
<td>1</td>
<td>0.63</td>
</tr>
<tr>
<td>DB</td>
<td>0</td>
<td>0.30</td>
<td>0.30</td>
<td>0</td>
<td>0.70</td>
<td>0.50</td>
<td>0.70</td>
<td>1</td>
<td>0.44</td>
</tr>
<tr>
<td>DG</td>
<td>0.10</td>
<td>0.20</td>
<td>0.20</td>
<td>0.20</td>
<td>0.70</td>
<td>0.47</td>
<td>0.5</td>
<td>0.70</td>
<td>0.44</td>
</tr>
<tr>
<td>DM</td>
<td>0</td>
<td>0.19</td>
<td>0.02</td>
<td>0.02</td>
<td>0.34</td>
<td>0.09</td>
<td>0.5</td>
<td>0.33</td>
<td>0.28</td>
</tr>
<tr>
<td>Mean</td>
<td>0.10</td>
<td>0.51</td>
<td>0.25</td>
<td>0.19</td>
<td>0.68</td>
<td>0.44</td>
<td>0.68</td>
<td>0.58</td>
<td>0.49</td>
</tr>
</tbody>
</table>

Source: (Research Data, 2012)

Figure 4.7 Applications of Control Group Processes

Source: (Research Data, 2012)
4.6.2 Relationship between the Application of Control Group Processes and KCSE Performance

To determine the presence of a relationship if any between application scores of control group processes and KCSE mean scores; a scatter plot was established as depicted in figure 4.8. This plot indicates that both variables move in the same direction and therefore suggest that an increase in the application of control group processes would result in a corresponding increase in KCSE mean scores. A correlation coefficient of 0.891 at 0.01 significance levels was reported by SPSS analysis. This strong relationship suggests a 99% chance that application of control group processes in the educational administrative sector will result in increased performance in KCSE.

Figure 4.8 Scatter Plot on Control Group Processes and KCSE Mean Grades

Source: (Research Data, 2012)
4.7.0 Closure Group Processes

4.7.1 Identification of Closure Group Processes

The closure group phase was identified through response to questions designed to elicit administrative and contract closure processes consecutively.

The distribution is presented in table 4.5 and figure 4.9. Table 4.5 shows a mean application of 56%. PB reported the highest score at 79% and DB the lowest at 40%. Contract closure process application returned a score of 58% and was characterised by the maintenance of procurement contract documents in a file ready for MOE audit across the board. However formal closure of contracts was not applied across the board and the methods varied from resolutions in board meeting minutes, correspondence to inaction. Administrative closure process scored a relative application of 42% application with methods varying from end of phase parade and issuing of report forms to additions of parties, prize giving ceremonies, talks and trips. This explains the relatively high standard deviation reported at 0.19.

**Table 4.5 Distribution of Closure Group Processes**

<table>
<thead>
<tr>
<th></th>
<th>Administrative closure</th>
<th>Contract closure</th>
<th>Mean Closure</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB</td>
<td>0.70</td>
<td>0.88</td>
<td>0.79</td>
</tr>
<tr>
<td>PG</td>
<td>0.60</td>
<td>0.88</td>
<td>0.74</td>
</tr>
<tr>
<td>DB</td>
<td>0.30</td>
<td>0.50</td>
<td>0.40</td>
</tr>
<tr>
<td>DG</td>
<td>0.43</td>
<td>0.50</td>
<td>0.47</td>
</tr>
<tr>
<td>DM</td>
<td>0.32</td>
<td>0.50</td>
<td>0.41</td>
</tr>
<tr>
<td>Mean</td>
<td>0.47</td>
<td>0.65</td>
<td>0.56</td>
</tr>
</tbody>
</table>

Source: (Research Data, 2012)
4.7.2 Relationship Between the Application of Closure Group Processes KCSE performance

A scatter plot was established to determine the relationship if any between application scores of closure group processes and KCSE mean grades as depicted in figure 4.10. This plot shows no relationship at low application scores and a positive grid line at medium to high application scores. This is attributed to the even and widespread use of a report form without any effect on performance scores. A Pearson’s correlation coefficient of positive 0.783 was reported at .01 significance figures on a two tailed test indicating a very strong effect where
the processes have medium to high application levels. This relationship can only happen by chance with 1% probability meaning that an increase in the application of these processes would result in high KCSE performance.

