ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

FACTORS DETERMINING THE SUCCESS OF CONSTRUCTION OF CONDOMINIUM PROJECTS: A CASE STUDY OF BOLE ARABSA Vs BOLE BULBULA SITE

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MA PROGRAM

JUNE, 2018

ADDIS ABABA, ETHIOPIA

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“A PROJECT SUBMITTED TO ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER IN PROJECT MANAGEMENT”

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Title: ***FACTORS DETERMINING THE SUCCESS OF CONSTRUCTION OF CONDOMINIUM PROJECTS: A CASE STUDY OF BOLE ARABSA Vs BOLE BULBULA SITE***

BY

Tewodros Berhanu

Approved Board Committee:

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Examiner **Signature**

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Advisor **Signature**

DECLARATION/CONFIRMATION

I Tewodros Berhanu declare that, this research project entitled "Factors Determining the Success of Construction of Condominium Projects: A Case Study of Bole Arabsa Vs Bole Bulbula Sites " is my own work submitted for the award of Master of Arts in Project Management at Addis Ababa University School of Commerce. To the best of my knowledge, it contains no material previously published by another person, nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

Tewodros Berhanu

Signature ____________________

Date ____________________

Advisor: Mengistu Bogale (Phd)

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Date ____________________

ACKNOWLEDGEMNT

First of all, I would like to thank the almighty God for helping me from the beginning up to i successfully accomplish this research work.

I would like to express my sincere gratitude to my advisor Dr. Mengistu for his unreserved support, continuous assessment and advice throughout the long process of producing this research paper work. I also would like to thank my family members Mam, Dad, Sister and especially my wife Mrs Koket Botoru for their support and encourage during my research project preparation.

I would like to extend my gratefulness to staff members of Addis Ababa Housing Development Project Office, consultants and contractors assigned in Bole Arabsa and Bole Bulbula sites for their cooperation in providing information and willingness to respond to the questionnaires. I would also like to extend my thanks to Mr. Biruke Metaferia who takes his time to facilitate for the research questionnaire to be filled.

ABSTRACT

The main objective of this research paper is to identify the critical success factors in the building construction projects at Bole Arabsa and Bole Bulbula condominium sites. In addition, one of the objectives is to see the understanding of the project executioners towards the project management body of knowledge areas. The significance of this study is identification of success factors, huge contribution to knowledge development and serves as a reference for other researchers. On the way, the study examined the critical factors that ensure the success of a project using frequency percentage and Relative index approach. Construction industry is the backbone for the economy and the successful completion of projects plays a vital role for development. Thus, it is important to identify the factors which lead a project to be success and it is the main reason for the study to be conducted. The paper is descriptive type and the method used to gather data from the sites is questionnaire and reviewed the related literatures to organize the factors. The study used both primary and secondary data sources. The targeted population for the study was taken from governmental and privet institutes and only consists the skilled manpower. Due to the size of the targeted population is small, for this study the total targeted population is equal to sample size. The research paper analysis data using percentage frequency and Relative importance index methods. The study indicated 18 general success factors of which the top five average rank scores of the two sites are clear goal, adequate Budget, detail plan, project manager capability, and commitment of project team important to complete a project successfully. The study also indicates that there is a difference between the respondents on ranking the success factors between the two sites. The respondents at Bole Arabsa ranked Clear and defined Goal, detailed plan, support of project consultant, commitment of project team and top management support as top five success factors. While, the respondents at Bole Bulbula ranked Adequate Budget, project manager capability, clear and defined goal, detailed plan and commitment of project team as top five success factors chronologically. The respondents agreed that the 10 knowledge area success factors were important for successful completion of a project even if the differ on ranking of the success factors.

Key Words: Building Construction Project, Success Factors, Descriptive Research, Frequency and RII Method

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LIST OF ACRONYMS

APM	Association for Project Management
EEA	Ethiopian Economic Association
GDP	Gross Domestic Product
ISIC	International Standard Industrial Classification of All Economic Activities
ISO	International Organization for Standardization
PMI	Project Management Institute
UN-DESA	United Nations, Department of Economic and Social Affairs
UNEP	United Nations Environment Programme
UN-HABITAT	United Nations Human Settlements Programme

LIST OF ABBREVIATION

AAIHDP	Addis Ababa Integrated Housing Development Program
BAS	Bole Arabsa Site
BBS	Bole Bulbula Site
IHDP	Integrated Housing Development Program

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Projects are launched to achieve some purpose and the project manager is ultimately responsible for the delivery of successful project. According to Rajani (2013) "A project manager is the person who has the overall responsibility for the successful initiation, planning, design, execution, monitoring, controlling and closure of a project." When the project fails or goes in a wrong way, usually organizations review the project failure factors in order not to repeat it again in the next project. What factor leads the project to become successful? This question must be asked and obviously there is no single answer for the question since there are lots of factors that lead our projects to be successful.

Day by day there is a huge population shift from rural to urban areas and results an increase in the proportion of people living in the urban areas. It leads to the formation of towns and cities as more people begin living in the central areas. The United Nations projected that half of the world's population would live in urban areas at the end of 2008. It is predicted that by 2050 around 64% of the developing world and 86% of the developed world will be urbanized (UN-DESA, 2014). The basic reason for the increasing urbanization is an increase in the number of people moving into cities seeking jobs, higher education, and better future with much higher quality of life.

Federal Negarit Gazeta of The Federal Democratic Republic of Ethiopia Proclamation No. 370/2003 defines condominium as a building for residential or other purpose with five or more separately owned units and common elements, in a high-rise building or in a row of houses, and includes the land holding of the building. The word condominium originated in Latin. The condo is a recent development in the U.S. In 1960, the first condominium in the continental United States was built in Salt Lake City (Donna 2014). The future of real estate is condos for the following reasons: it is the best was for the government and real estate developers to make more money, it is also believed that they are safe for any kind of weather, and safe from crime.

According to *United Nations Universal Declaration of Human Rights 1948 Article 25,* Food and Shelter for All, states that we all have the right to a basic standard of life. Mothers and children, people who are old, unemployed or disabled, and all people have the right to be cared for. Every person has the right to live in a shelter which is safe and with the infrastructure fulfilled i.e. clean water, electricity, road, etc. which enable them to lead a standard life adequate for their wellbeing.

The economic development, rapid population growth, widening inequality of income, Expanding poverty, shortage of houses and increasing rent price, unemployment etc. are some of the reasons that make it difficult for the government to satisfy the need of residences effectively and efficiently. For that reason the Ethiopian government launches the Integrated Housing Development Program (IHDP) in 2005 GC (UN-HABITAT, 2011). The aim is to reduce the number of homeless low and middle income peoples, increase employment opportunities, changing the image of the city to make it standard, increase knowledge in the construction industry by introducing cost efficient house development technology. It also has significant benefit for the low and middle income people, for contractors and for both skilled and unskilled employees who works in the construction area.

1.2 Statement of the Problem

The loss of millions of birr invested in construction projects by organizations may be the result of poor project management. There are challenges during implementing projects and these challenges are expected to be properly handled by the project managers. To put the project in to a successful position, project managers are expected to point out the critical factors that determine the success of a project. According to *PMI's Pulse of the Profession survey, 2018* "9.9% of every dollar is wasted due to poor project performance that's $99 million for every $1 billion invested.

Construction industry is a key sector in which the government gives significant attention. The sector improves the life style as well as wellbeing of its citizens by enhancing economic growth. Organizations may face managing problems on technical and/or non-technical conditions. First and foremost, studies conducted on success factors of projects in the construction industry are few. Secondly, some condominium projects (like bole arabsa, tuludimtu) had faced challenges in proper management of projects as per the time table/schedule, management of costs to avoid or reduce cost overrun, management of quality and so on. The researcher believe such indications are the results of knowledge gap on identifying the most critical success factors that needs to be managed carefully.

There are literatures written on critical success factors in different industries. However, the empirical studies conducted in the building construction were very few. This inspired me to conduct the study on building construction sector and identify the most critical success factors that should be managed carefully before they became challenges.

1.3 Basic Research questions

A. What are the success criteria factors for building construction Projects?

B. Where the critical success factors that affects the project success a project identified by the project management practitioners? Are they aware of the importance of them?

C. What factors are effective and critical to determine the successful completion of projects for both the government projects?

1.4 Objective of the Research

1.4.1 General Objective

The general objective of the study was to investigate the factors that determine the success of the condominium projects constructed by AAIHDP and to compare the success factors of the condominium projects at Bole Arabsa and Bole Bulbula to have a better understanding of what drive success in large construction projects.

1.4.2 Specific Objectives

- ❖ To assess the critical success factors in construction of condos at Bole Arabsa and Bole Bulbula Sites.
- ❖ To assess the awareness of the project executioners towards management body of knowledge area and their understanding on the importance of identified critical factors.
- ❖ To provide recommendation for improvement of similar projects to be successful.

