

**EXAMINING PROJECT MANAGEMENT PRACTICES AT THE GHANA
WATER COMPANY LIMITED, HEAD OFFICE, ACCRA**

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DECLARATION

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Kwame Nkrumah University of Science and technology, Kumasi or any other educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

This investigation examined project management practices at Ghana Water Company Limited (GWCL), headquartered in Accra. GWCL is the only water company in the ten regions of Ghana. It should also examine the success rate of projects of the company and identify the causes of the failure of the project in the company, project management tools and techniques used by the company, benefits associated with the use of project management tools and techniques and determine the obstacles with the use of project management tools and techniques. The method used to conduct this research was to gather information from engineers and managers who manage projects through questionnaires. The data collected was analyzed using the Statistical Package for Social Sciences (SPSS) and the correlation coefficient was used for data analysis. The main findings of the study showed that the project management processes were taken over by initiation, planning, implementation, monitoring and control and completion in the implementation of projects in GWCL. The application of project management tools and techniques to GCWL has gradually become an important issue when implementing projects of varying size and structure. The study has shown that using PM tools and techniques is an essential management approach that results in specific goals being met within specific time and budget limits by making the most of resources. In addition, the study found that there was a lack of in-depth knowledge of PM tools and techniques GWCL, and high costs of use were also observed by respondents. Among other things, the study recommended that PM tools and techniques be gradually applied, especially in old government institutions where resistance to change is perceived as high.

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ACRONYMS

AfDB	African Development Bank
ANOVA	Analysis of Variance
CBA	Cost Benefit Analysis
CPM	Critical Path Method
ECG	Electoral Commission of Ghana
GERT	Graphical Evaluation and review Technique
GPRS	Ghana Poverty Reduction Strategy
GWCL	Ghana Water Company Limited
HND	Higher National Diploma
MCA	Millennium Challenge Account
PERT	Programme Evaluation and Review Technique
PM	Project Management
PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute
SPSS	Statistical Package for Social Sciences
WBS	Work Breakdown Structure

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DEDICATION

This dissertation is dedicated to my lovely princess (Kelinam Amuzu), Soulmate Theophilus Ankomah Adjei, Mrs Sheila Nager (Chochii) and the entire family for their sacrifices, time, prayers, good will and financial assistance throughout the period of the course am forever grateful.

CHAPTER ONE

INTRODUCTION

1.1 Background

The status of project management and its perception are increasing day by day. One of the reasons is the success project management brings to companies and organizations. The success of projects is a discussion topic for academics and practitioners. The knowledge base continues to evolve, with more and more innovative methods being used.

Since independence, there have been many examples of failed public and private sector projects in Ghana. The situation in Ghana is not the best, according to former Gyan-Baffour, Deputy Minister of Finance and Economic Planning, in his opening speech at a Project Manager ceremony organized by the African Development Bank (AfDB, 2006) in Accra, Ghana. He pointed out that the performance of project implementation in the country has declined in all sectors of the economy and that the country has caused significant costs. He stressed that the situation is in need of improvement and that the Bank and the Government of Ghana are responsible for identifying the training needs (Daily Graphic, 2014).

In order to achieve the set project goals, project managers perform daily special PM practices (Project Management). (Freeman, 2012) comments that it has been argued that PM practices can vary from organization to organization. However, other project managers argue that PM practices may not necessarily vary from organization to organization, as professional practice in the water industry must follow established

guidelines and ethical principles; The purpose of adopting a particular practice may therefore be based on specific environmental and social requirements of the project. A satisfactory performance can not be dispensed with, and this requires optimal procedures. As stated by (Ramabadron et al., 2007), the high performance achieved by a project is an optimal practice.

There is concern that both the private and public sectors have lost significant sums of money as a result of failed projects and programs. Over the years, Ghana has received significant donor inflows for specific projects to improve economic development. For example, in 2006, Ghana had access to \$ 547 million under the Millennium Challenge Account (MCA) (Report of the Minister of Finance of the Republic of Ghana, 2012) and other similar donor inflows. All these projects did not benefit much (AfDB, 2006).

In terms of donor support, Africa is generally affected by the economic downturn of the Western world, the United States and Europe. As a result, donors are generally tired in the Western world, and therefore, careful handling of resources, especially development funds, can not be overemphasized in Ghana.

Ghana Water Company Limited (GWCL) is selected for this study because it is one of many state-owned companies whose management practices have been considered

1.2 Problem Statement

The Project Management Institute (PMI), the body that governs project management practices, describes the processes of initiation, planning, execution, monitoring, control, and closure as the best practices worldwide to ensure the successful completion of all projects.

Ideally, projects must go through all of the above processes with the expected supervision of certified project managers to make sure they are well implemented. In some countries, projects that do not go through all of these processes and are monitored by professional project managers are not implemented.

However, the failure of projects in Ghana has been substantiated for many reasons such as socio-political, economic, technological, macro and micro-global reasons without empirical evidence. Juran (1992) points out that, as a rule, the review of a project history and the causes of project failures in projects with a long development cycle are often neglected. Project default rates in Ghana are high and the associated costs are excessive (Daily Graphic, 2006). The phenomenon was that in the past and even now most project contracts were won by foreign companies. There is little or no knowledge transfer from foreign companies to local companies that win contracts and carry out projects in Ghana. Elsewhere, countries have benefited from foreign companies that have signed contracts for their knowledge, experience and know-how transfer in their home countries (Walker et al., 2006). The lack of knowledge transfer denies nations the benefits of placing contracts with foreign companies (Schindler and Eppler, 2003). As a result, local businesses are not growing so fast that they compete on equal terms with their foreign counterparts (World Bank Report, 2001).

As a developing country, both public and private institutions rely on projects to achieve the organizational goals (Ghana Poverty Reduction Strategy (GPRS) Report, 2005) and the lack of project management knowledge and skills hampers development in all these areas. Water covers about 70% of the earth's surface and naturally it exists in the earth in all three physical states of matter and it is constantly moving around because the water

flows with the flow. Of the surface water's percentage of surface water, only about 2.5% is fresh water, and due to the fact that most are stored in deep groundwater, a small amount is available for human use. Water scarcity is becoming a major concern for people around the world and the need to protect existing ones and to find ways or means to provide safe water in reasonable quantities to people around the world and to meet the needs of future generations. These have become more important to the managers of GWCL to be more proactive in the practices of project management. Water is life and it is directly or indirectly linked to many services, such as: human health and well-being as well as the social and economic development of a community or a country. Therefore, the need to delve into Ghana's water project management is essential.

Against this background, this study attempts to examine project management practices at GWCL at its head office in Accra.

It will also be useful to investigate whether the failure of projects or project performance is caused by inappropriate project management processes. Therefore, the study will try to identify the factors that may cause a project or its performance to fail.

1.3 Aim

The central objective of this study is to examine the project management practices at the Ghana Water Company Limited (GWCL).

1.4 Research Objectives

The specific objectives include the following:

1. To identify the project management tools and techniques used by the GWCL in carrying out its projects.

2. To determine the benefits associated with the use of such tools and techniques atGWCL.
3. To determine the obstacles to the use of such tools and techniques in GWCL
4. .To determine strategies to improve the use of such tools and techniques at GWCL.

1.5 Methodology

The study will use both quantitative and qualitative research techniques in its approach. The research was carried out in two phases. The first phase of the study will follow a qualitative approach; an exploratory study to solicit, prove, or validate the perception of project managers in terms of project critical success or failure factors arising from the literature review and observation. The exploratory survey will be conducted among project managers at GWCL to measure the perception of the degree of impact of the project success or failure factors listed in a literature review. The core of the approach is the contextualisation of the "weathered" and "theorized" success / failure factors of projects listed from the point of view of the Ghanaian project leader. The survey tool will be structured and semi-structured on the basis of the nature of the research, to allow project managers to be part of the original list and then ranked by main ones to influence the success or failure of the project. The new list to be obtained from respondents, the knowledge of the degree of influence of the critical factor (the critical factors), will influence the design of the survey instrument for the second phase of the study.

Project management practices data was collected through personal semi-structured interviews and documentation analysis. Employees of the GWCL headquarters in Accra were interviewed. Other PM practices data were obtained on a desk-based study.

Relevant literatures were also examined to promote other PM practices that were not covered by the interview.

In addition, an analysis of variance (ANOVA) is used in simultaneous comparisons of groups of respondents in similar and different sectors.

1.6 Scope of the Study

The outcome of an investigation may depend on several factors analyzed by Walker (1997). These factors include the choice of appropriate research methodology, the reliability of the data collected and, where appropriate, the use of appropriate statistical tools.

First, the implementation of such a project is considered capital intensive and there is a time limit within which the final thesis has to be presented. Therefore, funds and deadlines will be the main limitations to the results of this study.

Second, the study used GWCL as a case study. In developed economies, there are databases where data could be extracted for research, but access to data is always difficult in emerging economies. The data is extracted from GWCL's offices to help analyze the study. Again, there are projects in GWCL with long life and short life. The coverage of this study is limited to projects with a maximum lifetime of three (3) years.

1.7 Significance of the Study

This research provides policy makers with key information about the implications of project management practices in the public sector.

The research result is also important as there is little information on current project management practices in the public sector. This will help to fill the gap in the literature.

The aim of this research is to provide a model for improving project success rates in Ghana and developing countries with similar conditions to Ghana. It attempts to do this by identifying and analyzing the potential project-critical bugs / success factors that are common and specific to projects in GWCL.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

According to PMI's Guide to the Knowledge Organization (PMBOK 3rd Edition, 2004), the project is a temporary effort to create a unique product or science. From the above definition, it can be deduced that a project has some basic properties:

Temporary - Temporary means that a project has a specific beginning and a defined end. The end is reached when the project goals are reached or when it becomes clear that the project goals can not be achieved or the demand for the project ceases and the project ends.

Temporary does not mean short duration, since many projects can take several years.

In addition, the temporary character of projects does not apply to the product, the service or the resulting outcome of projects. Most projects undertaken or creating a national monument will produce results that last for centuries. (PMI's Guide to Project Management Knowledge Base, 3rd Edition, 6)

Disnmore et al (2005) point out that the temporary nature of projects only means that they are not repetitive or continuous activities.

Typically, a project is performed to produce a specific (unique) result, which may be a product (good), services or some results. In fact, projects can create:

1. A product or artifact that is quantifiable and can be either an end element or a component element.
2. An ability to run a service such as a business function that supports production or sales

3. A result such as results or documents, for example a research project, develops knowledge that can be used to determine whether there is a trend or a new process benefiting society.