Figure 4.10 Scatter Plot on Closure Group Processes and KCSE Mean Grades

Source: (Research Data, 2012)

4.8.0 Application of Project Management Knowledge Area Processes

During the conceptual phase of this study, project management was described as the application of the nine processes of integration (IM), scope (SM), time (TM), quality (QM), cost (CM), communication (CM), human resource (HRM), risk (RM) and procurement (PM); integrated in the initiation, planning, execution, monitoring & control and closure cycle. An analysis of responses to interview questions in the 49 sampled schools as enumerated in
Appendix (ii) and (iii) was carried out to conceptualise the application of project management and a summary of the distribution presented in table 4.6. Table 4.6 shows a mean of 37.6% with highest scores of 93% on PM and a low of 15.25% in RM. The low standard deviation of 0.03 is attributed to the integration of the knowledge areas in the different phases and therefore low variability.

<table>
<thead>
<tr>
<th>IM</th>
<th>SM</th>
<th>TM</th>
<th>CM</th>
<th>QM</th>
<th>HRM</th>
<th>CM</th>
<th>RM</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1938</td>
<td>0.3729</td>
<td>0.21</td>
<td>0.5438</td>
<td>0.3215</td>
<td>0.2701</td>
<td>0.4063</td>
<td>0.1525</td>
<td>0.9271</td>
</tr>
</tbody>
</table>

Source: (Research Data, 2012)

4.8.1 Integration Management

Application of integration management processes appendix (ii), had a distribution between 15 & 50% with an overall low mean of 19% and standard deviation of 0.11. The responses indicated that most schools did not have a verifiable performance plan while the highest scoring had a documented strategic plan. This indicated the need to develop overall change control programmes in the management of secondary schools education programmes.

4.8.2 Scope Management

The processes that limit and control the work (SM) in a students school education cycle as enumerated in appendix (iii) ranged between 25% & 80% with a mean application of 37% and a standard deviation of 0.15. The scope was defined by a squealed syllabus produced by the Kenya national examination council, describing the KCSE examination topic areas. This
version was reported to be usually in conflict with the secondary school curriculum produced by the MOE through the Kenya institute of education which includes non examinable activities designed to meet the national goals and aspirations. The schools that scored highly in this knowledge area processes reported application of practices that included; Appointment of experienced teachers to adjust for sequential discrepancies in syllabus topics and model scheme of work addressing conflicts in dependencies, Provision of career guidance sessions for students and teachers at the initiation stage allowing for early identification of subject choices and performance targets in line with university course entry points(form one), and Planning for weekend and evening tuition sessions to take care of MOE holiday tuition ban constraints with the involvement of parents for the purposes of financing.

4.8.3 Time Management

Application of the processes to ensure timely completion of student’s education projects (TM) as enumerated in appendix (iii) ranged between 10% and 88% with a mean of 21% and a standard deviation of 0.19. The scheme of work for the secondary school curriculum forms the scope of the education project and is largely standardised by the MOE through KIE. The syllabus is designed in a sequential manner taking care of dependencies in the curriculum. All schools used a time standard time table software to make timetables. However teachers reported discrepancies in the dependencies of topics in the MOE scheme of work and institutions that scored highly in this knowledge area processes applied practices that included; Scheduling more English and comprehension lessons in the initial cycle as a prerequisite to other subjects’ comprehension, Fitting more lessons between 8 and 5pm with frequent shorter breaks while observing the MOE guidelines on length of lessons and
scheduling for maths and English lessons in the morning sessions only, and Scheduling for KCSE revision.

4.8.4 Cost Management

Processes designed to ensure project completion within budget (CM) as enumerated in appendix (iii), ranged between 45% & 100% with an average score of 54% and a standard deviation of 0.16. With the high profile of corruption upon the formation of the Kenya anti-corruption commission there is a strict adherence to guidelines on cost management and documentation. All schools had a template that documented the motions of resource planning in departmental requisitions, cost estimation and budgeting ready for MOE impromptu audits and scheduled returns. The highly scoring schools seemed to have huge financing by various sponsors besides parents, based on the influence and commitment of the board of governors and the success of the institutions alumni. Audit control was a distinctive feature in the schools that scored highly with revised cost estimates and estimate at year end documented in BOG minutes. Advance arrangements for financing shortfalls were recorded and satisfactory audit reports documented.