1.5 Significance of the Research

There are some project executioners who try to implement a project that costs millions of birr in a traditional way business is as usual. It is obvious that there is no single project which has a similar project life cycle with another project. Thus, this paper will help to widen the knowledge towards identification of success determinant factors. It is important to note that all factors that determine the success of a project don't have equal magnitude. There are factors than needs greater attention or priority than others. Therefore, it is important to see the most dominant success factors for a project to be successful. The research will also contribute knowledge development, thus, schools that apply the recommended approach derived from the results of the study will be able to train students better. Furthermore, for the researchers, the study will help them to uncover critical success factors for construction and other areas in the educational process that this study and other researchers were not able to explore. Finally, per the data gathered and analysis drawn, it is important to provide recommendations to the institutes regarding identification of success factors.

1.6 Scope of the Research

This research project will focus and cover the success determinant factors for AAIHDP on specific project at Bole Arabsa 20/80 and Bole Bulbula 40/60 site (Both respondents in this sites have the experience of building 20/80 and 40/60 construction. This paper doesn't cover issues related to success factors in other sites of AAIHDP. It only focuses on assessing and comparison of the two institutes success factors for the project they execute. This is due to the limitations to get information from some individuals and the time provided to complete the research work is short. The assessment of the success factors in the condo construction project at Bole Arabsa and Bole Bulbula site is limited to the selected sample of general factors and knowledge areas success factors, and the assessment did not take the stages of the project life cycle.

1.7 Limitation of the Research

- The following were some of the limitations expected upon conducting the research work:
- Some of the AAIHDP and private institute staffs are not willing to participate in filling in the questionnaires and giving responses to interviews.

- ❖ Some of the respondents think that the information they give may result accountability and have a consequence on them.

1.8 Organization of the chapters

The study is divided into five chapters as follows:

Chapter One: Introduction of the study, Back ground of this study, Statement of the problem, Objective of the Research, Basic Research Questions, significant of the Research, Scope of the Research & limitation of this Research. Chapter Two: The literature part will review about project management, construction Building projects and Management, project success, project management success, project success criteria and project success factors and critical success factors of project management. Chapter Three: Methodology and this chapter includes the research and questionnaire design research strategy, research population and sampling, research location, data collection system, data measurement method and data processing. Chapter Four: Data Collection and analysis contain the analysis of survey data and the discussion on the findings. Chapter five: Conclusion and Recommendation

Chapter Two Literature Review

2.1 Building Construction

As per UN (1996) ISIC, Rev. 3.1, categorize the following activities under construction of buildings: site preparation, building of complete construction or parts thereof, civil engineering, building installation, building completion and renting of construction or demolition equipment with operators. Construction projects may be carried out by private or public construction firms. All the activities of construction, whether they are carried out by the private or public construction firms, are included in this industry. Construction industry is one of the cannonading industries of today that has a great impact on the economy of any nation. Any piece of infrastructure real estate erected around us is undertaken by segments under construction industry. It contributes to the national output and stimulates the growth of other sectors through a complex system of linkages.

According to UNEP, 2012, the global construction industry represents $4.7 trillion, or 8-10 percent of the global gross domestic product (GDP). The construction sector already accounts for 5-10 percent of employment globally and the construction industry is rapidly expanding, namely in developing economies. The construction industry employs large unskilled labor and creates income for the population and has multiplier effects on the economy. Women are also found to be beneficiaries of the employment in the industry. However, the employment in the industry is mainly temporary in nature and once the job is over, the workers are obliged to find other jobs or return to their place of origin.

Similar to all other socio-economic activities, another key contribution of the construction industry is revenue generation to government. The construction industry contributes to economic activity through generation of revenue for government from corporate income taxes of companies, the rental income, sales tax, capital gain tax and employees income tax from those employed in the construction industry, which in turn goes to the financing of public services such as schools and health institutions among others (EEA, 2006/07).In order to identify and estimate the total economic contribution of the construction industry to an economy, one has to look beyond the direct expenditures made by the industry itself, since there is a ripple effect of the expenditures made for goods and services supplied to the industry. Likewise, business revenues generated from supplying of goods and services to the construction industry are paid out in wages, and material costs, which in turn are spent on living costs. This multiplier effect enlarges the economic impact of the initial construction industry expenditures. In other words, the initial wave of spending generates a second and third wave of spending as wages paid and profits made on the direct construction spending spins through the economy in several cycles. Thus, the original direct expenditure yields a greater economic impact than just initially spent.

2.2 Role of Building Construction in Ethiopia

For the socio-economic growth, the construction sector has a significant contribution. The contribution of the construction industry to GDP is considered as an important tool for the economy. Construction is relatively labour intensive in using a large number of workers in most developing countries. The construction industry also contributes to the generation of revenue for the government and privet developers directly or indirectly.

2.3 Project

What is a Project?

A project is a unique, transient endeavor, undertaken to achieve planned objectives, which could be defined in terms of outputs, outcomes or benefits (AMP 2006).

ISO 10006, 2003 - Project is a unique process, consist of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective confirming to specific requirements, including the constraints of time cost and resource (ISO 2003).

PMBOK - A project is a temporary endeavor undertaken to create a unique product, service, or result (PMBOK 2017).

A project is an organization of people dedicated to a specific purpose or objective. Projects generally involve large, expensive, unique, or high risk undertakings which have to be completed by certain date, for a certain amount of money, within some expected level of performance. At a minimum, all projects need to have well defined objectives and sufficient resources to carry out all the required tasks (Tuman, 1983).

2.3.1 Characteristics of a project

Unique product, service, or result - Projects are undertaken to fulfill objectives by producing deliverables. A deliverable is defined as any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project. Deliverables may be tangible or intangible.

Temporary endeavor - The temporary nature of projects indicates that a project has a definite beginning and end. Temporary does not necessarily mean a project has a short duration.

Projects drive change - Projects drive change in organizations. From a business perspective, a project is aimed at moving an organization from one state to another state in order to achieve a specific objective.

Have definite objectives (goals) to achieve - An objective is defined as an outcome toward which work is to be directed, a strategic position to be attained, a purpose to be achieved, a result to be obtained, a product to be produced, or a service to be performed.

Requires set of resources – Man power (Skilled and unskilled), technology, raw material, machinery

Involves risk and uncertainty – since the future of any project is not certainly known, it involves risk and uncertainty. Risk is an element inherent in every project.

2.3.2 Project Management

ISO 10006, 2003 – Project management is a process of planning, organizing, controlling and reporting of all aspects of a project and the motivation of all those involved in it to achieve the project objective.

According to Joseph & Robert 1992, Project management is a method and a set of techniques based on the accepted principles of management used for planning, estimating, and controlling work activities to reach a desired end result on time, within budget, and according to specification.

PMBOK - Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Project management is accomplished through the appropriate application and integration of the project management processes identified for the project. Project management enables organizations to execute projects effectively and efficiently (PMI 2017).

Effective project management helps individuals, groups, and public and private organizations to meet business objectives, satisfy stakeholder expectations, be more predictable, increase chances of success, deliver the right products at the right time, resolve problems and issues, respond to risks in a timely manner, optimize the use of organizational resources, identify, recover, or terminate failing projects, manage constraints (e.g., scope, quality, schedule, costs, resources), balance the influence of constraints on the project (e.g., increased scope may increase cost or schedule) and manage change in a better manner.

Poorly managed projects or the absence of project management may result in:

- Missed deadlines,
- Cost overruns,
- Poor quality,
- Rework,
- Uncontrolled expansion of the project,
- Loss of reputation for the organization,
- Unsatisfied stakeholders, and
- Failure in achieving the objectives for which the project was undertaken.

Projects are a key way to create value and benefits in organizations. In today's business environment, organizational leaders need to be able to manage with tighter budgets, shorter timelines, scarcity of resources, and rapidly changing technology. The business environment is dynamic with an accelerating rate of change. To remain competitive in the world economy, companies are embracing project management to consistently deliver business value.

2.3.3 Project Success

Project success involved concern for three factors: time, budget and project performance. If a project is completed on time, on or near budget and performed as it was expected to perform (with in tolerance limits), it was considered a success. More recently, an additional element has been added to the formula for a successful project. This element involves concern for the satisfaction and welfare of the client. By "client," it refers to any party for whom the project is intended, either internal or external to the organization (PMBOK).

According to Marion, 2002, a successful project produces an outcome that performs as expected, by deadline, and within cost limits. Thus, the three parameters by which a project is planned and controlled are established. Quality is defined by specifications, time is defined by schedule, and costs are defined by budget.

Most people will agree that the three constraints (time, cost and scope) shall be fulfilled to consider a project achieved its objective and is successful. Evaluating whether the triple constraints were satisfied is primarily a measure of how efficiently a given work effort is managed. It is not a direct metric of success in the achievement of desired business results. This is a key concept. The inflexibility in their approach to managing project efforts seems to suggest this underlying premise: As long as the appropriate cost, schedule, and scope targets are properly set during the early stages of the project, it somehow follows that hitting these targets will automatically translate to business success (Gray R., 2006).