Unambiguity is an important feature of project performance as it distinguishes each outcome from another similar purpose. For example, there are many office buildings developed from projects, but each facility is unique or different. (PMI Guide for Project Management, 3rd Edition, 6)

2.2 Strategic necessity of projects

Projects are means to address needs that can not be addressed within organizations, normal operating boundaries. Projects are therefore often used as a means of achieving an organization's strategic plan. Projects are usually approved on the basis of one or more of the following strategic considerations:

1. Market demand, as might be the case with an oil company approving a project to build an oil refinery in response to chronic fuel shortages.
2. an organizational need; For example, a training and development company that authorizes a project to create a new course for increased revenue
3. A customer request, as in the case of an electricity utility such as ECG, which is undertaking a project to build a new substation to meet growing demand and improve power delivery to its customers
4. Technological advances as presented in software companies authorizing projects to create a new generation of video games.
5. A legal requirement, such as the Ghana Electoral Commission, which is carrying out a project to register all Ghanaians over the age of 18 in a new biometric

electoral roll to be voted on in general elections, as laid down in the Ghanaian Constitution. (PMI Guide for Project Management, 3rd Edition, 7)

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2.4 Project Life Cycle

Projects like an organism develop and change continuously. Projects go through different phases in the so-called project life cycle. Most project management books divide the life of a project into four phases. Thamhain and Wilemon (2005) share the life of a project in project formation, project setup, main program phase, and phase unity, while Adams and Brandt (1983) categorize projects into conceptualization, planning, execution, and completion.

The third edition of the Project Management Knowledge Base (PMBOK) describes the phases as the initiation or birth phase, in which the outputs and critical success factors are defined, the planning phase, characterized by breaking down the project into smaller parts / tasks, an execution phase in which the Plan is executed, and finally graduation or exit phase, which marks the completion of the project.

The summary of project activities in phases is to allow the project manager and the project team to effectively plan and organize resources for each activity, objectively measure the achievement of the goals, and justify their decisions to move forward, correct or terminate.

It is important to distinguish the phases of a project from the five project management process groups.

2.5 Project Management Processes

Project management is achieved through processes that leverage project management knowledge, skills, tools, and techniques that receive inputs and generate output. The basic processes adopted by project managers in all projects include initiation, planning, execution, monitoring and control, and completion. (PMI 2010, A Guide to Project

Management Knowledge) These five processes have clear dependencies and are performed in the same order for each project.

2.5.1 Introduction

The initiation process group consists of the processes that provide formal permission to start a new project or project phase. (PMB's PMBOK Guide 3rd Edition, 43). According to Nathan and Jones (2003), the initiation process determines the nature and scope of the project. The project initiation process also acknowledges that a project or phase should begin and the project management team commits to it. It involves the development of a proposal for a potential project and analyzes and validates the feasibility of the project.

The initiation phase creates a plan that includes the following areas:

1. A project charter that officially approves the project.
2. Analyze the business needs and requirements.
3. Review of current operations.
4. Financial analysis of costs and benefits
5. Identification and analysis of stakeholders
6. Appointment of a project manager.

2.5.2 Planning

After the initiation phase, the project is planned to a reasonable level of detail. The planning process group helps gather information from sources that have varying degrees of completeness and confidence (PM BOK Guide, 3rd Edition 46). Planning is done for time, cost, resources and risk management during execution. Project planning is an iterative and ongoing process throughout the life of the project.

Ibbs and Kwak (2002) claim that the project planning process leads to the development and maintenance of a workable system to meet the business needs of the project. These include the definition of the overall scope, the definition of the planning strategy, the development of the project structure plan for costs and timetable, the refinement of the estimates and analysis of the commitments, the optimization of the project plan, the development of risk management plans and the organization of the project team to set up a project-driven organizational environment.

According to Kerzner (2003), the planning process is over

1. Define planning (example detailed planning)
2. Develop the range specification
3. Selection of the planning team
4. Determine the services to be provided and create a project structure plan (WBS)
5. Identify the activities required to complete these results and network the activities in logical order
6. Estimate the resource requirements for the activities
7. Estimate the time and cost of the activities
8. Development of the timetable
9. Development of the budget
10. Risk Planning
11. Obtaining formal consent to begin work.

2.5.3 Execution

The execution consists of the processes used to complete the work defined in the project management plan to meet the project requirements (PM BOK Guide 3rd, 55). It includes the coordination of people and resources as well as the integration and execution of project activities according to the project management plan. The actual work on the project takes place during the execution process.

The PMBOK Guide, 3rd Edition 56-58 describes the activities performed as

1. Execute and manage the project execution
2. Perform a quality assurance
3. Acquire the project team
4. Develop the project team
5. Information distribution
6. Choose Salesperson.

2.5.4 Monitoring and control

Monitoring and control consists of those processes that are carried out to monitor project implementation, so that potential problems can be identified in good time and, if necessary, corrective action taken. (PMIs, PM BOK 3rd Edition, 59). The project steering process ensures that the project objectives are achieved by measuring progress and taking corrective action if necessary. It includes capturing project progress status, analyzing deviations, and communicating project status.

The main advantage of monitoring and controlling is that project performance is regularly monitored and measured to detect deviations from the project management plan.

Lewis (2000) points out that monitoring and controlling activities involve;

1. Measurement of ongoing project activities (where we are).
2. Monitoring the project variables (cost, time, scope, quality) against the project management plan.
3. Identify corrective actions to properly address issues and risks.
4. Influencing the factors that could bypass the integrated change control so that only approved changes are implemented

2.5.5 Closing

Closing includes the processes that are used to formally end all activities of a project or project phase, pass the entire product on to others, or close a canceled project.

The finalization process is completed when the project project is officially accepted and all administrative activities for archiving files and documenting the experience gained are completed.

Project completion consists of:

1. Project Completion: Complete all activities across all process groups to formally complete the project or phase of the project.
2. Conclusion of contract: Complete all documents for all contracts.(PMI, (2010) A Guide to Project Management Knowledge Base p27 - 35)

2.5 Project Management Process Model

Havranek (2009) defined project management as "the art and science of planning, organizing, integrating, controlling and controlling all dedicated resources throughout the project to achieve the goals of scale, quality, cost and customer satisfaction."

Westland (2006) also defines project management as "the skills, tools and management processes needed to successfully complete a project". It contains:

1. A range of skills: expertise, skills and experience are required to reduce the risk level of a project, thereby increasing the likelihood of success.
2. A set of tools: Different types of tools are used by project managers to improve their chances of success. Examples are document templates, tabs, planning software, modeling software, audit checklists, and review forms.
3. A series of processes: Different processes and techniques are required to monitor and control the time, cost, quality and scope of projects. Examples are time management, cost management, quality management, change management, risk management and issue management.

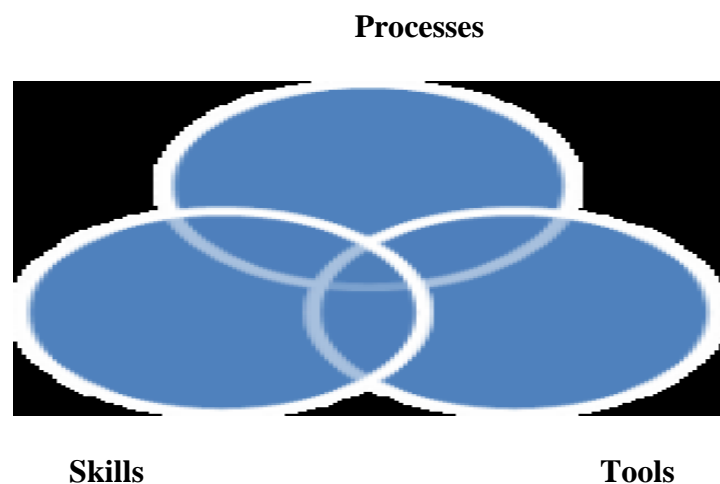


Figure 2.1: Project Management Components

According to Ibbs and Kwak (2002), the project management model is an important source of supply for an organization that applies project management practices and processes. This is because the model takes into account the successful execution of projects by organizations (Ibbs & Kwak, 1997). The project management process essentially comprises five levels. These are shown in the following model

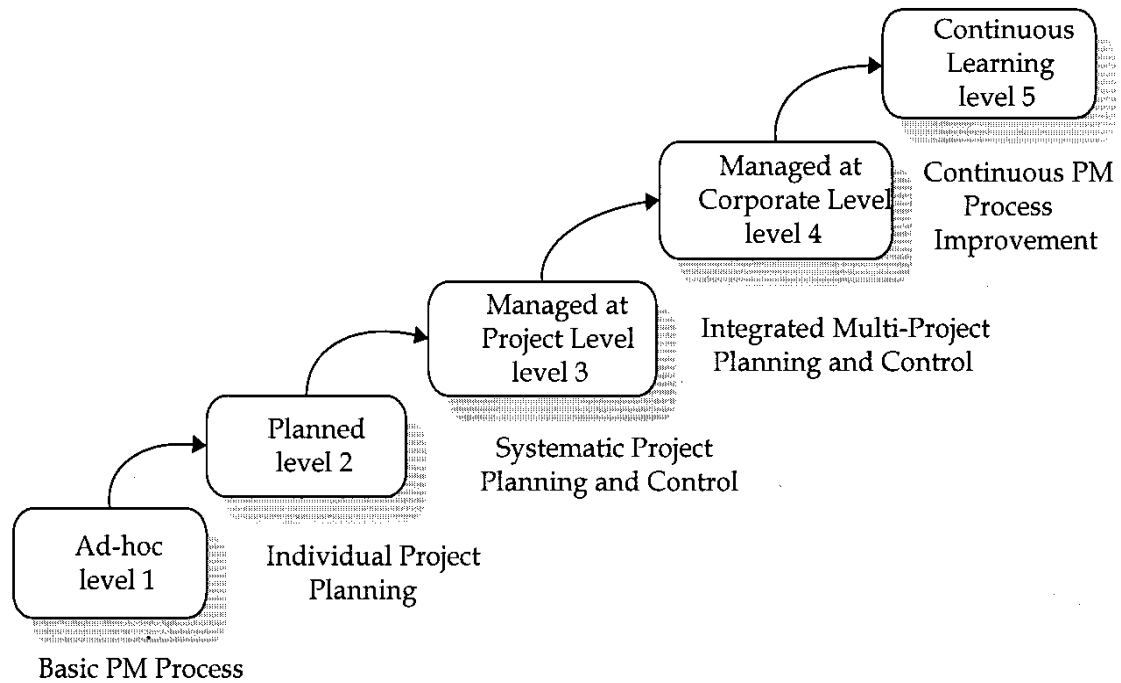


Figure 2.2: Basic Project Management Process (After Ibbs & Kwak, 2002)

project management model developed by Ibbs and Kwak (2002) deals with the following fields of knowledge in project management.

1. Project integration management
2. Project scope administration
3. 3rd project time management
4. Project cost management
5. Project quality management
6. Project Personnel Management
7. Project communication management

8. Project risk management
9. Project procurement management

Each successful project integrates these practices to deliver projects that meet the needs and satisfaction of customers / customers. Below is a discussion of the practices.

2.4.5 Project Integration Management

The project integration management according to (PMBOK, 3rd edition, 2004) involves the efficient and effective coordination of the various elements or components of the project. If properly integrated, project goals will be achieved according to established standards. At the integration level, topics such as applications, processes, organizations, and project lifecycle phases are considered essential. Five basic levels are involved at this stage. In the first level, project plans are not created in a structured format and no project management information system is available.

Level 2 defines informal PM tools and practices, including the basic project plan and the project organization structure. At level 3, the formal PM methodology is established and managed. In addition, a project management information system is managed to collect, review and distribute necessary project management data. Level 4 includes project control processes that are integrated and coordinated across different knowledge areas and projects. Project managers and supervisors integrate a project management information system for multiple projects and also ensure that control processes are integrated to minimize the risk of scale, cost, schedule, and quality. At the final stage (level 5), the entire integration process is planned, optimized and maintained to continuously improve the project management process.