4.8.5 Quality Management.

Processes directed to ensure that secondary education meet the need for which it was executed (QM) as enumerated in appendix (iii), ranged between 10% and 90% with a mean application of 32% and a standard deviation of 0.25. Teaching is a profession on its own right and its training is regulated by the MOE. Recruitment into the profession is based on acquisition of professional qualifications and regulated by the Teachers service commission.
The process of instruction quality planning, assurance and control as contained in the teachers curriculum is largely practised in template form and regularly audited by the district quality assurance officers. Methods employed by the highly scoring schools included: Parents involvement in academic clinics where performance targets for individual students are agreed and documented. Tuition is agreed on where necessary and parents commit to finance; Peer teachers evaluation of instruction methods and techniques; Student evaluation of teacher performance; Benchmarking with high performing schools where groups of teachers and students are involved in exchange programmes that last for as long as a week and reports shared with the lest of the school community and finally experts are invited for talks on exam techniques and general guidance.

4.8.6 Human Resource Management

Application of processes directed to making effective use of people in the education project (HR) as enumerated in appendix (iii), ranged between 10% & 70% with a mean score of 27% and a standard deviation of 0.20. There are two categories of teachers in the “staff” acquisition process. Those assigned by the TSC and by the BOG. The administrators are provided with a formula to calculate the “curriculum based establishment” in education parlance which shortfall calls for staff acquisition. However the government suffers a huge deficit due to what is explained as cost budgetary cost constraints. Shortfalls in staffing levels are met by recruitment of teachers by the BOG. While teacher to students ratios seem to be better in DM than in the highly scoring PB and PG it was reported that BOG recruited teachers are more in the DM schools. The disparities in salaries and allowances could be a motivational issue in this area. Whereas the high performing teachers are feted with parties,
sponsored trips, and cash prizes in high scoring schools, Low performers and undisciplined staff are deployed from PB and PG schools where the BOGs are reported to have more clout with the provincial staffing office to the DM. Team development and Motivational activities are largely dependent on the leadership of the BOG as the parent sponsors are ever willing to finance with foreseen goal success.

4.8.7 Communications Management.

The application of communications management knowledge area processes of information planning, distribution, performance reporting and administrative closure (CM) as presented in appendix (iii), ranged between 28 % and 78% with a mean of 41% and a standard deviation of 0.17. Some of the outstanding methods applied included: Term student/parent performance clinics besides the bi-monthly report cards where reviews are made, variances analysed in the groupings of sharp shooters, middle and weak. Corrective actions are agreed upon and committed; Computerised telephone number and e- mail directory actively used to convene unscheduled meetings communicate marking and reporting deadlines, communicate changes in schedules etc; Screaming walls where exceptions in all areas are posted by both the administration and students.; Students are divided into families of seven and below under a “mother” or “father” teacher, where open communication is encouraged individualised counselling and guidance is executed and documented in this format.

4.8.8 Risk Management

Application of processes for identifying, analysing and responding to the student’s education projects (RM) as presented in appendix (iii), ranged between 60% & 54% with a mean of
15% which was the lowest after integration and a standard deviation of 0.16. The most cited causes of deviation from plans included: Students often sent home for lack of fees affecting the schedule of scheme of work execution; Failure by government to disburse financial support in time and therefore affecting plans and Students expelled after of every disturbance / unrest to avoid escalation to full scale destructive riots. Only 6 schools reported some kind of insurance. One of the methods applied to respond to the risk of lack of supplies due to late disbursement of funds and volatility in food prices is the development of school farms managed separately to produce vegetables, milk and pork.