A deeper understanding of the seven sliders helps to show why it is not always important to strive for success equally on all fronts (Debbie Shatz, 2006).

Level of Stakeholder Satisfaction

Obviously the project needs to yield results to satisfy the stakeholders, but some stakeholders may have critical needs and are impacted directly, while for others the effects are less obvious or they may even be adversely affected. Changes to some aspect of technical infrastructure, for example, may have limited obvious importance to operational stakeholders even when they are critical to long-term maintenance of core systems.

Meeting of Objectives and Requirements

The overall objective in which both the project team and the client desired to achieve should be specified and the requirement shall be clearly stated. After measuring the results, the project status will be considered successful or not based on the outcome.

Meeting Budget

The project sponsor of the client has limited resources in terms of money and time. Therefore, for a project to be considered successful, the projects shouldn't require more time and money than anticipated.

Meeting Deadlines

In cases where there is a set time frame for when a project must be completed (e.g., to meet regulatory requirements), this slider would need to be in the fully "on" position. But in other cases, there might be flexibility, and the slider can be moved to a different position based on the stakeholder requirements.

Added-Value Requirements

This slider measures the importance of any added value to the organization the effort will produce. If the project involves technology replacement due to retirement of vendor support, the slider will be in a low position. In another project, the purpose of the new technology may be specifically to increase efficiencies to reduce overhead and gain almost immediate return on investment (ROI).

Quality Requirements

The level of quality is often reflected by the amount of time spent testing and validating the project results. If the project created a customer-facing application, this slider would be near or fully in the "on" position, indicating the need for a clean release with close to zero or no defects. If this were a back-office application with sufficient resources to address any short term defects, then the slider may be placed elsewhere.

Team Satisfaction

The culture of an organization has a lot of influence on the team-satisfaction slider. This factor addresses the team and how far the stakeholders are willing to push in order to reach their project objectives. If the organization focuses on quality of life for its employees, the slider will be somewhere in the middle; if the organization is willing to sacrifice the team's short-term happiness for a successful project, then it will slide toward the "off" position. In an organization that treats its employees above its customers to ensure some level of job satisfaction, then that slider would be set to "on."

The success of a project is strongly linked with the effectiveness of the organization and achievement of success in the long run. In some project management literature the project success has not been linked to competitive advantage and winning the market place and different individual's perception is still in different angles. One way of considering a project as successful is to complete the project on time, within the budget and with great performance. However, this approach is appropriate in the sort run when the market demand is critical and such approach is not enough. There are projects seemed to be troubled due schedule delay and cost overrun but later they turned to be successful. The construction of the Sydney Opera House project took three times longer than anticipated and cost almost five times higher than planned. But it quickly became Australia's most famous landmark, and no tourist wants to leave Australia without seeing it. Similarly, Microsoft's launch of its first Windows software suffered substantial delays and required a continuous flow of resources and additional staff. However, from the moment of its introduction, it became an enormous source of revenue for the company, and approximately 90% of all PCs in the world now use the Windows operating system (Aaron and Dov and Ofer and Alan, 2001). Thus, the focus of projects towards achieving the short term benefit is not enough and should also met the long term objectives.

So what are the things we do look for when determining the success of a project? There are three angles to each project’s success (Chantal and Martijn and Peter, 2011):

- ❖ The project approach: the project is a success if the way it was structured, planned and controlled was of the highest quality.
- ❖ The project result: the project is a success if the deliverables of the project can be put to the effect we originally demanded.
- ❖ The project goal: the project is a success if the project result significantly and sufficiently fulfills the original ambitions of the project.

To maximize the chances of success, a project manager needs a management model, as a manager he shall monitor the project in order to:

- ❖ Determine whether the project is on a course leading towards success;
- ❖ Determine the cause of any deviation, should any occur;
- ❖ Determine which aspects he can/must control differently, should a deviation occur;
- ❖ Determine what any such adjustment will cost him.

2.4 Project Success Factors

Does the same rule apply to all projects? The answer will be no since on size does not fit for all. Clearly, there are great differences among projects. Projects may differ in terms of technology, size, complexity, risk, and other variables. Yet much of the traditional project management literature has treated all projects as the same, assuming, that “a project is a project.” Several studies have recently recommended using a more project-specific approach, and suggested distinguished between different project types, and using different management styles to manage them (Aaron, et al., 2001).

The investigation of factors which might contribute to a successful project performance is critical in order to notice attention to specific areas of improvement. Number of studies over different geographic areas seems to contribute significantly to the body of knowledge in construction project performance during the past three decades. In spite of various similarities among findings there is no agreement between authors on final list of success factors. Lots of study had been conducted and much has been written to support project managers to do projects in effective and efficient way.

Table 0-1: Critical Success Factors identified across 63 publications Fortune and White (2006).

No.	General Success Factors
1	Clear and Defined Goal
2	Detailed Plan
3	Top management support
4	Project Manager capability
5	Commitment of Project Team
6	Adequate Budget
7	Realistic Schedule
8	Proven Technology
9	Allocation of sufficient Resources
10	Effective communication
11	Effective Project activity coordination
12	Effective Procurement
13	Compliance with the rules and procedures
14	Support and competence of project Consultant
15	On time fund availability
16	Project control system
17	Risk addressed/Managed
18	Past Experience

To see the understanding of the project executioners, the research paper included the success factors in 10 knowledge areas identified under PMBOK.

PROJECT INTEGRATION MANAGEMENT

Project Integration Management includes the processes and activities to identify, define, combine, unify, and coordinate the various processes and project management activities within the Project Management Process Groups. In the project management context, integration includes characteristics of unification, consolidation, communication, and interrelationship. These actions should be applied from the start of the project through completion.

Develop Project Charter—the process of developing a document that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities.

Develop Project Management Plan—the process of defining, preparing, and coordinating all plan components and consolidating them into an integrated project management plan.

Direct and Manage Project Work— the process of leading and performing the work defined in the project management plan and implementing approved changes to achieve the project's objectives.

Manage Project Knowledge—the process of using existing knowledge and creating new knowledge to achieve the project's objectives and contribute to organizational learning.

Monitor and Control Project Work—the process of tracking, reviewing, and reporting overall progress to meet the performance objectives defined in the project management plan.

Perform Integrated Change Control—the process of reviewing all change requests; approving changes and managing changes to deliverables, organizational process assets, project documents, and the project management plan; and communicating the decisions.

Close Project or Phase—the process of finalizing all activities for the project, phase, or contract.

PROJECT SCOPE MANAGEMENT

Project Scope Management includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully. Managing the project scope is primarily concerned with defining and controlling what is and is not included in the project.

Plan Scope Management—the process of creating a scope management plan that documents how the project and product scope will be defined, validated, and controlled.

Collect Requirements—the process of determining, documenting, and managing stakeholder needs and requirements to meet project objectives.

Define Scope—the process of developing a detailed description of the project and product.

Create WBS—the process of subdividing project deliverables and project work into smaller, more manageable components.

Validate Scope—the process of formalizing acceptance of the completed project deliverables.

Control Scope—the process of monitoring the status of the project and product scope and managing changes to the scope baseline.

PROJECT SCHEDULE MANAGEMENT

Project Schedule Management includes the processes required to manage the timely completion of the project.

Plan Schedule Management—the process of establishing the policies, procedures, and documentation for planning, developing, managing, executing, and controlling the project schedule.

Define Activities—the process of identifying and documenting the specific actions to be performed to produce the project deliverables.

Sequence Activities—the process of identifying and documenting relationships among the project activities.

Estimate Activity Durations—the process of estimating the number of work periods needed to complete individual activities with the estimated resources.

Develop Schedule—the process of analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule model for project execution and monitoring and controlling.

Control Schedule—The process of monitoring the status of the project to update the project schedule and manage changes to the schedule baseline.

PROJECT COST MANAGEMENT

Project Cost Management includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget.

Plan Cost Management—the process of defining how the project costs will be estimated, budgeted, managed, monitored, and controlled.

Estimate Costs—the process of developing an approximation of the monetary resources needed to complete project work.

Determine Budget—the process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline.

Control Costs—the process of monitoring the status of the project to update the project costs and manage changes to the cost baseline.

PROJECT QUALITY MANAGEMENT

Project Quality Management includes the processes for incorporating the organization's quality policy regarding planning, managing, and controlling project and product quality requirements in order to meet stakeholders' objectives. Project Quality Management also supports continuous process improvement activities as undertaken on behalf of the performing organization.

Plan Quality Management—the process of identifying quality requirements and/or standards for the project and its deliverables, and documenting how the project will demonstrate compliance with quality requirements and/ or standards.

Manage Quality—the process of translating the quality management plan into executable quality activities that incorporate the organization's quality policies into the project.

Control Quality—the process of monitoring and recording the results of executing the quality management activities to assess performance and ensure the project outputs are complete, correct, and meet customer expectations.