2.5.6 Project Scope Management

This aspect of project management ensures that all factors and variables for the definition and control of the project are included. These variables or factors include project planning and cost control, trade-off analysis, project charter preparation, kick-off meeting, work scope statement, project scope validation and initiation of a change-control process (Ibbs & Kwak, 2002). This phase of the project management process involves five levels and each level has its own activities.

At level 1, project managers are assigned on an ad hoc basis and there is no methodology for initiating and controlling the project. At Level 2, informal work structures and processes for changing the area of activity are defined and available. In addition, the PM team agrees to initiate the project informally. At level 3, formal project charter and project manager roles will be established. In addition, planning, definition and verification of the areas are managed. At level 4, product and scope management are integrated to ensure project success. In addition, the process of changing the scope and review will be documented and integrated. At level 5, the entire process of scope management is planned, optimized, and maintained for continuous PM process improvement.

2.5.7 Project Time Management

According to Ibbs and Kwak (2002), project time management ensures that a project is completed on time. This is one of the biggest challenges for any project manager or organization involved in projects. Time management in projects includes the definition of activity and sequence, duration estimation, schedule development, and schedule control. Resource allocation and leveling, network crash, and rapid tracking of projects

are used to effectively manage the project plan. In terms of time management, in level 1 there

The project management model advanced by Ibbs and Kwak (2002) deals with the following project management knowledge areas.

1. Project integration management
2. Project scope management
3. Project time management
4. Project cost management
5. Project quality management
6. Project human resource management
7. Project communication management
8. Project risk management
9. Project procurement management

Every successful project incorporates these practices to deliver projects in line with the requirements and satisfaction of clients/customers. Below is a discussion of the practices.

2.5.8 Project Cost Management

The project cost management ensures that the project is completed within the approved budget. Cost management is critical as cost overruns are common and lead to serious cost issues during project execution. Project cost management includes resource planning, costing, cost planning and control, earned value analysis, and depreciation and capital budgeting. There is no cost estimation process at level 1 as the results would be poor and most likely exceed the original budget. At level 2, tools and techniques for informal cost estimation are available. Cost base, resource requirements and work

breakdown plans are defined. At level 3, resource planning and cost estimation work well together and lifecycle costs are used and managed. At level 4, formal resource planning, cost estimation and budgeting processes are integrated. In addition, project participants have great perspectives for different project cost metrics. Level 5 organizations have formal cost-estimation tools and techniques that are optimized and maintained for continuous PM process improvement.

2.5.9 Project Quality Management

Project Quality Management ensures that the project meets or exceeds all activities of the overall management function. It includes an overview of quality concepts, quality costs, statistical process control, variation and measurement as well as quality improvement. At level 1, project overflows and rework are common and expected. There are no quality audits, quality assurance or quality control processes. For quality control, only one on-site inspection is performed. Level 2 organizations have informal quality management systems. Non-compliance issues will only be resolved through inspections and audits if required by a project contract. At level 3, formal quality policies and standards are defined. Quality planning and assurance activities are managed and carried out to find quality problems. At Level 4, the objectives for achieving high quality project management processes and project quality are integrated. Project progress to achieve project quality is quantified, implemented and integrated. At level 5, the quality management system for continuous PM process improvement is optimized and maintained.

2.6 Project Personnel Management

The Human Resource Management project ensures the most effective use of the people involved in the project. It should effectively manage, motivate and organize people. These include the allocation of project roles and responsibilities, reporting on organizational relationships, personnel, motivation, leadership, team development and conflict resolution. Level 1 organizations struggle with the concept of a project-driven organization, which leads to conflicts between functional project managers. Level 2 defines an informal organizational chart and personnel management plan. At level 3, customers and suppliers are often included as members of the project to share teambuilding activities and training. At level 4, improvements in both individual and team skills are integrated to function effectively. The organization is rewarded and recognized by project-oriented teams. At level 5, the HR management system is optimized and maintained for continuous PM process improvement. (McCauley M. 1993)

2.6.1 Project Communication Management

Project communication management ensures timely and adequate generation, collection, distribution, storage and provision of project information. Project success requires open and clear communication between planners, implementers and all levels of the organization. It includes a communication plan, an information distribution path, a progress report and an information sharing system for management and customers. Level 1 organization has no formal project performance reporting systems. Reviewing project performance is often limited to basic status reporting. An appraisal will only take place if required by contract. At Level 2, a system for information gathering and distribution is defined and informal performance reports and reviews are carried out. At level 3 the

project data is managed in a structured format and the project performance data are regularly analyzed, reviewed and revised for project evaluation. Level 4 provides information on scope, timetable, costs, risk, quality, staff and staff

2.7 Successful project implementation

In addition to defining the concept of organizational projects, it is important to describe exactly what a "successful project" is before discussing the steps that will lead to a successful project. Project implementation success has been defined in many ways to accommodate a variety of criteria. In its simplest terms, however, the project's success can be considered as including four fundamental facets. A project is generally considered to be successfully implemented if it does

1. Arrives on schedule (time criterion).
2. Comes in the budget (monetary criterion).
3. Achieves basically all originally set goals (effectiveness criterion).
4. Accepted and used by the clients for whom the project is intended (customer satisfaction criterion).

"By its basic definition, a project has a defined time-to-completion, limited budget, and set of capabilities, and is typically intended for use by an internal or external client of the organization and the project team. It therefore seems reasonable that any assessment of the success of project implementation should include these four measures above (Pinto et al., 1987).

2.8 Project Success Factors

Freeman and Beale (2012) found that project success has different meanings for different people and is very contextual. "Attempting to pin down the success of projects in the project is akin to the consensus of a group of people on the definition of good art" (Jugdev & Muller, 2005).

At the most basic level, the project's success is seen as the timely, cost and quality completing of the project's results (Greer, 1999). As found in early literature and practice, "the Iron Triangle (time, scale, and budget) was a measure of success" (Cooke-Davis, 2002, Hartman, 2000).

Thomsett (2002) extends these success criteria after an in-depth review of 20 failed projects over a 18-year period to "satisfy stakeholders, meet requirements, meet quality expectations / requirements, within cost (paid, unpaid, and business expert costs), within The deadline delivers sustainable and real benefits and provides the team with professional satisfaction and learning "(Thomsett, 2002).

Lim and Mohamed (1999) used the analogy of the forest and the trees to illustrate the difference between the macro and micro aspects of project success. The micro-view deals with the assessment of project management success based on project completion, while the macro-view incorporates the longer-term view of product use for measuring customer satisfaction. The key point is that the decision on whether or not the project was successful could only be made at the operational stage following the handover of the project to the host organization and the receipt of the evaluation report by users and stakeholders. "The work of Lim and Mohammed was of great importance as it pointed to the setting of expectations at the beginning of the project, which helped to align project

performance with expectations so that the work could be directed in this direction" (Jugdev & Muller, 2005).

Project success factors are factors or traits that, if present, increase the likelihood that projects will be successfully implemented (Kerzner, 1997, 2003; Pinto & Slevin, 1987). Kerzner (1987) also defined project success factors as "elements required to create an environment in which projects are consistently managed with excellence".

Greer (1999) states that "planning is everything and continues" and adds "planning and replanning must be a way of life for project managers", and because of the dynamics of many projects, the plan needs to be revised on a regular basis. Planning and controlling the scope of the project is important to avoid higher costs and late deliveries (Butterick, 2000). Well-defined requirements are an important input for the scope management process.

Management of changes in a project is a critical success factor, a formal method for recording change requests, the assessment of the impact of the change on the project and a change approval process need to be controlled (Thomsett, 2002). Risk management in a project is another element of successful projects. Risk management should begin during project planning and identify risks that may cause problems later in the project. Some risks can never be completely eliminated.

2.9 Project life cycle

The idea of a life cycle suggests that a project has a life. This includes a sequence of phases including birth, growth, maturity, aging and death.

The project lifecycle model describes the different phases that a project normally goes through when it comes to a conclusion. The model is based on the idea that although all

projects are different, they all go through similar phases. Each phase completes one phase of the project. (Martin, 2006)

The project cycle also provides a structure to ensure that stakeholders are consulted and relevant information is available throughout the project so that decisions can be made at key stages of a project.

According to (Westland, 2006), the project life cycle consists of four phases as shown in Figure 2.2.



Figure 2.3: Project Life Cycle

2.9.1 Project initiation

The project initiation phase is the conceptualization of the project. Accordingly, the purpose of the project initiation phase is to specify what the project should achieve. Caution in this sense is driven by the needs of the customer when insufficiently worded and poorly worded goals are identified as significant concerns. This starting point is

crucial as it will lead to an agreement on initiation for those who deliver the product / process and for those who use this product / process and those who are involved in the project achieve. (Project Management Methodology, 2004)

The initiation phase is the first phase of a project management lifecycle and the most important phase. During this phase, a business problem or opportunity is identified and a business case is defined that offers several solution options. Next, a feasibility study will be conducted to examine whether each option addresses the business problem and suggests a final recommended solution. Once the recommended solution is approved, a project to deploy the approved solution will start. The project charter will be finalized, setting out the objectives, scope and structure of the new project and appointing a project manager. The project manager starts recruiting a project team and sets up a project office environment. The permit is then requested to enter the detailed planning phase.

2.10 Competencies of the project manager

Lack of project management techniques, ineffective monitoring and evaluation, inadequate feasibility studies were identified in this study as some of the project failure factors. Pinto and Slevin (2008) mention staffing, detailed specification and implementation, timely and comprehensive control as one of the ten factors that influence project management. Andersen et al. (1987) identified project flaws or things the project leaders could or might not do, increasing the likelihood of the project failing. They identified the project manager as part of the case list. Toney (2000) named the project manager as one of the key success criteria. He said that if a wrong person is selected as a project manager, the project has a 50 percent chance.

At present, there is a strong awareness that in addition to technical (engineering and science) skills, management skills in projects are needed. The PMI, PMBOK ® (2008, 4th edition) names the five areas of competence:

1. The project management knowledge society.
2. Scope Knowledge, standards and regulations.
3. Understand the project environment.
4. General management knowledge and skills.
5. Interpersonal skills.

The Project Management Body of Knowledge (PMI, PMBOK®) describes the knowledge that is unique in the field of project management and overlaps with other management disciplines.

Project teams should exhibit the competence areas for the successful management of projects. The project manager also needs the expertise to be managed. Recognizing the emerging PM trends and the fact that the majority of initiatives do not meet all PM objectives, the emphasis on professionalism is of paramount importance. Accordingly, the selection of a project manager should be based on the ability and competence of an individual in the discipline. A project manager with the right ability will have the ability to successfully manage results, in addition to the "specific knowledge of professional" project management techniques. According to Kerzner (2000), the development of PM has changed the skill requirements expected of effective project managers. In the early days of PM, emphasis was placed on technical skills such as traditional PM. Over time, the project teams involve more and more non-technical personnel and behavioral skills are as important as technical skills. During this time, it became clear that an effective

project manager must have a technical understanding rather than a technical expert. The projects became so extensive and complex that it simply was not possible for a project manager to remain a technical expert in all aspects of a project. Project managers spent more time planning, cost control and progress rather than technical guidance. Compared to Kerzner (2000), the PMI (PMBOK, 2008) argues that certain general management skills are the key to the project manager's success. According to PMI (2008), "General Management" is a broad topic that deals with all aspects of managing a running business, and there are certain.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter focused on the research processes and methods used in obtaining data for the research. The research design made up of the sampling and sampling techniques. This chapter made use of data collection tools and procedures as well as the analysis of the information collected and the various forms that the data collected will be presented. The study involved the evaluation of how project management is practiced in GWCL. Consequently, the research was designed to achieve the objectives set out by the researcher.