4.8.9 Procurement Management.

Application of processes that manage what to procure and when (PM) as presented in appendix (iii) , ranged between 92 % & 100% with the highest mean at 93% and a standard deviation of 0.03. Interview responses elicited keen adherence to laid down procedures of procurement in the form of templates and documentation filed for audit by the district school auditors. Procurement was reported to have been a cause of criminal anti-corruption proceedings in some schools and therefore calling for strict documentation. The highest scoring schools performed best in procurement planning and contract administration. Failure to apply procurement management processes was mainly attributed to: Lack of storage facilities and Lack of funds to settle for supplies in a timely manner due to irregular disbursement of finances by both the government and parents resulting in collaborations with suppliers to mark up their prices rather than institute civil proceedings following breach of contracts on the part of the schools.
CHAPTER FIVE

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1.0 Introduction

This chapter presents a summary of the report, conclusions and recommendations of the study. It is divided into sections, presenting the background and summary of variables; conclusions based on the study objectives; recommendations and finally the major limitations of the study.

5.2.0 Summary

5.2.1 Background Information

The general objective of this research study was to explore the effect of project management processes on performance of secondary schools. This quest originated from the elusive need to achieve objectives of the secondary education in Kenya measured by performance in KCSE. A review of literature showed that education can be approached as a basic service as is the current practice or alternatively as a production function which has historically been best served by project management (Koskella and Howard, 2002). While education has traditionally not been a project management application area it was appreciated that its evolution has been driven by various pressures including the need for effectiveness and efficiency in organisations (Hearkens, 2002).

Through evolution PM has produced universally applicable design templates for integrating diverse functions in organisations (Brinner & Hastings, 1994). In this respect "PM" practices were expected to have evolved in an effort to achieve effectiveness and efficiency in the education sector. To meet the study objectives, a questionnaire was designed to indentify
practices currently applied in various schools that mirror what is generally accepted by the Body of project management as phase processes necessary for the success of production systems. Nyeri County stratified on the basis of economic status and gender. Response to open ended questions were clarified by way of interviews and the data coded and distribution of established processes analysed by use of SPSS version 10. The performance in KCSE was obtained from the ministry of educations provincial office and scatter plot established to determine relationships. A correlational analysis was further carried out by SPSS. The results were presented by tables and histograms and interpretations provided in chapter 4. This analysis identified outputs in the secondary school administrative practices processed through methods consistent with those generally accepted as project management processes in the PMBOK. A summary of the variables are presented hereunder.

5.2.2 Initiation Group Processes

Initiation group processes indicating the beginning of a project or project phase in this case school entry or start of successive term or annual phases were identified. They had the lowest relative application of level at 11% consistent with the PMBOK, which indicates that the processes rely entirely on the interplay of integration management which as well reported low application levels at 19.4%. A correlation coefficient of 0.801 at 0.01 significance levels was entered for a relationship with KCSE mean scores. The scatter plot showed that where initiation practices were confined to those expected in the teaching profession and applied all round no significant effect on performance was noted. However where innovative practices were applied, a high impact was noted and thus the high positive correlation. This indicates that the design and application of initiation group processes would result in increased
performance in KCSE at 99% levels of confidence.

5.2.3 Planning Group Processes

The planning processes had a relatively high application of 20% and a low variability between the strata of with a standard deviation of 0.14. This was mainly on account of the education (application area) being a professional requirement in generally standardised preparation of schemes of work, lesson planning and time tabling of the curriculum. This agrees with the PMBOK of the need to integrate application area knowledge, general management, interpersonal skills, environment and project management processes in all aspects of a project. The fact that the teachers are professionally qualified in their area of application results in this high application levels. It is however evident that where innovative practices consistent with those generally accepted in PM were applied, higher KCSE scores were evident as PB and PG. A positive correlation of 0.903 at 0.01 significant figures suggests that the relationship is not merely by chance and a deliberate application of all planning processes would result in high KCSE mean scores.