PROJECT RESOURCE MANAGEMENT

Project Resource Management includes the processes to identify, acquire, and manage the resources needed for the successful completion of the project. These processes help ensure that the right resources will be available to the project manager and project team at the right time and place.

Plan Resource Management—the process of defining how to estimate, acquire, manage, and utilize physical and team resources.

Estimate Activity Resources—the process of estimating team resources and the type and quantities of material, equipment, and supplies necessary to perform project work.

Acquire Resources—the process of obtaining team members, facilities, equipment, materials, supplies, and other resources necessary to complete project work.

Develop Team—the process of improving competencies, team member interaction, and the overall team environment to enhance project performance.

Manage Team—the process of tracking team member performance, providing feedback, resolving issues, and managing team changes to optimize project performance.

Control Resources—the process of ensuring that the physical resources assigned and allocated to the project are available as planned, as well as monitoring the planned versus actual use of resources, and performing corrective action as necessary.

PROJECT COMMUNICATIONS MANAGEMENT

Project Communications Management includes the processes necessary to ensure that the information needs of the project and its stakeholders are met through development of artifacts and implementation of activities designed to achieve effective information exchange. Project Communications Management consists of two parts. The first part is developing a strategy to ensure communication is effective for stakeholders. The second part is carrying out the activities necessary to implement the communication strategy.

Plan Communications Management—the process of developing an appropriate approach and plan for project communication activities based on the information needs of each stakeholder or group, available organizational assets, and the needs of the project.

Manage Communications—the process of ensuring timely and appropriate collection, creation, distribution, storage, retrieval, management, monitoring, and the ultimate disposition of project information.

Monitor Communications—the process of ensuring the information needs of the project and its stakeholders are met.

PROJECT RISK MANAGEMENT

Project Risk Management includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project. The objectives of project risk management are to increase the probability and/or impact of positive risks and to decrease the probability and/or impact of negative risks, in order to optimize the chances of project success.

Plan Risk Management—the process of defining how to conduct risk management activities for a project.

Identify Risks—the process of identifying individual project risks as well as sources of overall project risk, and documenting their characteristics.

Perform Qualitative Risk Analysis—the process of prioritizing individual project risks for further analysis or action by assessing their probability of occurrence and impact as well as other characteristics.

Perform Quantitative Risk Analysis—the process of numerically analyzing the combined effect of identified individual project risks and other sources of uncertainty on overall project objectives.

Plan Risk Responses—the process of developing options, selecting strategies, and agreeing on actions to address overall project risk exposure, as well as to treat individual project risks.

Implement Risk Responses—the process of implementing agreed-upon risk response plans.

Monitor Risks—the process of monitoring the implementation of agreed-upon risk response plans, tracking identified risks, identifying and analyzing new risks, and evaluating risk process effectiveness throughout the project.

PROJECT PROCUREMENT MANAGEMENT

Project Procurement Management includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team. Project Procurement Management includes the management and control processes required to develop and administer agreements such as contracts, purchase orders, memoranda of agreements (MOAs), or internal service level agreements (SLAs). The personnel authorized to procure the goods and/or services required for the project may be members of the project team, management, or part of the organization's purchasing department if applicable.

Plan Procurement Management—the process of documenting project procurement decisions, specifying the approach, and identifying potential sellers.

Conduct Procurements—the process of obtaining seller responses, selecting a seller, and awarding a contract.

Control Procurements—the process of managing procurement relationships, monitoring contract performance, making changes and corrections as appropriate, and closing out contracts.

PROJECT STAKEHOLDER MANAGEMENT

Project Stakeholder Management includes the processes required to identify the people, groups, or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution. The processes support the work of the project team to analyze stakeholder expectations, assess the degree to which they impact or are impacted by the project, and develop strategies to effectively engage stakeholders in support of project decisions and the planning and execution of the work of the project.

Identify Stakeholders—the process of identifying project stakeholders regularly and analyzing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success.

Plan Stakeholder Engagement—the process of developing approaches to involve project stakeholders based on their needs, expectation, interests, and potential impact on the project.

Manage Stakeholder Engagement—the process of communicating and working with stakeholders to meet their needs and expectations, address issues, and foster appropriate stakeholder engagement involvement.

Monitor Stakeholder Engagement—the process of monitoring project stakeholder relationships and tailoring strategies for engaging stakeholders through the modification of engagement strategies and plans.

2.5 Empirical Previous study Review

1. Mamaru and Dr. Ing-Esayas and Sintayehu (2016): the purpose of the study was to investigate and rank the major success factors in building construction projects of Bole Sub City. The study identified 98 success factors of which 79 from previous literature reviews and 19 success factors through questionnaire. The researchers used relative importance index to rank the factors and the ranking result indicates that (1). Leadership skills of project manager; (2) project clear objective, adequacy of funding, decision making effectiveness , (3) project monitoring ; (4) project manager’s commitment to meet quality, cost &time; (5) project manager’s early & continued

involvement in project; (6) contractor's cash flow; (7) site management; (8) coordinating ability and rapport of project manager with contractors/subcontractors; (9) project manager's authority to take financial decision, selecting key team members; (10) organizing skills of project manager were the twelve top ten major success factor according to their high significance order.

2. Kyu (2015): Myanmar (formerly Burma) is a Southeast Asian nation of more than 100 Ethnic groups, bordering India, Bangladesh, China, Laos and Thailand. The research was carried out in the areas of construction projects in Myanmar, which consists of five dams as follows:

- Shwelaung dam construction project (Bago region),
- Salu dam construction project (Bago region),
- The irrigation network construction project of Yenwe (Bago Region)
- Myogyi multi-purpose dam construction project (Shan State)
- Minhlay (Dam/Lake) reconstruction project (Mandalay Region)

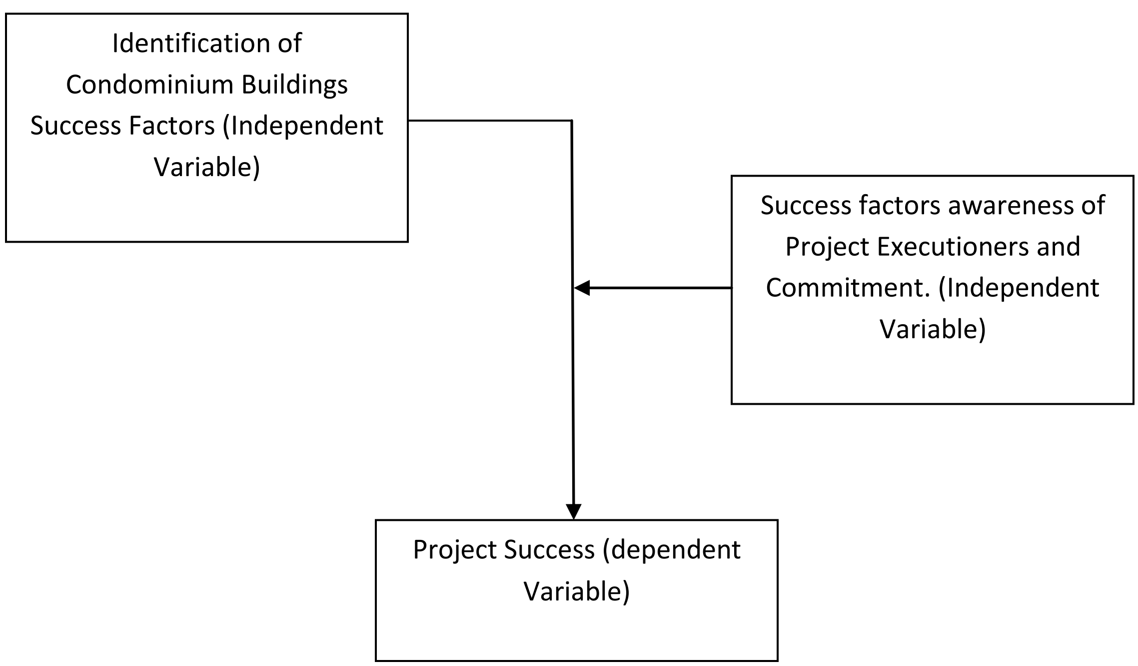
The research work was focused on identifying the critical factors that effect on the success of dam construction project management in Myanmar and to assess the relative importance of those factors from the viewpoint of project practitioners. The researcher believes that the present condition of a project management level in Myanmar is quite low and inadequate. In addition, more than half of the development projects are not able to finish within the time and cost schedule.

The purpose of the study was to assess the quality of project management practices by determining the factors regarding with the well-known success factors and project knowledge areas management that facilitate project success in the dam construction project in Myanmar. The study also indicates that attention must be paid to the ten common critical success factors of five dam construction projects to obtain the project success for further dam construction projects in Myanmar. These common critical success factors are estimation of project cost, determine the required budget, quality checklists, control cost, collect requirement, estimate activity resources, develop schedule, budget performance, identify risks, well-defined stakeholder management plan.