3.1 Research Design

The study used a survey design. This design was suitable because the study expressed the views or opinions of engineers on some of the project management practices of Ghana Water Company Ltd. wanted to investigate.

To achieve the research goals, a quantitative research approach was chosen. This approach was chosen because the study collected numeric data rather than non-numeric data. A quantitative approach was also appropriate as a questionnaire was used instead of an interview to collect the data in the study.

3.2 Population

The target population was some staff of Ghana Water Company Ltd. The study comprised of the main project engineers in the main head office of GWCL in the Greater Accra region. The target comprised engineers, assistant engineers, divisional engineers

as well as district engineers. A total of 14 Engineers in all based in the head office of GWCL and the project offices were interviewed.

3.3 Sampling techniques or techniques

Sampling determines who will participate in a study. However, it is necessary because you can not usually put everyone into a study. Consequently, you must select a smaller group of participants from the larger population. In sampling there are two types of probability and non-probability samples. This study used a non-probability sampling method, in particular a convenient sample survey, because the population was selected based on the convenience of the researcher. A total of thirteen (13) engineers were selected for the study. The expected 14 sample size was not achieved because one participant declined to participate in the study due to work demands and schedules.

3.4 Data collection

A structured questionnaire, containing both open and closed questionnaires, was used to obtain information from respondents and to manage it by the interviewer. The first part of the questionnaire included background information on respondents such as gender, age, educational background, number of family members, family expenses, etc.

Some of the questions were very specific and contained a fixed range of answers. The structured questionnaire included multiple-choice questions in which the researcher selected a selection of answers and respondents were asked to select one or more of the alternatives and dichotomous questions that have only two answer alternatives, yes or no. In addition, two different types of data were used. These were primary and secondary data. Primary data in this study included data collected through questionnaires and used

for analysis, while secondary data came from the articles, journals and various project management publications that were contacted.

3.5 Research Instrument

The study used a self-report questionnaire to collect data from participants in the study. A questionnaire is designed and used to collect relevant data from the selected sample. The questionnaire is divided into two sections. The department collected information about participants' demographics, such as tenure, position, and number of managed or supervised projects. Section B collected information about GWCL project management practices.

3.6 Data collection procedure

The researcher requested the approval of the head of each district in the Greater Accra region of GWCL by explaining the purpose of the study to the various leaders. This was appropriate, as required by research ethics. Once approved, the investigator would seek the consent of the participants who have agreed to participate in the study before providing them with the questionnaires. Participants would be confident in the confidentiality of the information they provide. The data collection would take a month.

3.7 Data analysis

After collecting the data from the field, they were processed and analyzed as specified in the research plan. The researcher used some statistical tools to analyze the data collected from the field, such as bar charts, tables, and graphs. The collected data was screened, encoded and entered into SPSS version 16.0 for Windows. This software was used to facilitate the data analysis process.

3.8 Company profile

Ghana Water Company Limited was incorporated on July 1, 1999, following the transformation of Ghana Water and Sewerage Corporation into a state-owned limited liability company under the Companies Law Act 461, 1993, as amended by LI 1648.

The first public water supply system in Ghana, then Gold Coast, was founded in Accra shortly before the First World War. Other systems were built exclusively for other urban areas, including the colonial capital of Cape Coast, Winneba and Kumasi in the 1920s.

During this time, the water supply systems were managed by the Department of Public Works Hydraulics. Over time, the responsibility of the Hydraulic Division has been extended to the design of water supply systems in other parts of the country.

Ghana Water Company Limited (GWCL) is an energy company wholly owned by the state. The company is responsible for the drinking water supply of all municipalities in Ghana. GWCL currently operates eighty-eight (88) urban water supply systems across the country. The average production is about eight hundred and seventy-one thousand four hundred and ninety-six cubic meters (871,496 m³) per day (192 million gallons per day). The current drinking water requirement is one million, one hundred and thirty-three.

Governance structure

The Ministry of Water Resources and Housing is responsible for formulating water supply policies, monitoring GWCL operations, raising funds through external support agencies and coordinating investment plans for the sector.

Under the general direction of the ministry, GWCL is headed by a nine-member board of directors, with overall responsibility for setting sector policy and controlling corporate programs. The day-to-day business of the company is managed by a managing director

and two deputy directors, one responsible for operations and the other for finance and administration. The three directors are supported by the directors, 14 at the headquarters and 15 at the regional level. The 15 Regional Chief Managers are supported by district managers who oversee and control GWCL's 75 districts across the country.

The directors of the office are individually responsible for the various departments that run them. These departments are as follows: Project Planning and Development, Human Resources and Administrative Services, Legal Services, Business Planning, Geographical Information System, Finance, Materials, Audit, Business Development, Water Resources, Water Quality Assurance, Land and Assets, Commercial and Public Relations.

Vision

To be a world class utility company.

Mission

GWCL is committed to meeting the growing demand for better service delivery by efficiently managing the core business of drinking water and customer management production and distribution in Ghana's urban areas.

Core values

Quality and excellent customer service

Urgency in the provision of services

Continuous improvement and innovation.

Health and safety of those involved

High ethical and professional standards

Core business

Abstraction, treatment and supply of water in urban communities in Ghana

Planning and development of the urban water sector

investment planning

Sector Financial Management

Contracting the planning, construction, rehabilitation and extension of existing and new

water supply infrastructures;

asset management

CHAPTER FOUR

RESULTS and Discussion

4.1 Introduction

This chapter deals with the presentation, analysis and interpretation of the findings on examining the project management practices at the Ghana Water Company Limited (GWCL). This was achieved using the company's balance sheet and self-administered questionnaire to identify the problem.

Microsoft Office Excel package was used for diagrams, graphs and word processing of the research report. Results obtained from the field were put in tables and graphs. Thus, pie charts and bar charts graphically presents the findings while tables present the numerical values of the variables.

The analysis was done through descriptive statistics and findings were presented in form of frequency tables and percentages. The discussion of the outcomes is based on the outputs from Statistical Package for Social Sciences (SPSS) version 17. A total of 80 questionnaires were duly filled and returned out of the 120 distributed. This represents response rate of 66 % which falls within accepted limits.

4.2 Demographic Characteristic on Respondents

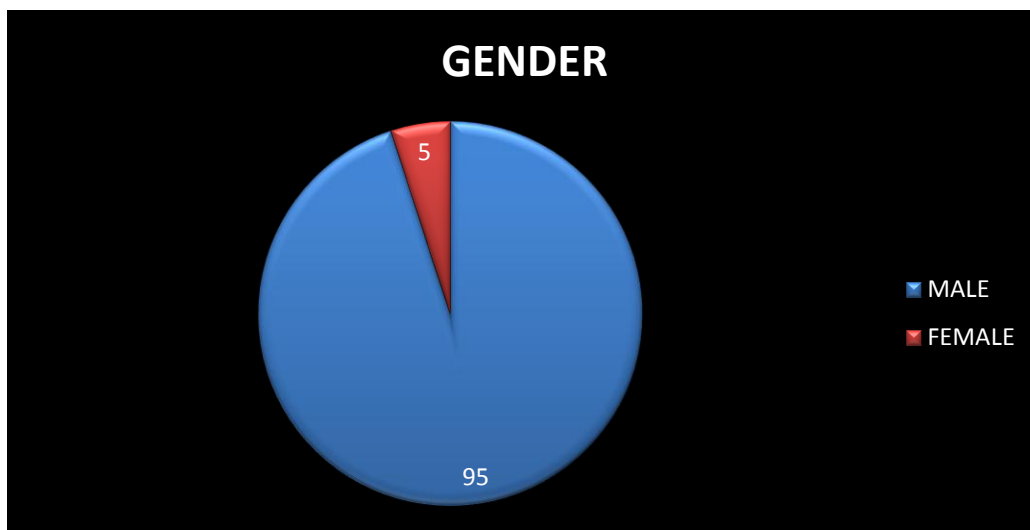
The demographic characteristics of respondents in this section include gender, age, education levels, number of year's worked and marital status.

4.2.1 Gender of Respondents

Table 4.1: Gender Profile of Respondents

GENDER	FREQUENCY	PERCENT
Male	76	95
Female	4	5
TOTAL	80	100

(Source: Field Data, 2018)



(Source: Field Data, 2018)

Figure 4.1: Pie Chart of the Gender Profile of Respondents

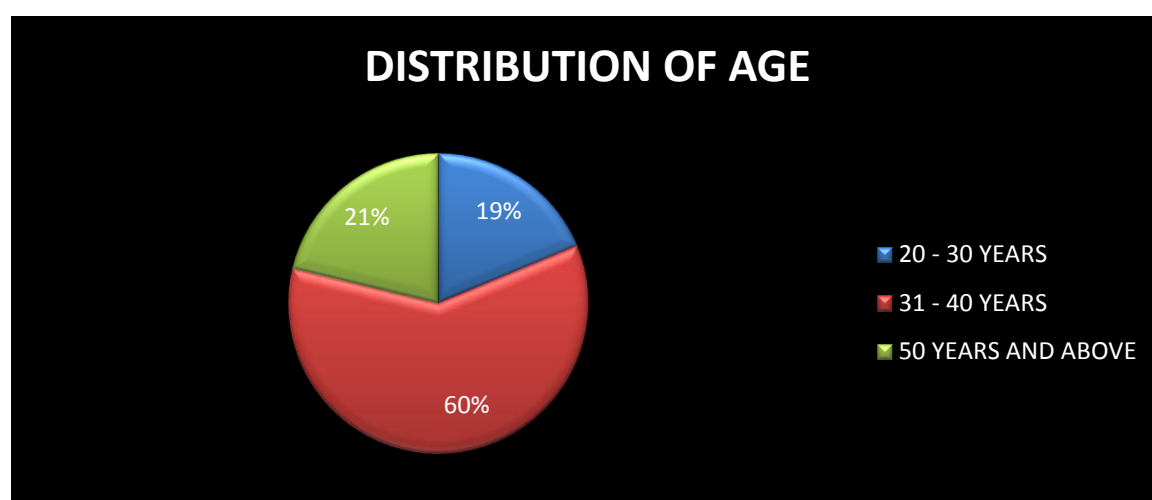
From *Table 1* and *Figure 1* above, 95% of the respondents were male, while 5% were Female. This implies there more male employees than female employees were used as respondents for this study

4.2.2 Age Distribution of Respondent

Table 4.2: Age of Respondents

AGE	FREQUENCY	PERCENT
20-30 years	15	18.75
31-40years	48	60
Above 50 years	17	21.25
TOTAL	80	100

(Source; Field Data, 2018)



(Source: Field Data, 2018)

Figure 4.2: Pie Chart of the Age Profile of Respondents

From *Table 2* and *Figure 2* above, it is an indication that the biggest numbers of respondents were in the age bracket of between of 31-40 years represented by 60% of the total respondents. 18.75% were in the age bracket of 20-30 years and 21.25% of the respondents were above 50 years. This implies that GCWL has employed more matured employees who are experienced.