5.2.4 Execution Group Processes

Project execution processes scored a relatively high application of 29%. Execution in this application area is mainly professional resulting in the low variability at 0.14 standard deviation. As a result the main determinant of variation in this phase was innovative practices in team development and quality assurance which scored low application levels of 36% and 57% consecutively. A correlation of 0.918 at 0.01 significant levels suggest strongly that an application of execution group processes would result in high scores in KCSE mean scores.
5.2.5 Control group processes

The application of performance, monitoring and control processes had an overall relative score of 19%. As indicated in the results section most schools strictly apply the district quality assurance guidelines in the form of templates in readiness for audit purposes and thus the high application levels in contract administration (100%) and performance monitoring (68%). The highest scoring schools show relatively high application in the other project knowledge areas mainly integrated change control and scope control, supporting the PMBOK in the assertion that performance monitoring and control is only fully applied when all relevant processes are iteratively integrated. A positive correlation of 0.891 at 0.01 significant levels suggests that the application of control group processes would result in high levels of KCSE mean scores.

5.2.6 Closure group processes

The application of integration, human resource and communication management knowledge areas to bring the project to an orderly closure had a relative score of 21% application. This is mainly a reflection of contract closure processes aggressively pursued as a result of audit purposes. Administrative closure was generally low (47%) which is consistent with the PMBOK as the levels of integration management and relevant planning processes in human resource and information management reported equally low scores at 19.34% and 27.01% consecutively. The relatively high variance in application of these processes (standard deviation of 0.19) is a pointer to the lack of specific standardised guidelines in these areas. As a result high scoring schools relying entirely on innovative activities indicative of the
evolution of closure group processes as generally accepted in the PMBOK resulting high KCSE mean grades. The KCSE mean grade and closure processes application scatter plot, clearly indicates a strong correlation where administrative closure processes are applied presenting the main contribution to the 0.783 correlation coefficient. This suggests the need for closure processes and that their application would result in high KCSE mean scores.

5.3.0 Conclusions

This study identified application of all group processes consistent with those generally accepted in the project management body of knowledge (PMBOK). In their application, evidence of knowledge in education (application area), general management skills, interpersonal skills and a clear understanding of the educational environment in school administration. These are four among the five areas of expertise required for an efficient and effective project team (PMBOK). The final area of expertise required, “project management” is evident in a rudimentary form as identified in this study. The consistent successful use of templates with clearly defined inputs, techniques and expected outputs where there are audit requirements clearly indicate the efficacy of project management skills and techniques in this application area. These practices are consistent with Cleland & Ireland (2002), who described project management as flexible templates for integrating by design diverse functions of an organisation towards the efficient and effective accomplishment of customer requirements.

The successful innovative use of similar techniques in areas where audit is not envisaged show a slow evolution of project management in the entire student education cycle and is consistence with the views advanced for evolution of project management by Hearkens, (2002).
This leaves us with the question of whether education in the secondary school situation can really be defined as a project. A project is defined as "a temporary endeavour undertaken to create a unique product or service" (PMBOK). Indications are that those schools engaging in processes that define the beginning and end of a student’s life thus appreciating the temporary nature of this endeavour have posted better KCSE results. These include career guidance at initiation, parallel scheduling to cater for KCSE revision and clear information on exams revision and techniques. The uniqueness of individual students in personality and talent is not in doubt. It is however noteworthy that schools where this uniqueness is appreciated in the form of individualised subject choices based on student career aspirations, personalised academic clinics and formation of school families for personality analysis and personalised documented guidance and counselling practices post better scores. The application of project phase processes integrated with the relevant knowledge areas allow for progressive elaboration of the students education project as they experience the challenges of ageing and get better understanding of the requirements to meet individual career objectives through a period of four years. Education therefore, from the student’s perspective fits the characteristics of temporary, unique services and progressive elaboration that define a project.

Ultimately the study shows a strong positive relationship between the application of project management processes and performance in KCSE suggesting that the deliberate application of project management processes should result in better performance in KCSE.
5.4.0 Recommendations

Based on these conclusions it is recommended that:

• Secondary school student education programmes be managed as projects as opposed to a basic social service. In this respect, all initiation group processes be applied to clearly indicate the start and end of all educational phases of the student’s education “project”, separate from the MOE’s annual calendar.

• The planning of the schools development in line with the MOE’s strategic objectives be incorporated in a separate students four year educational project planning incorporating all group processes.

• Control group processes be applied in all schools in correspondence to the planned student educational “project” and not for the purposes of complying to the MOE’s audit purposes.

• All teachers be exposed to the knowledge, skills and techniques of project management to supplement the execution of professional knowledge. This will ensure that all execution group processes are applied to meet the objectives of the student’s education “project” and not merely for audit purposes.