3. Daniel (2013): one of the objectives of the study is to identify the critical success factors of project management in Ghana and to see how Ghanaian Project management practitioners rank the identified critical success factors that affect the success of projects. The study identified around 14 success factors.

The purpose of the study was to assess the quality of project management practices by determining the factors that facilitate project success, such as clarity of project mission and goals, top management support and effective communication, and those that militate against project success, such as lack of support and finance, and lack of effective communication in Ghana. The study also indicated that attention must be paid to the 4Cs – communication, commitment, competency, and coordination in order to improve project quality.

Conceptual Framework



Assumption: all the required resources are available

Chapter Three: Research Methodology

3.1 Introduction

This chapter provides the framework of the research methodology used in the study. It briefly describes the design and approach, source for data collection and measurement method, validity and reliability, and formula for ranking the result relative importance index. The choice of research approach is based on the research problems and questions of the study.

The research questionnaire specifically deals with on the success factors of construction building on a specific area (Bole Arabsa and Bole Bulbula) and quantitative survey is used to gather information from the two sites. The reason to select survey method is that this study intended to gather information through questionnaire so that critical success factors can be compared from different respondents. "In a survey research data are collected predominantly by questionnaire……., which are then examined to detect patterns of association" (Bryman and Bell, 2003) and descriptive research method is applied.

3.2 Design and approach

This study identified the critical success factors in building construction and, on the way, assesses the awareness of the project executioners on management body of knowledge. A qualitative approach was chosen in order to investigate what are the success factors in the selected projects. Thus, the information is gathered from the institutes who are engaged in building construction industry to figure out the success factors by using quantitative survey to rank the result with percentage distribution method and relative importance index method.

To obtain more reliable and useful data, the research questionnaire was designed in a good way. Section I of the questionnaire tries to provide information about the respondents Gender, position in the company, Education level, year of experience, and their organization type. On section II, Literature on critical success factors were reviewed, which resulted in the study: a survey questionnaire which was composed of 18 critical success factors have been selected to see some important thoughts from previous studies (Critical Success Factors identified across 63 publications Fortune, et al., 2006). The finale part of the questionnaire is designed to know the thoughts and understandings of the project executioner's on the Project Management area of Knowledge (Kyu 2015). Therefore, the questionnaire contains the processes of each knowledge area to identify the critical success factors.

3.3 Source of Data

The study used both primary and secondary data sources. The primary data is gathered using questionnaire which is filled by the skilled employees at both sites. While, the secondary data sources are Journals, books, publications and some online internet data.

3.4 Research Population and Sampling

In both sites, the population is composed of both skilled and unskilled man power. The targeted population consists of both governmental and private organization workers. Since one of the objective of the study is to see the awareness of the project executioner's (like the Project Manager, General Manager, Engineer, Supervisor…), the respondents are selected using Judgmental sampling technique. Accordingly, the total population numbers considered by this study are only the skilled professionals found in both institutes. As per the data gathered from the HR officers, there are 39 and 35 skilled professionals at Bole Arabsa and at Bole Bulbula site respectively.

The number of observation in a given sample population is known as sample size. The sample size plays an important part in the study which helps us to find the difference between the population from the given sample. Sample size can be smaller and larger, but the larger sample size gives us the more accurate results and in the lower case it is denoted by 'n' and the sample size in upper case is denoted by 'N'

The sample size formula for the infinite population is given as:

$$SS=\frac{Z^2 p(1-p)}{C^2}$$

The sample size formula for the finite population is given as:

$$\text{New } SS=\frac{SS}{1+(SS-1)/Pop}$$

Here,

SS= Sample size

Z= Given Z value of 95%

P= percentage of population, 50%

C= Confidence level 0.05

Pop= population size of 39 at Bole Arabsa and 35 at Bole Bulbula,

Due to the size of the targeted population is small, for this study the total targeted population is equal to sample size.

Table 0-1: Summary of Sample size

Targeted Population		Sample Size	Number of Questionnaire		
Description	Size		Distributed	Returned	Not Returned
Arabsa	39	39	39	33	6
Bulbula	35	35	35	31	4

3.5 Data Analysis Methods

To explain and analyze the questionnaire data filled by the respondents, descriptive method is adopted. To calculate the percentage frequency of the distribution, SPSS (Statistical Package for the Social Sciences) version 20.0 has been used. Moreover, the Relative Importance Index is used to rank the success factors for the reason that this method makes possible to cross compare the relative importance of the factors that the project executioners have faced upon work.

Chapter Four: Data Presentation & Analysis

4.1 Background of the company

The demand for having standardized houses is increasing from day to day. To fill the demand gap and resolve the problem, the government initiated an enterprise called Addis Ababa Housing Project Office. Addis Ababa Housing project Office was established by establishment proclamation No 33/1996, and it is also established by the successive proclamation of No. 33/1996 and No. 33/2000. The institute is established in 1996 E.C and the Vision is to build quality and standardized houses for low and middle in-come residents of Addis Ababa and enable them be owners of houses by 2020. The mission of the institute is alleviating house shortage in Addis Ababa city by upgrading integrated system that involves contractors, counselors, small and micro enterprises, as well as strengthens construction industry by using vast labor power, build up condominium houses and make the residents house owners through fair distribution. The Values of the office are transparency, accountability, quality service provision, knowledgeable and faithful leadership, ready for change, quality and cost effective and fair resource distribution.

The project office has many projects in the city and Bole Arabsa and Bole Bulbula project sites are the sites considered by this research paper. The project office at Bole Arabsa had completed 5,427 residential houses and 638 shops. On the other hand, Bole Bulbula project office had completed 3,184 residential houses and 1,392 shops.

4.2 Introduction

Demographic questions are designed to elicit information from respondents concerning their personal characteristics and social background. This type of information is important for explaining variations in Educational outcomes. A number of these areas cover sensitive and personal issues and therefore need to be handled carefully. This chapter presents the summary of the analyzed data. The results are presented based on the objective of the study so as to identify the critical success factors in construction of condos and to see the awareness of the project executioners towards management body of knowledge area and their understanding on the importance of identified critical factors. The study used descriptive statistics and presented the findings frequency in percentages. The outcomes are computed using SPSS (Statistical Package for the Social Sciences) version 20.0 and Relative Importance Index ranking formula. Out of the total 74 research questionnaire distributed, only 64 questionnaires are filled properly. Therefore, the respondent ratio of this survey was 86.5%.

The chapter is organized by three section in which section one provides background information of the respondents, section two present the frequency of respondents in percentage and rank the common success factors and the finale section, section three, will present the frequency of respondents in percentage and rank the 10 body of knowledge areas within their identified factors which are critical for project success.

4.3 Validity and Reliability of Data

The validity and reliability of the data collected is tested using SPSS and it is summarized in the table below.

Table 0-1: Validity & Reliability of Data from Bole Arabsa

Case Processing Summary

		No. of respondents	%
Cases	Valid	31	100.0
	Excluded[a]	0	.0
	Total	31	100.0
Reliability Statistics		Cronbach's Alpha	No. of factors
		.926	77

a. Listwise deletion based on all variables in the procedure.

Table 0-2: Validity & Reliability of Data from Bole Bulbula

Case Processing Summary

		No. of respondents	%
Cases	Valid	33	100.0
	Excluded[a]	0	.0
	Total	33	100.0
Reliability Statistics		Cronbach's Alpha	No. of factors
		.865	77

a. Listwise deletion based on all variables in the procedure.

4.4 General Information about the Respondents

The aim of providing the general information of the respondents is to create an understanding by showing the background info of the respondents. This information of the respondents will increase the confidence on the reliability of the gathered data.

Table 0-3: Demographic data Distribution

		Count	Table N %
Company Position	**Project Manager**	***3***	***4.7%***
	General Manager	***2***	***3.1%***
	Engineer	***31***	***48.4%***
	Supervisor	***16***	***25.0%***
	Equipment Manager	***2***	***3.1%***
	Others	***10***	***15.6%***
Gender	**Male**	***52***	***81.2%***
	Female	***12***	***18.8%***
Education Level	**Diploma**	***4***	***6.2%***
	Bachelor	***58***	***90.6%***
	MSC/MBA	***2***	***3.1%***
	PHD	***0***	***0.0%***
	Other	***0***	***0.0%***
Work Experience	**0 - 2 years**	***20***	***31.2%***
	3 - 5 years	***29***	***45.3%***
	6 - 10 years	***13***	***20.3%***
	Above 10 Years	***2***	***3.1%***

		Count	Table N %
Type of Organization	Private	*22*	*34.4%*
	Government	*42*	*65.6%*
	NGO's	*0*	*0.0%*
	Other	*0*	*0.0%*

Company Position

Figure 4-1 shows that 4.7% of the respondents are Project Managers, 3.1% of the respondents are General Manager, 48.4% of the respondents are Engineers, 25% of the respondents are Project Supervisors, 3.1% of the respondents are Equipment Managers and the remaining 15.6% of the respondents are from other fields (Architects and Consultants). It also indicates that the role Engineers and Consultants are very important in the building construction industry since they hold 73.4% of the total.