4.2.3 Education Level

Table 4.3: Educational Level of Respondents

EDUCATIONAL BACKGROUND	NUMBER OF RESPONDENTS	PERCENTAGE (%)
Higher National Diploma	38	47.5
First Degree	29	36.25
Masters Degree	5	6.25
Other Levels of Education	1	1.25
TOTALS	80	100

(Source; Field Data, 2018)

This section gave the educational attainments of the respondents within the studied population. The educational background ranged from, Higher National Diploma (HND; being the least), First Degree to Masters' Degree (being the highest) and other levels of educational qualification.

Out of the 80 respondents (*Table 3 and Figure 3*), 5 of the respondents, representing 6.25% have Masters' Degrees; 38 of the respondents, representing 47.5% have Higher National Diploma (HND), 29 of the respondents, representing 36.25% First Degrees and 1 respondent, representing 1.25% as educational qualification.

The majority had HND and this implies that GWCL employs more workers with HND qualification than those with lower education.

4.2.4. Job Title Distribution

Table 4.4: Job Title Distribution of Respondents

Job Title	Frequency	Percentage (%)	Cumulative (%)
District Manager	5	5.3	5.3
Plant Maintenance Manager	8	8.5	13.8
Project Manager	17	28.7	42.5
Civil Engineer	23	24.5	67
Chief Manager, Project Planning and Development	27	33.0	100.0
Total	80	100.0	

(Source: Field Data, 2018)

4.3 Project Management Tools and Techniques Used

4.3.1 Project Management Technique Employed

Table 4.5: Project Management Technique

CATEGORY	PERCENTAGE	95% CONFIDENCE INTERVAL
Work Breakdown Structure	26	7.6 – 36.4
Statement of Work	30	15.1 – 46.3
Critical Path Method	3	0.0 – 9.4
Project Sensitivity Analysis	6	0.0 – 12.1
PRINCE 2	-	-
Gantt Chart	64	52.4 – 83.6
Cost benefit Analysis	58	36.6 – 71.5
Programme Evaluation and Review Technique	-	-
Graphical Evaluation and review Technique	-	-
Project Management Software	18	4.2 – 29.5
Other decision Making Technique	13	3.4 – 21.7

Source, Field Data, 2018

The analysis of table 5 above shows that Gantt chart is the most frequently used tools with 64%, Cost Benefit Analysis 58%, Statement of Work 30%, Work Breakdown Structure 26%, project management software (18%), and other decision making techniques 13%. Project Sensitivity Analysis, PRINCE 2, PERT and CPM, GERT are some of the rarely used or not employed tools by the agencies.

Havranek (2009) defined project management tools and techniques as "the art and science of planning, organizing, integrating, directing and controlling all committed resources throughout the life of a project to achieve the predetermined objectives of scope, quality, cost and customer satisfaction". To this end, it can be seen that project management tools and techniques are still not well implemented in GWCL.

According to (PMI, PMBOK®, 2008) PM has over 500 known Tools and Technique. These Tools and Techniques are applied to Project Management Processes. The Project Management System is defined as "an aggregate of the processes, tools, techniques, methodologies, resources and procedures needed to manage a Project" (PMBOK®, 2008). Kerzner (2003) emphasized the importance of Project Management Tools by including it as one of the key components of a Project Management

4.4 Benefits Associated with the Tools and Techniques Used

Table 4.6: Benefits of Project Management Tools and Techniques Used

PERCEIVED BENEFIT	PERCENTAGE	95% CONFIDENCE INTERVAL
Better Communication	67	57.7 – 96.1
Good management Resources	63	55.4 – 84.7
Known Work progress	73	52.6 – 88.7
Defined goals and objectives	55	32.5 – 72.9
Better quality	58	34.6 – 75.6
Better work organization	52	31.3 - 67.2
Better time utilization	60	42.8 – 77.5

Source, Field Data, 2018

Perceived benefits of employing project management tools and techniques were examined in Table 10. All the respondents believed that if PM tools and techniques are well applied, it would lead to reduction in cost and time overruns and more project success. As revealed by Table 10, 75% believed that it would afford the opportunity of tracking the project progress, 67% believed that it would enhance better communication, while 61% perceived that PM tools would lead to good management of resources. Other benefits stated by the respondents are; better work organization, defined goals and objectives, better time utilization and better quality. This is in line with the study of Abbasi and Al-Mharmah (2000) that discovered that among other benefits, knowing work progress and having better work organization are highly perceived benefits of PM tools and techniques application.

4.4.1 Factors that Contribute to Benefits of Project Management Tools and Techniques

Factors that contribute to the benefits of project management tools and techniques were explored. A number of factors were reported by respondents as contributing to the success of projects. The analysis showed that, executive management support and adequate communication channels contributed significantly to project success while realistic expectations contributed less to success.

This can be seen in the work of, Freeman and Beale (2012) who stated that the benefits of project management tools and techniques has different meanings to different people and it is very context dependent. "Trying to pin down what benefits tools and techniques means in the project context is akin to gaining a consensus from a group of people on the definition of good art" (Jugdev & Muller, 2005).

4.4.2 Executive Management Support

Regarding executive management support, the majority of respondents expressed agreement that it contributed to project success (69.23%) with 30.77 percent strongly agreeing with the statement. This shows that, all respondents found management support as a critical factor in project success.



Figure 4.3 Executive management support

4.4.3 Adequate Communication Channels

In relation to project success, adequate communication was found to impact significantly to success. Most of the respondents agreed that (69.23%) adequate communication channel was an important factor in project success while 30.77 percent expressed strong agreement with the statement.

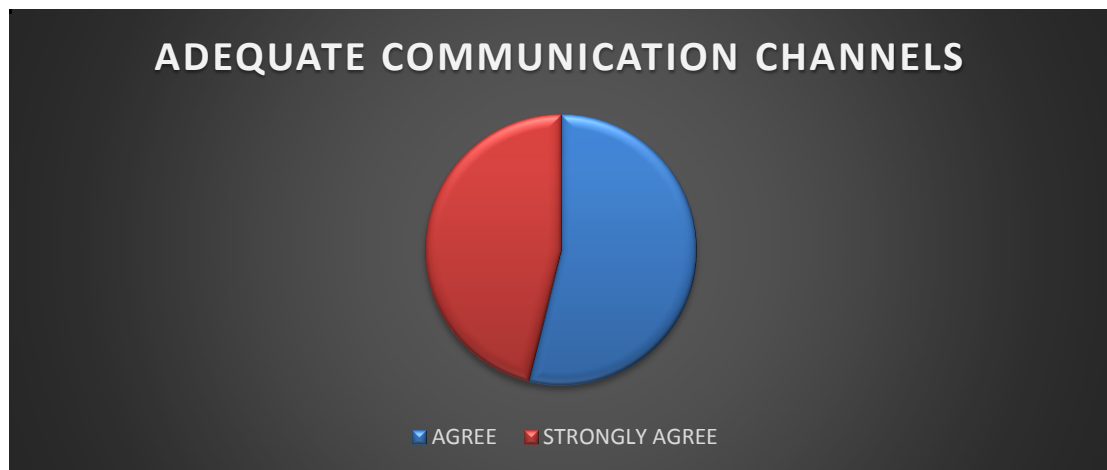


Figure 4.4 Adequate Communication Channels

4.4.4 Proper Planning

In terms of project success, the majority of respondents agreed that (46.15%) that proper planning was a significant factor. Similarly, 46.15 percent expressed strong agreement that proper planning significantly accounted for project success in GWCL. However, 7.69 percent of respondents expressed uncertainty. This means that some respondents were not sure whether the success of projects was accounted for by proper planning or not.



Figure 4.5 Proper Planning

4.4.6 Realistic Expectations

It was also observed that, realistic expectations impacted on project success. Whereas 38.46 percent of respondents expressed agreement about the contribution of realistic expectations to project success, 30.77 percent expressed strong agreement about the contribution of realistic expectations. However, some respondents were not sure of the contribution of realistic expectations to project success (23.08%) while 7.69 percent expressed disagreement with the statement.

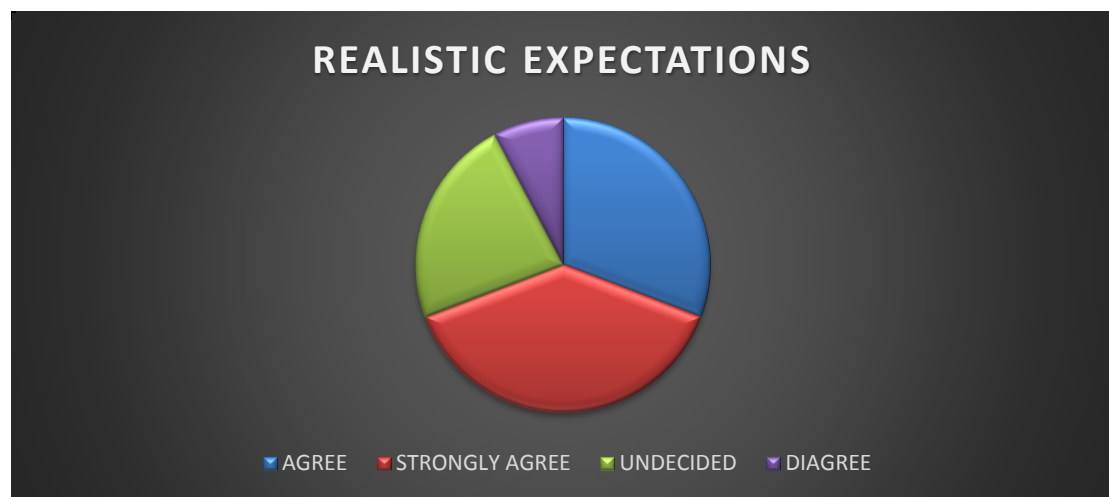


Figure 4.6 Realistic Expectations

4.4.6 Sufficient Resource Allocation

Project resource allocation significantly accounted for project success. Most of the respondents expressed strong agreement that sufficient resource allocation accounted for process success (46.15%) with 38.46 percent agreeing with the statement. However, 7.69 percent of respondents expressed disagreement with the statement while another 7.69 expressed uncertainty about the contribution of allocation of sufficient resources to project success.