• Efforts to close the students project in an orderly manner be standardised to a minimum of all closure phase knowledge area processes to ensure application across the board and leave room for innovation and thus further evolution.

• All educational processes be designed into flexible templates that will be updated as the project management evolves in this application area.
5.4.1 Recommendations for Further Study

Education is an important process in the development of human capital for national growth. While results of the study suggests a strong positive relationship between the application of project management processes and performance in KCSE, this was an exploratory study and a 1% probability that these results were by chance would result in huge loses in resources. It is recommended that project management processes templates be developed and applied in a causative test of this hypothesis.

5.5.0 LIMITATIONS OF THE STUDY

School principals and their deputies were not willing to disclose administrative information on record due to fears of reprisals from “high” offices especially where issues do not seem right. It is suspected that despite assurances of confidentiality, full disclosure is suspect.
REFERENCES


Appendix (i)

Questionnaire sheet

An analysis of the effect of project management processes on performance of students in Kenya secondary schools.

Please answer the questions and indicate your evaluation with a tick on the space ( ) provided. Kindly offer any additional details requested.

Part A

1. Name of respondent

2. Name of school.

3. Status of school
   (a) Provincial boys
   (b) Provincial girls
   (c) District boys
   (d) District girls
   (e) District mixed

4. School population
   Teachers
   Non teaching staff
   Number of streams
   Total student number

Part B

5. Do you prepare the following for every new school class? Yes No
   (a) Scheme of work
   (b) Constraints and assumptions.
   (c) Strategic plan/action plan

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6. Have the teachers and students agreed and identified the educational objectives and major deliverables in?  
(a) Syllabus (choice of subjects)  
(b) Scheme of work  

7. Do you break down the syllabus into major educational deliverables into smaller components when making the scheme of work?  

8. Is your scheme of work development based on the following?  
(a) Subject topic/activity list  
(b) Supporting detail including topical dependencies, assumptions and constraints.  

9. Do you produce an activity network diagram to identify those that depend on others and must be performed first?  

10. Do you make and document estimates of the number of work periods needed to complete each identified subject/activity.  
(a) Subject/activity duration estimates  
(b) Basis of estimates.
11. Have you analysed subject topic sequences, durations, and resource requirements to create the school schedule/calendar and documentation. 

(a) School schedule/calendar and supporting detail. 

(b) Schedule management plan 

(c) Resource requirement updates. 

Yes  No 

12. Have you determined and documented the types of resources and quantities for each educational activity. 

(a) Determined estimates for some activities. 

(b) Determined estimates for each activity. 

13. Have you developed and documented estimates of costs for resources needed to complete student activities? 

(a) Cost estimates and supporting detail. 

(b) Cost management plan describing how cost variances will be managed. 

Yes  No 

14. Have you made and documented estimates to individual work items in order to establish a time-phased budget (cost baseline) to measure and monitor cost performance? 

(a) Time based budget established 

15. Have you identified and documented the quality standards relevant to the student’s education and determined how to satisfy them? 

(a) Quality Management Plan 

(b) Operational definitions 

Yes  No
What quality management methods have you identified?  

16. Have you identified, documented, and assigned roles, responsibilities, and reporting relationships as follows?  
   Yes  No

   (a) Role and responsibility assignments:  
       ( ) ( )

   (b) Staffing Management Plan:  
       ( ) ( )

   (c) Organization chart  
       ( ) ( )

   (d) Job descriptions / position descriptions  
       ( ) ( )

   (e) Training needs  
       ( ) ( )

Others please specify  ________________________________________________

17. Have you acquired and documented teachers and support staff assigned them to the educational activities?  
   Yes  No

   (a) Enough teachers acquired  
       ( ) ( )

   (b) Teaching and support staff assigned  
       ( ) ( )

   (c) Teachers and support staff team directory  
       ( ) ( )

   (d) All activities assigned  
       ( ) ( )

18. Have you determined and documented the information and communications needs of the school stakeholders?  
   Yes  No

   (a) Methods for gathering and storing information.  
       ( ) ( )

   (b) Who should receive the information and how will it be sent.  
       ( ) ( )

   (c) A description of the information to be distributed including formats.  
       ( ) ( )

   (d) Schedules showing when each type of communication will be produced.  
       ( ) ( )
19. Have you determined and documented which risks might affect the student's education and their characteristics? 
   (a) Risk identified
   (b) Risk symptoms identified

20. Have you performed a qualitative analysis of risks and conditions, to prioritize their affects on student education objectives?
   (a) An overall school risk ranking.
   (b) The risks to be prioritised with the high or moderate categorised for further analysis.