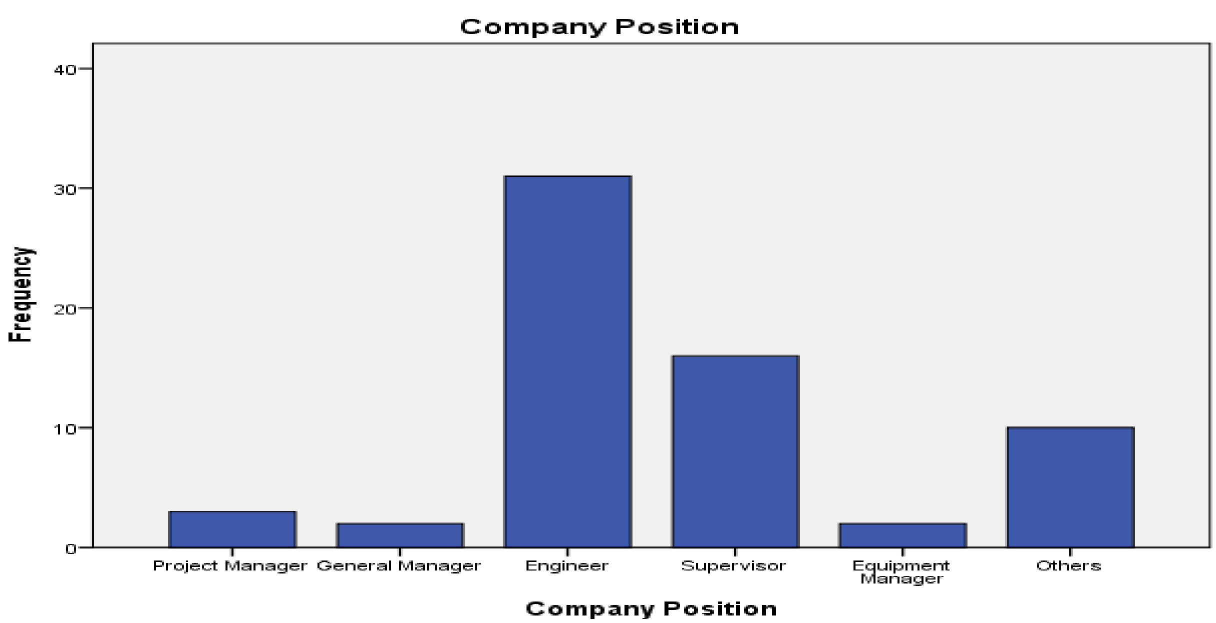


Figure 0-1: Company Position

Gender

This question is designed to know the gender distribution frequency of the respondents. Gender data of the respondents is significantly important to examine the gender equality in the building construction sector. Figure 4-2 shows the gender distribution of respondents in the study and male respondents are huge in number representing 81.2% of the sample size while the remaining 18.8% are female. This shows that there is a numerical dominance of male is the institutes.

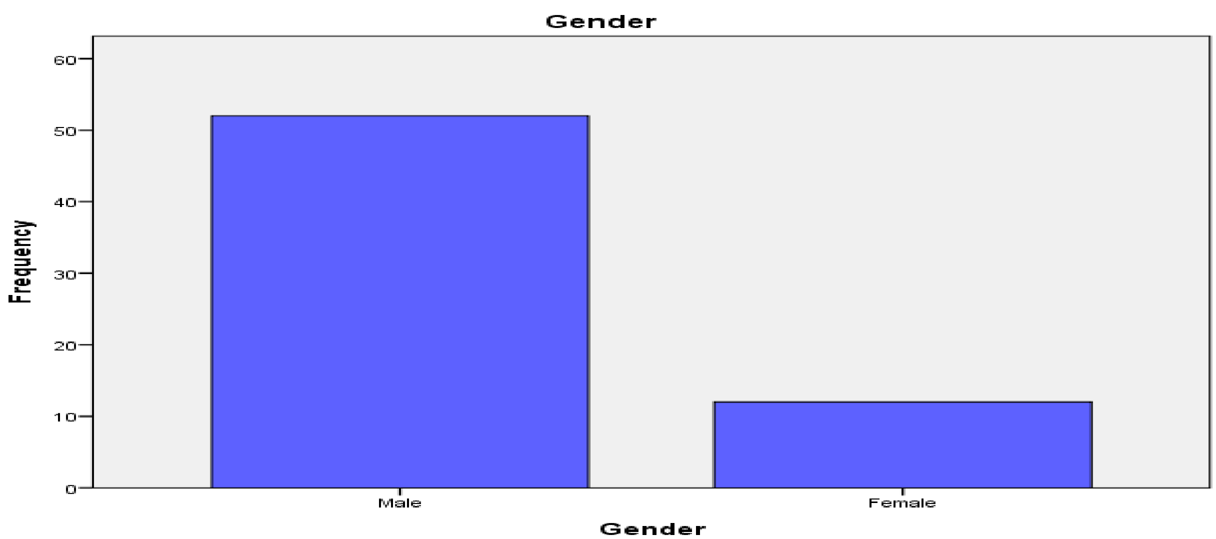


Figure 0-2: Gender Distribution

Educational Qualification

The sample study in the Figure 4-3 below indicates that 6.2% of the respondents are Diploma holders, 90.6% of the respondents are BA holders and the remaining 3.1% of the respondents are MBA/MSC holders. However, there are no PHD and other qualifications holders of the respondents. Since education have a huge influence of the way of managing construction projects, it is important to know the qualification level of the respondents.

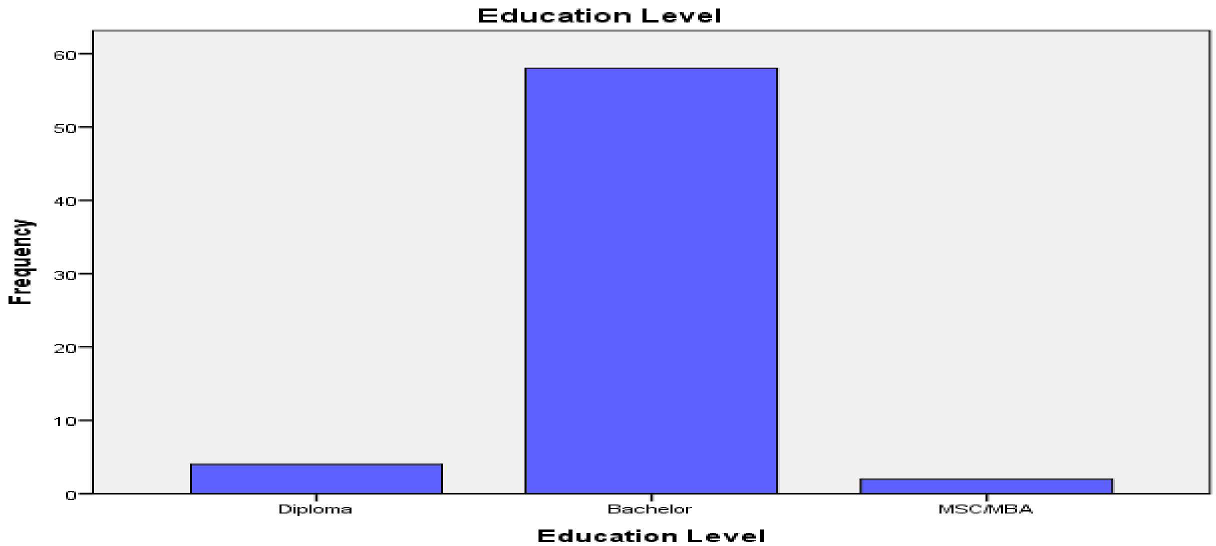


Figure 0-3: Level of Education

Respondent’s Years of Experience

Figure 4-4 below shows that 31.2% of the respondents have less than 2 years of experience, 45.3% of the respondents have an experience between 3 and 5 years. Moreover, 20.3% of the respondents have an experience from 6 upto10 years and the remaining 3.1% of the respondents have an experience above 10 years. This variety of experience level supports the study by providing variety of information and knowledge.