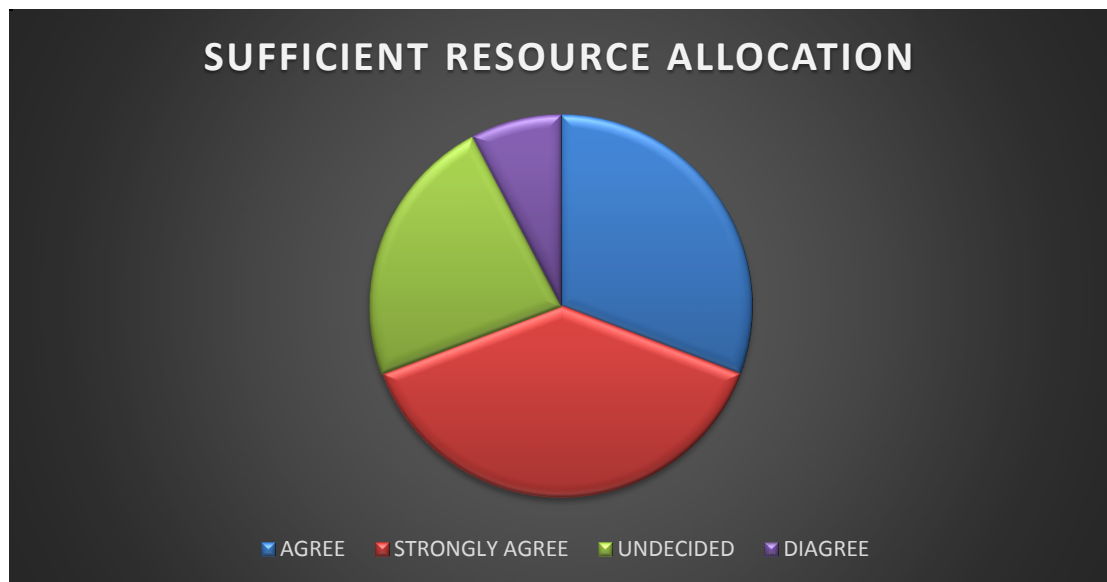


Fig. 4.7 Sufficient resource allocation

4.4.7 Competent Project Team Members

The contribution of project team to project success was also explored. The study found that, the availability of competent project team members was a critical factor to project success. 53.85 percent of respondents expressed strong agreement that competent project team members determined project success while 30.77 percent also endorse the issue. However, 7.69 percent expressed contrary views while 7.69 percent were not sure of the contribution of competent project team members to project success.

This is in line with the study by Ibbs and Kwak (2002), who said project team members ensures completing a project on time, which is one of the major challenges for any project manager or organizations involved in projects. Time management in projects includes defining activity and sequence, duration estimation, schedule development, and schedule control. Resource allocation and leveling, network crashing, and fast tracking of projects are used to effectively manage the project schedule

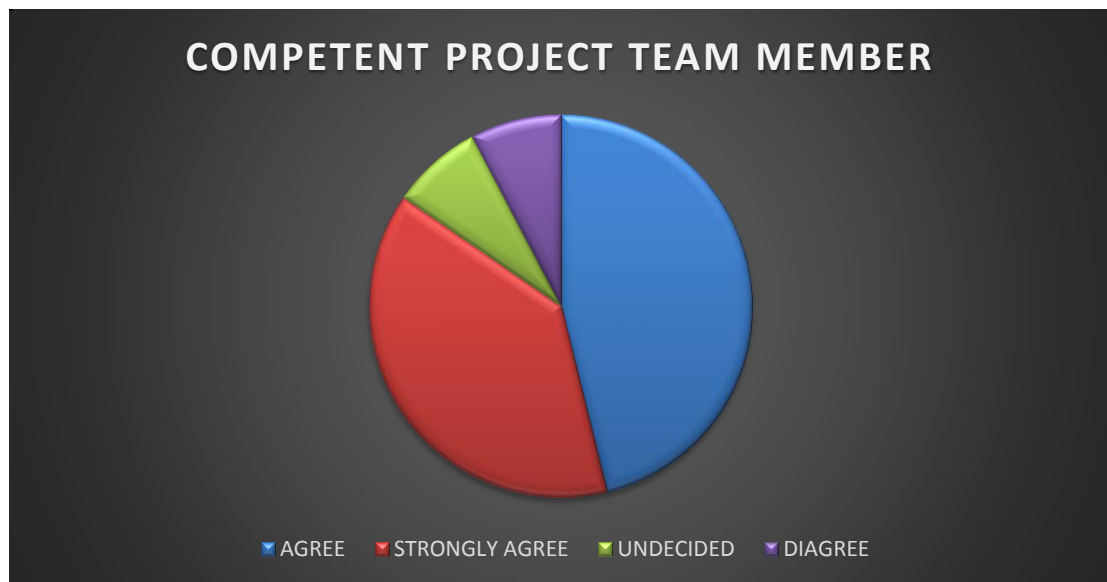


Fig. 4.8 Competent Project Team member

4.4.8 Control Mechanisms

The majority of respondents agreed that control mechanisms significantly resulted in project success (46.15%) with 23.08 percent expressing strong agreement with the issue. However, 23.08 percent expressed uncertainty about the contribution of control mechanisms to project success while 7.69 percent of them disagreed with the impact of control mechanisms on project success.

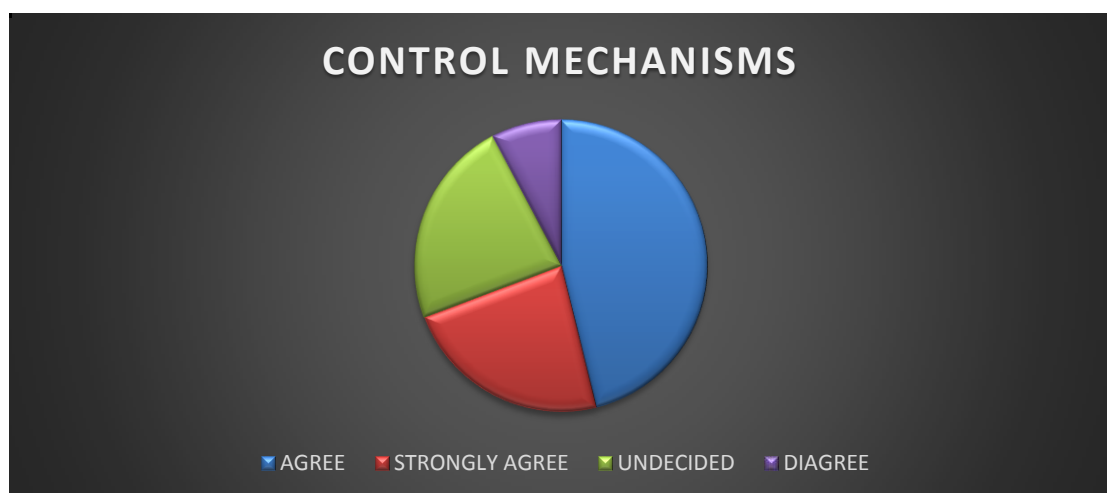


Fig. 4.9 Control Mechanisms

4.5 Obstacles on the Use of Project Management Tools and techniques

Table 4.7: Obstacles in the Application of PM Tools and Techniques

OBSTACLES	PERCENTAGE	95% CONFIDENCE LEVEL
Lack of expertise	66	49.2 – 75.8
Weak interface with customers	40	22.4 – 57.6
High cost of application	83	57.3 – 79.7
Difficulty in modelling real world	52	32.1 – 69.5

Source, Field Data, 2018

Table 7 revealed that high cost is the major obstacles observed in application of PM tools and techniques. Other obstacles observed by the respondents are; lack of expertise, weak interface with customers and difficult to model real world.

Form the observations made in the study, lack of project management techniques, ineffective monitoring and evaluation, improper feasibility study were identified in this study as some of the obstacles on the use of project management tools and techniques. Pinto and Slevin (2008) mention personnel, detailed specification and implementation, timely and comprehensive control as among the ten factors which affect project management. Andersen et.al (2012) identified the obstacles or things that the project management tools and techniques might do or not do which increase possible chance of failure of project.

4.5.1 Correlation Coefficients

Table 4.8: Correlation of Coefficients

CATEGORY	APPLIED PM TOOLS AND TECHNIQUE	OBSTACLES	PERCEIVED INTEREST
Type of business	0.365	0.481	0.375
Cost of implementation	0.435	0.361	0.257
Age of the firm	-0.453	0.425	0.361
Employee experience	0.621	0.583	0.232
Government commitment	-0.532	-0.485	0.379
Total number of employee	0.524	0.427	0.386

Source, Field Data, 2018

Correlation coefficients among different factors that could affect the level of application of PM tools and techniques, the obstacles, and the perceived benefits were analysed and shown in Table 8. Some of the factors considered are; type of business, cost of application, age of the agency, employee experience, government commitment and total number of employees. The result indicated that age of the agency and government commitments have negative correlations with applying PM tools, obstacles and perceived benefits. Therefore, it can be inferred that old government institutions such as GWCL are still resisting the application of PM tools and techniques; also the government

is not doing enough in entrenching the tools and techniques of PM in most of its institutions.

4.6 Strategies to Improve Project Management Tools and Techniques

To strategies for an improved project implementation, it has to go through the under listed five phases. The study sought to determine the extent to which this was applicable in GWCL. The views of respondents were sought regarding each of the phases. As shown in the tables below, GWCL fully adopted and implemented the initiation and execution phases while the planning, monitoring and closing were not always entirely implemented as strategies to improve on the project management tools and techniques. Specifically, all the respondents surveyed (n=13) indicated that the initiation process (100%) and the execution (100%) processes of project management were fully strategies by GWCL.

Table 9: Initiation Process

CATEGORY	FREQUENCY	PERCENTAGE (%)
Yes	80	100
TOTAL	80	100

Table 10: Execution Process

CATEGORY	FREQUENCY	PERCENTAGE (%)
Yes	80	100
TOTAL	80	100

Regarding the other three phases namely; planning, monitoring/control and closing phases, it was observed that respondents did not endorse complete implementation by GWCL.

Regarding planning, 76.9 percent (n=10) reported that it was implemented with 23.1 percent (n=3) expressing different opinions.



Figure 4.10 Planning process

Further, it was observed that, while the majority (76.9%) indicated that as part of project management of the Company, monitoring and control processes were implemented, 23.1 percent (n=3) indicated otherwise.

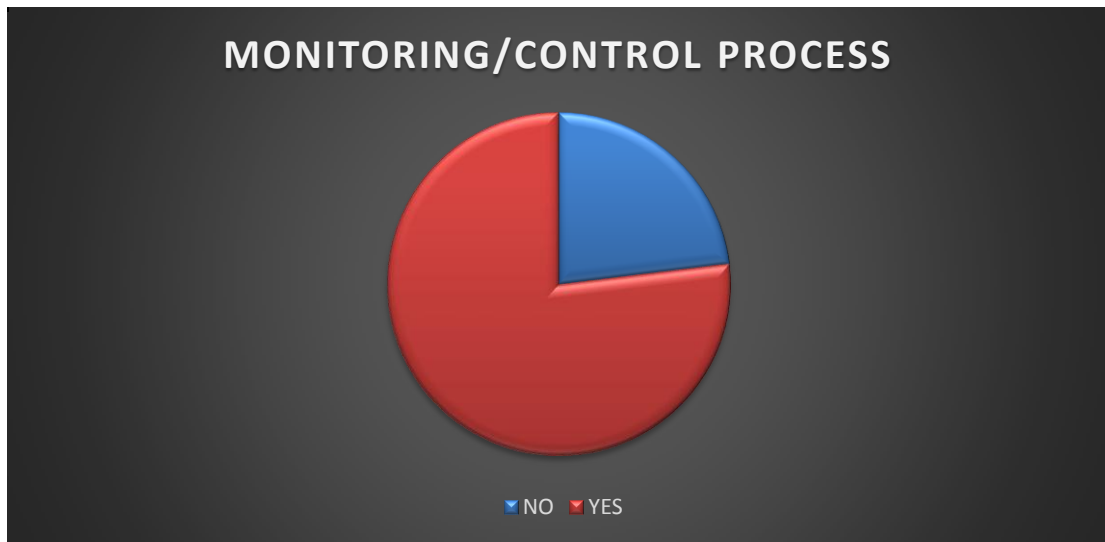


Fig. 4.11 Monitoring/Control process

Finally, it was revealed that, the closing phase was mostly implemented. 92.3 percent of respondents reported that, GWCL implemented the closing phase of project management while 7.7 percent (n=1) said this phase is not implemented.