21. Have you measured the probability and consequences of risks and estimated their implications for educational objectives?
   (a) A prioritized list of quantified risks.
   (b) A probability analysis of the educational risks.

22. Have you developed procedures and techniques to enhance opportunities and reduce threats from risk to the student educational objectives?
   (a) Risk response plan and contingency plans.
   (b) Contractual agreements created.

How else have you sought to reduce risk? ---------------------------------------------------

23. Have you identified which educational needs are best met by procuring products or services outside the school organisation documented as follows? 
   (a) Procurement management plan
   (b) Statement of work for each planned contract.
24. Have you prepared documents needed to support solicitation as follows?
   (a) Procurement documents such as requests for quotations, and request for proposals.
       
       
       
       
   (b) Evaluation criteria that will be used to rate or score proposals.
       
       
       
       
25. Do you evaluate overall student performance on a regular basis to provide confidence that their education regime will satisfy the relevant quality standards and documented the following?
   (a) End of term performance results
       
       
       
       
   (c) Regular performance results
       
       
       
       
   (b) Change requests.
       
       
       
       
26. Do you seek to develop individual teacher/support staff and group skills to enhance student performance?
   (a) Improvements in individual skills to allow personnel to perform their work more effectively.
       
       
       
       
   (b) Improvements in team behaviours to allow team members to devote a greater percentage of their effort to technical activities
       
       
       
       
   (c) Improvements in either individual skills or team capabilities to facilitate identifying and developing better ways of education.
       
       
       
       

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27. Do you seek to make needed information available to school stake holder’s student education activity records in timely manner?  
   Yes  No
(a) Students  
   ( )  ( )
(b) Parents  
   ( )  ( )
(c) Teachers  
   ( )  ( )

28. Have you sought to obtain information from prospective sellers on how project needs can be met and filed bids and proposals prepared by sellers explaining how they can provide the requested products or services.  
   Yes  No
   ( )  ( )

29. Have you applied the evaluation criteria to select providers and designed contracts?  
   Yes  No
   ( )  ( )

30. Do you ensure that changes to the school action plan are beneficial and coordinated to maintain performance measurement baselines to produce the following?  
   Yes  No
   ( )  ( )
(a) School action plan updates  
   ( )  ( )
(b) Corrective action  
   ( )  ( )
(c) Lessons learned.  
   ( )  ( )

31. Do the stakeholders formally accepting the syllabus and scheme of work and documented signed acceptance documents.  
   Yes  No
   ( )  ( )

In what ways do stake holders formally indicate acceptance? --------------------------
32. Do you have a performance measurement system in place where additional planning is documented as in? Yes No

(a) Syllabus and education activity changes. ( ) ( )
(b) Corrective actions. ( ) ( )
(c) Lessons learned. ( ) ( )

33. Do you use performance reports and scope change requests and lessons learned to make the following? Yes No

(a) Scheme of work and activity updates ( ) ( )
(b) Corrective action ( ) ( )
(c) Lessons learned. ( ) ( )

What activities are most frequently expected to changes? -------------------------------

34. Do you influence and manipulate the factors which create changes to the cost baseline to ensure that changes are beneficial to performance? Yes No

(a) Revised cost estimates ( ) ( )
(b) Budget updates ( ) ( )
(c) Corrective action ( ) ( )

What factors are most critical-----------------------------------------------?