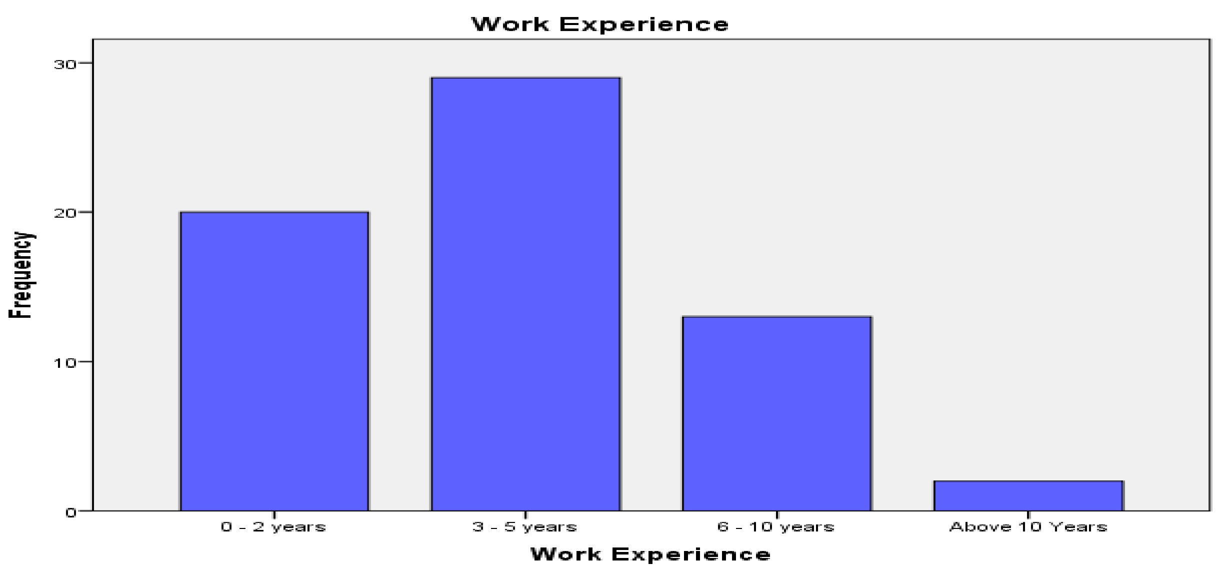


Figure 0-4: Work Experience

Type of organization

The figure 4-5 below shows that 34.4% of the respondents are from private institutes (such as contractors, architects, supervisors) and the remaining 65% of the respondents are from government institute. However, there are no respondents from NGO's or other institutes. These result shows that the respondents from the governmental organization are dominant in number on the selected sites.

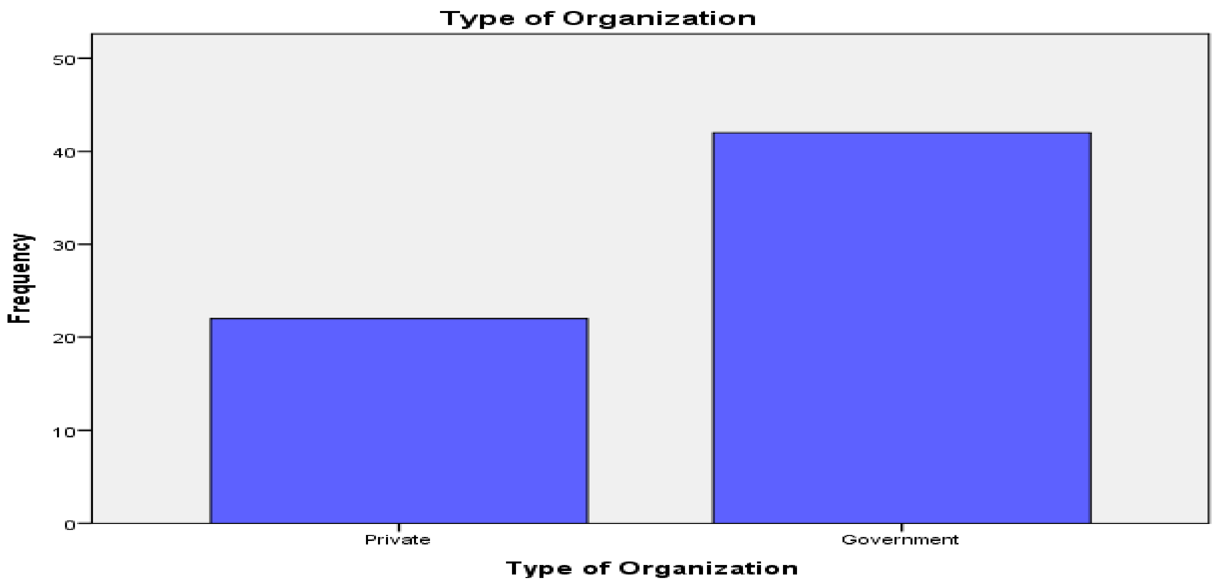


Figure 0-5: Organization Type

By using the Percentage Distribution method and the Relative Importance Index (RII), the general critical factors identified in different earlier published materials and the ten knowledge areas factors identified by PMBOK 6th edition will be evaluated. In addition, this analysis will indicate the awareness of the project executioners about the knowledge areas identified by PMBOK.

4.5 Response for General Success Factors

The table 4.2 below is the feedback of the respondents which show the importance level of each factor based on their experience. The table presents the data collected from the two project sites and the highest frequency percentage assigned by the respondents based on the degree of relevance of the variables are highlighted on the table.

Clear and Defined Goal: the respondents result from the study indicates that 96.8% from BAS and 100% from BBS agreed that having a clear and defined goal is important. Whereas, 3.2% of the respondents from BAS are neutral.

Detail Plan: the data analysis of the study indicated that the respondents in both sites 100% agreed on the importance of having a detail plan.

Top management support: results from the study indicated that 96.8% from BAS and 100% from BBS agreed on the importance of top management support. However, 3.2% of the respondents from BAS site indicated that it is low important.

Project Manager Capability: in terms of Project Manager capability 93.5% from BAS and 100% from BBS of the respondents agreed on the importance of the project Manager capability and the remaining 6.5% of the respondents from BAS were neutral.

Commitment of Project Team: the data analysis showed that 90.3% from BAS and 97% from BBS respond that commitment of the project team is important. However, the respondents 9.7% from BAS and 3% from BBS were neutral.

Adequate Budget: in terms of adequate budget the results showed that 87.1% from BAS and 100% from BBS responded as it is important, 9.7% of respondents from BAS are neutral and the remaining 3.3% from BAS indicated that it is not important at all.

Realistic Schedule: 74.2% from BAS and 100% from BBS responded that having a realistic schedule is important, 22% of the respondents from BAS are neutral and the remaining 3.2% of the respondents indicated as it is low important.

Proven Technology: the data analysis of respondents 71% from BAS and 93.9% from BBS showed that using proven technology is important. While 29% from BAS and 6.1% from BBS indicated that it is neutral.

Allocation of Sufficient Resources: the analysis of the respondents 80.7% from BAS and 90.9% from BBS indicated that it is important, 16.1% from BAS and 9.1% from BBS are neutral and 3.2% of the respondents from BAS considered as it is low important.

Effective Communication: Respondents 93.6% from BAS and 100% from BBS agreed on the importance of having effective communication based on their experience. While 3.2 respondents from BAS were neutral and the remaining 3.2% respondents from BAS considered it as it is low important.

Effective Coordination: 87.1% from BAS and 100% from BBS indicated the importance of Effective Coordination, 9.7% of the respondents from BAS were neutral and 3.2% of the remaining respondents from BAS indicated as it is low important.

Effective Procurement: 90.3% from BAS and 93.9% from BBS agreed that effective procurement was important. However, 9.7% from BAS and 6.1% from BBS are neutral.

Compliance with Rules and Regulation: results from the study indicated that 90.3% of the respondents from BAS and 93.9% of the respondents from BBS agreed on the importance, 3.2% from BAS and 6.1% from BBS were neutral and the remaining 6.5% of the respondents from BAS indicated as it is not important at all.

Support and Competence of project Consultant: according to the data, 100% of the respondents from BAS and 93.9% of the respondents from BBS indicated the importance of competent Consultant and 6.1% of the respondents form BBS were neutral.

On time fund availability: the data analysis showed that 87.1% of the respondents from BAS and 94% of the respondents from BBS agreed on the importance, 3.2% and 3% of the respondents from BAS and BBS were neutral, 6.5% of the respondents from BAS indicated that it is low important and 3.2% of the respondents from BAS showed that it is not important at all.

Project Control System: 90.3% and 93.9% of the respondents from BAS and BBS showed the importance of Control System, 3.2% and 6.1% of the respondents from BAS and BBS were neutral and the remaining 6.5% of the respondents from BAS showed that it is low important.

Risk Managed: the study results indicated that 83.8% and 100% of the respondents from BAS and BBS agreed on management of risk, 6.5% of the respondents from BAS were neutral, 3.2% of respondents from BAS indicated that it is low important and the remaining 6.5% of the respondents from BAS showed that it is not important at all.

Past Experience: the data showed that 80.7% and 78.8% of the respondents from BAS and BBS agreed on the importance, 6.5% and 15.2% of the respondents from both sites were neutral, 6.1% of the respondents from BBS indicated that it is low important and 12.9% of the respondents from BAS agreed that it is not important at all.