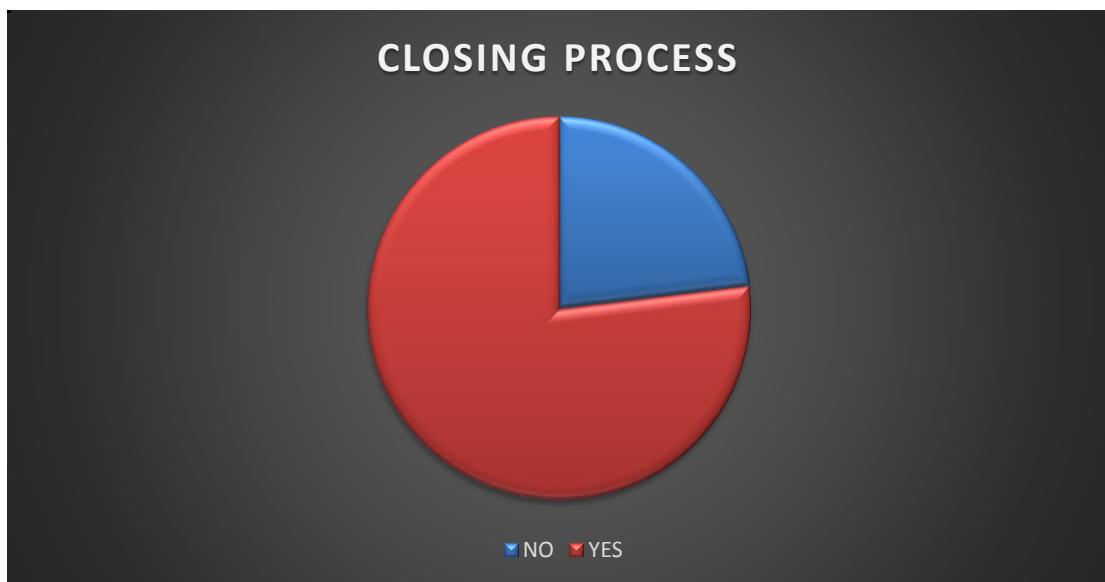


Fig. 4.12 Closing Process

Following from the above analysis, it can be said that GWCL, adopts and implements project management practices such as initiation, planning, and execution, monitoring/control, and closing processes though planning, monitoring and closing phases were sometimes not implemented.

4.7 Descriptive Analysis

This was used to examine the relationship of variables using mean and standard deviations of the dependent and independent variables.

4.7.1 Critical Success Factors – Project Manager Related

From the table below, twelve (12) factors were identified to be Project Manager Related elements that affect the success of projects at GWCL. Among these factors, ‘Project Manager’s Authority to Take Day-to-day Decisions was ranked first (1st) with the overall mean score of 4.4574. This was followed by ‘Project Manager’s Competence,’ ranked 2nd with mean value of 4.3830, ‘Organizing Skills of Project Manager’, ranked 3rd with the mean value of 4.3511, ‘Project Manager’s Commitment to Meet Quality, Cost and Time’, ranked 4th with mean value of 4.1277, Project Manager’s Experience was ranked fifth (5th) with a mean value of 4.0851. Leadership Skills of Project Manager and Coordinating Ability and Rapport of Project Manager with Owner/ Owner Representatives were ranked sixth (6th) and seventh (7th) with mean values of 4.0319 and 4.0106 respectively. Project Manager’s Authority to Take Financial Decision ranked 8th with mean value of 3.9149, ‘Project Manager’s Adaptability to Changes in Project Plan,’ ranked 9th with mean value of 3.8402, ‘Motivating Skills of Project Manager’, ranked tenth (10th) with the mean value of 3.8296. Finally, Coordinating Ability and Rapport of Project Manager with Owner/ Owner Representatives and Technical

Capability of Project Manager were ranked eleventh (11th) and twelfth (12th) with mean values of 3.7979 and 3.6596 respectively.

This indicates that project manager factors are crucial ingredients for the successful completion of a project, his competence affects planning and scheduling of the work.

Table 4.11: Mean Score Ranking of Critical Success Factors – Project Manager

Related

Critical Success Factors – Project Manager Related	Total(N)	$\sum W$	Mean ($\sum W/N$)	RII	Ranking
Project Manager's Competence	94	412	4.3830	0.8766	2nd
Project Manager's Experience	94	384	4.0851	0.8170	5th
Project Manager's Authority to Take Day-to-day Decisions	94	419	4.4574	0.8915	1st
Technical Capability of Project Manager	94	344	3.6596	0.7319	12th
Leadership Skills of Project Manager	94	379	4.0319	0.8064	6th
Organizing Skills of Project Manager	94	409	4.3511	0.8702	3rd
Project Manager's Authority to Take Financial Decision, Selecting Key Team Members, etc.	94	368	3.9149	0.7830	8th
Coordinating Ability and Rapport of	94	357	3.7979	0.7595	11th

4.7.2 Critical Success Factors – Business and Work Environment Related

From table 4.13 below, Seven (7) factors were identified to be Business and Work Environment Related elements that affect the success of projects at GWCL. Among these factors, ‘Political Environment’ was ranked first (1st) with the overall mean score of 4.2979. This was followed by ‘Commitment of all Parties to the Project,’ ranked second (2nd) with a mean value of 4.2234, ‘Economic Environment,’ ranked third (3rd) with mean value of 4.1064, ‘Physical Work Environment’, ranked fourth (4th) with mean value of 4.0745, ‘Adequacy of Funding’, ranked fifth (5th) with mean value of 4.0638. Technology Availability and Human Skill Availability were ranked sixth (6th) and seventh (7th) with mean values of 3.9362 and 3.7234 respectively.

The environmental factors affect the project success as well as the level of technology which has external influence on the process.

Table 4.12: Mean Score Ranking of Critical Success Factors – Business and Work Environment Related

Critical Success Factors – Business and Work Environment Related	Total(N)	$\sum W$	Mean ($\sum W/N$)	RII	Ranking
Economic Environment	94	386	4.1064	0.8213	3 rd
Political Environment	94	404	4.2979	0.8596	1 st
Physical Work Environment	94	383	4.0745	0.8149	4 th
Commitment of all Parties to the Project	94	397	4.2234	0.8428	2 nd
Adequacy of Funding	94	382	4.0638	0.8128	5 th
Technology Availability	94	370	3.9362	0.7872	6 th
Human Skill Availability	94	350	3.7234	0.7447	7 th

Source, Field Data, 2018

4.8 Success or Failure rate of Projects.

The study sought to determine whether the adoption of project management processes led to project success or failure of GWCL. The study found that, projects were successful when the processes such as initiation, planning, execution, monitoring/control and closing were adopted and implemented. Specifically, success rate of more than 75 percent (61.54%) and between 51 and 70 percent success rate respectively were accomplished when project management processes were adopted and implemented. This implies that, the adoption of process management processes would always produce an above average performance or success rate.

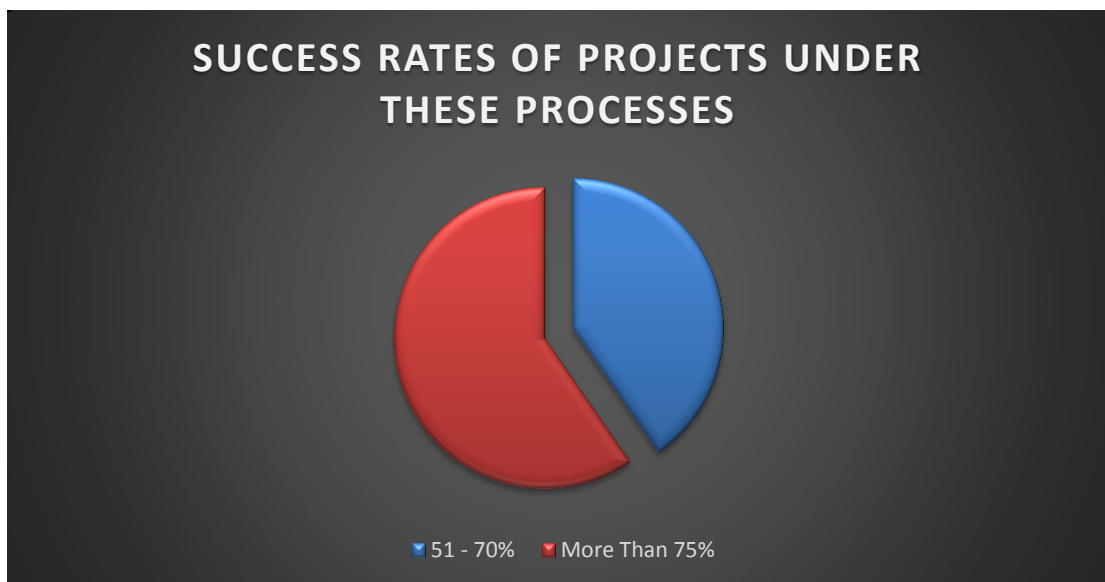


Figure 4.13 Success rates of projects under the PM Processes.

It was however observed that, projects suffered when project management processes were not adopted. The success rates of projects executed without these processes were far below those executed with the adoption of project management processes. The study found that the success rate of more than 75 percent (8.33%) was smaller when the processes were not adopted than when the processes were adopted (61.54%). In addition,

the success rates of projects when project management processes such as initiation, planning, execution, monitoring/control and closing were not adopted less than 25 percent (50%) and between 21 and 50 percent (41.67%) respectively. This shows that, the adoption of project management processes significantly increase the success rates of projects than when those processes are not adopted.

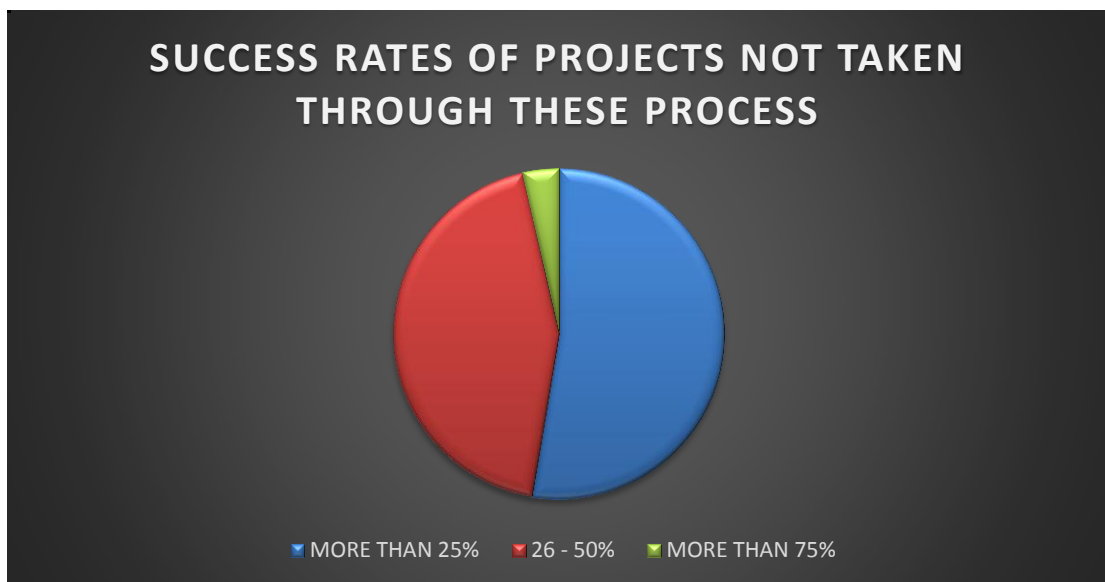


Figure 4.14 Success rates of projects not taken through PM processes

4.9 Ratings of Project Success within the last three years

It was realized that, project success generally ranged from good to excellent with most of the projects executed within the last three years rated as very good (53.85%). In addition, 30.77 percent of some of the projects were rated as good while very few were rated as excellent (15.38%).