35. Do you monitor specific student education results to determine if they comply with relevant quality standards and identify ways to eliminate causes of unsatisfactory performance documenting the following? Yes No

(a) Quality improvements ( ) ( )
(b) Acceptance decisions ( ) ( )
(c) Rework ( ) ( )

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(d) Completed check-lists and process adjustments. ( ) ( )
(e) Estimate at completion ( ) ( )
(f) Lessons learned. ( ) ( )

Others please specify  ________________________________________________________________

36. Do you collect and disseminate performance information including status reports, progress measurement, and forecasting producing?  
   Yes  No
(a) Performance reports. ( ) ( )
(b) Change requests ( ) ( )

Others please specify  ________________________________________________________________

37. Do you monitor risks, identify new risks, execute risk reduction plans, and evaluate their effectiveness throughout the school life to document the following?  
   Yes  No
(a) Work-around plans. ( ) ( )
(b) Corrective action. ( ) ( )
(c) Activity change requests. ( ) ( )

How else do you implementation of plans and record lessons learned?  ________________

38. Do you ensure that seller's performance meets contractual requirements and document the following?  
   Yes  No
(a) Correspondence ( ) ( )
(b) Contract changes ( ) ( )
(c) Payment requests. ( ) ( )
39. Do you generate, gather, and disseminate information to formalise term/year or school completion through:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Maintenance of school archives</td>
<td>( )</td>
<td>( )</td>
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<tr>
<td>(b) Formal acceptance of the year or phase.</td>
<td>( )</td>
<td>( )</td>
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<tr>
<td>(c) Documenting lessons learned.</td>
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</table>

What activities signify completion? ------------------------------------------

40. Do you complete and settle contracts including any resolution of open items through:

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<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Maintaining a contract file</td>
<td>( )</td>
<td>( )</td>
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<tr>
<td>(b) Formal acceptance and closure.</td>
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<td>( )</td>
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</tbody>
</table>

Others please specify-----------------------------------------------------------------
Appendix (ii): All knowledge area processes as encoded and scored.

<table>
<thead>
<tr>
<th>Project management knowledge area processes</th>
<th>Questionnaire elements</th>
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<tbody>
<tr>
<td>1 INTEGRATION MANAGEMENT</td>
<td>A</td>
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<td>Overall Change control</td>
<td>5,30</td>
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<tr>
<td>2 SCOPE MANAGEMENT</td>
<td>B</td>
</tr>
<tr>
<td>1.Scope planning</td>
<td>6</td>
</tr>
<tr>
<td>2.Scope definition</td>
<td>77</td>
</tr>
<tr>
<td>3.Scope verification</td>
<td>331</td>
</tr>
<tr>
<td>4.Scope change control</td>
<td>32</td>
</tr>
<tr>
<td>3 TIME MANAGEMENT</td>
<td>C</td>
</tr>
<tr>
<td>1.Activity definition</td>
<td>8</td>
</tr>
<tr>
<td>2.Activity sequencing</td>
<td>9</td>
</tr>
<tr>
<td>3.Activity duration estimation</td>
<td>10</td>
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<td>4.Schedule development</td>
<td>11</td>
</tr>
<tr>
<td>5.Schedule control</td>
<td>33</td>
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<tr>
<td>4 COST MANAGEMENT</td>
<td>D</td>
</tr>
<tr>
<td>1.Resource planning</td>
<td>12</td>
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<td>2.Cost estimation</td>
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<td>3.Cost budgeting</td>
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<td>4.Cost control</td>
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<td>5 QUALITY MANAGEMENT</td>
<td>E</td>
</tr>
<tr>
<td>1 QUALITY PLANNING</td>
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<tr>
<td>2. Quality assurance</td>
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<td>----------------------</td>
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<tr>
<td>3. Quality control</td>
<td>35</td>
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<tr>
<td><strong>6 HUMAN RESOURCE MANAGEMENT</strong></td>
<td><strong>F</strong></td>
</tr>
<tr>
<td>1. Organisational planning</td>
<td>16</td>
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<td>2. Staff acquisition</td>
<td>17</td>
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<td>3. Team development</td>
<td>26</td>
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<td><strong>7 COMMUNICATIONS MANAGEMENT</strong></td>
<td><strong>G</strong></td>
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<td>1. Communications planning</td>
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<td>2. Information distribution</td>
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<td>3. Performance reporting</td>
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<td>4. Administrative closure</td>
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Appendix(iv): Application of Project management group processes

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