Fig. 4.15 Rating of success of projects executed within the last three years

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This chapter summarizes the results of the study, the conclusion drawn from the study, and the recommendations that have been made to address the issues raised. The study examined project management practices at Ghana Water Company Limited, headquartered in Accra. In line with this main objective, the study looked at four specific objectives. These were: to determine whether GWCL applies project management practices in the implementation of projects; to examine the processes used in the implementation of GWCL projects; to identify the success rate of projects in GWCL; and to determine the various project management techniques used in GWCL. The results of the study support the investigated research goals. Below is a summary of the main findings in line with the research objectives:

1. Introduction of project management practices in the implementation of projects.

The first objective of the study to determine whether GWCL applies project management practices to the execution of projects has been achieved. The study found that project management practices such as initiation; Planning, execution, supervision / control and completion were undertaken by GWCL in the implementation of their projects. Similarly, it was found that the various activities in each of the five phases were respected by society.

2. Processes in the implementation of projects

The study also showed that the project management processes were taken over by initiation, planning, execution, monitoring and control and completion in the implementation of projects in GWCL. It has also been shown that the various activities in each of the five phases have been followed by society.

3. Success rate of projects

The third objective, which was to determine the success rate of projects after the introduction of project management practices, was supported. In particular, it was found that the success rate of projects in the implementation of project management processes was more than 75%, compared to the success rates of 25 to 50%, if such processes were not accepted.

4. Causes of project failure

Finally, the study found that a number of factors were responsible for the failure of GWCL projects. In particular, lack of management support and commitment, lack of planning, lack of control mechanisms, lack of sufficient project resources and inadequate communication were blamed for the failure of GWCL projects.

5.2 Conclusion

From the summary of the results of the study, as outlined above, some conclusions can be drawn from the analysis. The results indicate that the use of PM tools and techniques in public institutions in Ghana has become an important issue due to their successful application in private organizations and their demonstrated effectiveness and flexibility in achieving the project's objectives. Due to its nature as commercial capital and megacity of the country, Accra is experiencing unprecedented capital projects in all facets of developments that require better application and use of efficient and effective management tools and techniques. Examining the use of PM tools and techniques in GWCL would serve as an eye-opener for government and other policy makers to better plan their efforts to use PM tools and techniques efficiently. Properly applied, PM tools and techniques would provide tangible benefits in all aspects of project planning, planning, and control of costs, time, and quality.

The educational attainment of respondents indicated that the majority of respondents in the sample are well-educated and provide a sound basis for better use and application of PM tools and techniques. Gantt charts, WBS, and CBA are some of the respondent's PM tools and techniques used because of their simple and understanding nature, however, the lack of in-depth knowledge of these tools and techniques still remains a crucial obstacle to the application.

In terms of perceived benefits, there is a consensus that the efficient use of PM tools will help with project tracking, better communication, better resource utilization and better quality. The disadvantages in terms of high costs, lack of PM expertise and difficulties in real modeling are mentioned by respondents.

To address the drawbacks, respondents argued that the employee should be adequately trained in the art of the PM, that PM professionals should be employed, and that project management offices should be set up in government institutions

5.3 Recommendations

Based on the study results, the researcher recommended the following measures for the proper application of PM tools and techniques in GWCL and state-owned enterprises in general;

- (i) A compatible organizational form should be chosen (matrix or purely projected) to reconcile the use of PM tools and techniques with the culture and political environment of the governmental institutions.
- (ii) Project management tools and techniques should be applied gradually, especially in old government institutions where resistance to change is considered high. Drastic application should be avoided to avoid disruptive

changes such as power struggles and the loss of job management embarrassment (Struckenbruck & Zomorrodian, 2014).

- (iii) The Government should increase its involvement in the use of PM tools and techniques throughout its project. The bureaucracy that has established itself in all state-owned enterprises should be controlled in all government projects so as not to become inefficient and unproductive.
- (iv) As suggested by respondents, project management offices should be established in all government institutions to manage, monitor and control the projects initiated by their institution. This will improve the efficient and effective use of PM tools and techniques.
- (v) Appropriate PM training should be given to the project manager; This would increase employees' knowledge about various PM tools and techniques available for proper selection. PM professionals should also be involved in the proper and appropriate use of PM tools and techniques.
- (vi) Finally, the proper use of PM instruments and techniques can serve as a vehicle for change. It can be a wonderful training ground for future managers and professionals and an effective way to bring about administrative reforms in public institutions.
- (vii) The Company should make a conscious effort to set up a project management office with well-trained professional project managers and team members who can successfully implement the company's projects.
- (viii) The company should clearly separate its project activities from the operations and project team members of the project team in order to ensure effective implementation of all projects leading to a high success rate of its projects.

5.4 Areas of further studies

This research has attempted to close the gap between existing literatures, but it also has its own limitations and these limitations may be addressed by researchers in the future.

Accordingly, the study is limited to the sample of GWCL. In addition, further research on the effective implementation of project management among project stakeholders for the management of state-owned enterprises in Ghana can be carried out.

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APPENDIX

APPENDIX 1: QUESTIONNAIRE

This questionnaire is part of a dissertation research project conducted by Anita Yeboah, a final year MSC Project Management student of Kwame Nkrumah University of Science and Technology, Institute of Distance Learning currently undertaking a research on examining the project management practices at the Ghana Water Company Limited. The study is in partial fulfillment of the academic requirements for a Master's degree in Project Management. The questionnaire is purely for Academic purpose and the information provided shall be treated with utmost confidentiality. I kindly request you to spare a few minutes and fill this questionnaire as genuinely as possible.

INSTRUCTION: Please fill the spaces provided. Mark (✓) where applicable and specify where necessary.

SECTION A. RESPONDENT DEMOGRAPHY

1. Sex: a. Male [] b. Female []
2. Age: a. 20 – 30 years [] c. 31 – 40 []
b. 41 – 45 years [] d. 46 years and above []
3. Department:
4. Role:
5. Marital Status: a. Single [] b. Married [] c. Widowed []
d. Divorced [] e. Other (Please Specify):
6. What is your higher level of education? Please select the most appropriate.
a. HND [] Graduate Degree []
c. Post Graduate Degree [] d. Other (Please Specify)

SECTION B: PROJECT MANAGEMENT TOOLS AND TECHNIQUES

In your experiences, which of the following project management tools and techniques are frequently used in your institution in Ghana? Please indicate YES if you use it and NO if you don't use it.

Tools and Techniques Used	YES	NO
Work breakdown structure		
Account of work		
Critical Path Method		
Project Understanding Analysis		
PRINCE 2		
Gantt Chart		
Cost benefit Analysis		
Programme Evaluation and Review Technique		
Graphical Evaluation and review Technique		
Project Management Software		
Different decision Making Technique		

SECTION C: BENEFITS ASSOCIATED WITH PROJECT MANAGEMENT

TOOLS

In your experiences, which of the following factors are crucial benefits of the above project management tools and techniques used in Project Management in Ghana? Please indicate the level of severity each factor has on the development of professional project management by ticking the appropriate boxes using a scale of 1 to 5, where **1= Strongly Disagree**, **2 = Disagree**, **3 = Undecided**, **4 = Agree**, **5 = Strongly Agree**.

FACTORS	1	2	3	4	5
Executive Management Support					
Adequate communication channels					
Proper planning					
Realistic expectations					
Sufficient Resource Allocation					
Competent project management team members					
Control mechanism					

**SECTION D: OBSTACLES ASSOCIATED WITH THE USE OF PROJECT
MANAGEMENT TOOLS**

In your experiences, which of the following factors are crucial obstacles of the above project management tools and techniques used in Project Management in Ghana? Please indicate the level of severity each factor has on the development of professional project management by ticking the appropriate boxes using a scale of 1 to 5, where **1= Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, 5 = Strongly Agree.**

FACTORS	1	2	3	4	5
Absence of expertise					
Weak interface with clients					
High rate of tender					
Struggles in exhibiting real world.					

SECTION E: CRITICAL SUCCESS FACTORS – PROJECT MANAGER

RELATED

To what extent do you think the following Critical Success Factors influence Project Management Practices?

PROJECT MANAGEMENT PRACTICES	1	2	3	4	5
Project Manager's Competence					
Project Manager's Experience					
Project Manager's Authority to Take Day-to-day Decisions					
Technical Capability of Project Manager					
Leadership Skills of Project Manager					
Organizing Skills of Project Manager					
Project Manager's Authority to Take Financial Decision, Selecting Key Team Members, etc					
Project Manager's Adaptability to Changes in Project Plan					
Project Manager's Commitment to Meet Quality, Cost and Time					

SECTION F: CRITICAL SUCCESS FACTORS – BUSINESS AND WORK

ENVIRONMENT RELATED

To what extent do you think the following Critical Success Factors influence Business and Work environment?

Critical Success Factors	1	2	3	4	5
Political Environment					
Economic Environment					
Physical Work Environment					
Adequacy of Funding					
Technology Availability					
Human Skill Availability					

SECTION G: (OPEN ENDED QUESTIONS)

Is there a project management process in existence?

What is the scope of the project?

What project phases are put in place?

Upon the undertaking of projects, is there further delegation of tasks?

Who is responsible for the realization of project objectives?

Which processes of project management currently exist?

Thank you very much for filling out this questionnaire, your help is appreciated.

APPENDIX 2: INTERVIEW GUIDE FOR REGIONAL ENGINEERS

The purpose of this questionnaire is to support an academic study aimed at examining the project management practices at the Ghana Water Company Limited. Please answer as candidly as you can.

1. What project management tools and techniques do you use?
2. What are some of the factors that contribute to the benefits of project management tools and techniques?
3. Are those in charge of decision making contribute to project accomplishment?
4. What are the adequate communication channels employed by GWCL?
5. Is the proper planning for project success significant?
6. Does realistic expectations impact on project success?
7. Is project resource allocation significant in accounting for project success?
8. Do control mechanisms significantly result in project success?
9. What are some of the correlations between project management tools and techniques and the obstacles faced at GWCL?
10. How would you generally range project success from good to excellent with most of the projects executed within the last three years?
11. Do projects suffer when project management processes are not adopted?