Table 0-4: General Success Factors frequency distribution in Percentage

	Extremely Important		Very Important		Neutral		Low Important		Not Important at all	
Sites	***BAS***	***BBS***	***BAS***	***BBS***	***BAS***	***BBS***	***BAS***	***BBS***	***BAS***	***BBS***
Clear and Defined Goal	83.9%	48.5%	12.9%	51.5%	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Detailed Plan	64.5%	48.5%	35.5%	51.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Top Management Support	54.8%	36.4%	41.9%	63.6%	0.0%	0.0%	3.2%	0.0%	0.0%	0.0%
Project Manager Capability	48.4%	57.6%	45.2%	42.4%	6.5%	0.0%	0.0%	0.0%	0.0%	0.0%
Commitment of Project Team	67.7%	45.5%	22.6%	51.5%	9.7%	3.0%	0.0%	0.0%	0.0%	0.0%
Adequate Budget	64.5%	75.8%	22.6%	24.2%	9.7%	0.0%	0.0%	0.0%	3.2%	0.0%
Realistic Schedule	41.9%	24.2%	32.3%	75.8%	22.6%	0.0%	3.2%	0.0%	0.0%	0.0%
Proven Technology	48.4%	15.2%	22.6%	78.8%	29.0%	6.1%	0.0%	0.0%	0.0%	0.0%
Allocation of Sufficient Resources	45.2%	39.4%	35.5%	51.5%	16.1%	9.1%	3.2%	0.0%	0.0%	0.0%
Effective Communication	35.5%	42.4%	58.1%	57.6%	3.2%	0.0%	3.2%	0.0%	0.0%	0.0%
Effective Coordination	45.2%	27.3%	41.9%	72.7%	9.7%	0.0%	3.2%	0.0%	0.0%	0.0%
Effective Procurement	38.7%	24.2%	51.6%	69.7%	9.7%	6.1%	0.0%	0.0%	0.0%	0.0%
Compliance With Rules and Regulation	32.3%	36.4%	58.1%	57.6%	3.2%	6.1%	0.0%	0.0%	6.5%	0.0%
Support and Competence of project Consultant	61.3%	27.3%	38.7%	66.7%	0.0%	6.1%	0.0%	0.0%	0.0%	0.0%
On time fund availability	67.7%	45.5%	19.4%	51.5%	3.2%	3.0%	6.5%	0.0%	3.2%	0.0%
Project Control System	54.8%	42.4%	35.5%	51.5%	3.2%	6.1%	6.5%	0.0%	0.0%	0.0%
Risk Managed	41.9%	39.4%	41.9%	60.6%	6.5%	0.0%	3.2%	0.0%	6.5%	0.0%
Past Experience	32.3%	30.3%	48.4%	48.5%	6.5%	15.2%	0.0%	6.1%	12.9%	0.0%

4.6 Response on the 10 knowledge areas

Project Integration Management Success factors

The objective of these questions is to see the awareness of the project executioners towards project Integration Management. The percentage distribution of the respondents is shown in the table 4-3 and 4-4 below and the respond in both sites implies that the factors of project integration management are important

Table 0-5: Percentage distribution of Project Integration Management factors at Arabsa

A	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Project charter that Authorizes existence of a Project	*35.5%*	*45.2%*	*12.9%*	*6.5%*	*0.0%*
Availability of Project management Plan	*58.1%*	*29.0%*	*12.9%*	*0.0%*	*0.0%*
Direct and Manage Project Work	*38.7%*	*41.9%*	*12.9%*	*6.5%*	*0.0%*
Monitor and Control Project Work	*48.4%*	*45.2%*	*0.0%*	*6.5%*	*0.0%*
Change Control	*19.4%*	*51.6%*	*12.9%*	*16.1%*	*0.0%*
Close Project or Phase	*25.8%*	*45.2%*	*6.5%*	*12.9%*	*9.7%*

Table 0-6: Percentage distribution of Project Integration Management factors at Bulbula

B	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Project charter	*33.3%*	*51.5%*	*15.2%*	*0.0%*	*0.0%*
Availability of Project management Plan	*42.4%*	*42.4%*	*15.2%*	*0.0%*	*0.0%*
Manage Project Work	*24.2%*	*69.7%*	*6.1%*	*0.0%*	*0.0%*
Monitor and Control Project Work	*33.3%*	*60.6%*	*6.1%*	*0.0%*	*0.0%*
Change Control	*9.1%*	*57.6%*	*33.3%*	*0.0%*	*0.0%*
Close Project or Phase	*9.1%*	*45.5%*	*30.3%*	*6.1%*	*9.1%*

Project Scope Management Success factors

Here, the respondents were expected to indicate the level of importance of project scope management. The analyzed data computed in both sites based on frequency percentage method shows that scope factors are important to complete a project successfully.

Table 0-7: Percentage distribution of Project Scope Management factors at Arabsa

A	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Plan Scope Management	*54.8%*	*45.2%*	*0.0%*	*0.0%*	*0.0%*
process of determining, documenting & managing Stakeholders needs & requirements	*22.6%*	*67.7%*	*9.7%*	*0.0%*	*0.0%*
Clear and detail Project Scope	*41.9%*	*35.5%*	*16.1%*	*6.5%*	*0.0%*
Work breakdown structure	*51.6%*	*38.7%*	*0.0%*	*6.5%*	*3.2%*
Control Scope	*16.1%*	*61.3%*	*22.6%*	*0.0%*	*0.0%*

Table 0-8: Percentage distribution of Project Scope Management factors at Bulbula

B	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Plan Scope Management	*51.5%*	*48.5%*	*0.0%*	*0.0%*	*0.0%*
process of determining, documenting & managing Stakeholders needs & requirements	*27.3%*	*72.7%*	*0.0%*	*0.0%*	*0.0%*
Clear and detail Project Scope	*63.6%*	*36.4%*	*0.0%*	*0.0%*	*0.0%*
Work breakdown structure	*36.4%*	*57.6%*	*6.1%*	*0.0%*	*0.0%*
Control Scope	*15.2%*	*72.7%*	*12.1%*	*0.0%*	*0.0%*

Project Schedule Management Success factors

Based on their experience respondents were expected to indicate the importance level of the project schedule management success factors and the data in both sites indicate that the factor are important for success of a project.

Table 0-9: Percentage distribution of Project Schedule Management factors at Arabsa

A	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Schedule Plan	*51.6%*	*45.2%*	*3.2%*	*0.0%*	*0.0%*
Identify and document activities to be performed	*35.5%*	*61.3%*	*3.2%*	*0.0%*	*0.0%*
Sequencing activities based on their relationships	*32.3%*	*38.7%*	*29.0%*	*0.0%*	*0.0%*
Estimate Activity Durations	*19.4%*	*61.3%*	*16.1%*	*3.2%*	*0.0%*
Develop Project Schedule	*32.3%*	*54.8%*	*12.9%*	*0.0%*	*0.0%*
Control as per the Schedule	*35.5%*	*54.8%*	*0.0%*	*9.7%*	*0.0%*

Table 0-10: Percentage distribution of Project Schedule Management factors at Bulbula

B	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Schedule Plan	*48.5%*	*51.5%*	*0.0%*	*0.0%*	*0.0%*
Identify and document activities to be performed	*21.2%*	*78.8%*	*0.0%*	*0.0%*	*0.0%*
Sequencing activities based on their relationships	*27.3%*	*63.6%*	*9.1%*	*0.0%*	*0.0%*
Estimate Activity Durations	*24.2%*	*66.7%*	*9.1%*	*0.0%*	*0.0%*
Develop Project Schedule	*33.3%*	*57.6%*	*9.1%*	*0.0%*	*0.0%*
Control as per the Schedule	*30.3%*	*54.5%*	*15.2%*	*0.0%*	*0.0%*

Project Cost Management Success factors

Table 4-9 and 4-10 below shows the reply of the respondents in both sites and the respond showed that project cost management factors are important to complete a project successfully.

Table 0-11: Percentage distribution of Project Cost Management factors at Arabsa

A	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Plan Cost Management	***58.1%***	***29.0%***	***3.2%***	***9.7%***	***0.0%***
Estimate Costs	***19.4%***	***74.2%***	***6.5%***	***0.0%***	***0.0%***
Reliable cost data for estimation	***29.0%***	***41.9%***	***22.6%***	***6.5%***	***0.0%***
Determine Budget	***45.2%***	***48.4%***	***6.5%***	***0.0%***	***0.0%***
Control Costs	***25.8%***	***67.7%***	***6.5%***	***0.0%***	***0.0%***

Table 0-12: Percentage distribution of Project Cost Management factors at Bulbula

B	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Plan Cost Management	***54.5%***	***36.4%***	***9.1%***	***0.0%***	***0.0%***
Estimate Costs	***54.5%***	***39.4%***	***6.1%***	***0.0%***	***0.0%***
Reliable cost data for estimation	***42.4%***	***51.5%***	***3.0%***	***3.0%***	***0.0%***
Determine Budget	***39.4%***	***57.6%***	***0.0%***	***3.0%***	***0.0%***
Control Costs	***33.3%***	***57.6%***	***6.1%***	***3.0%***	***0.0%***

Project Quality Management Success factors

In these questions the respondents are expected to indicate the level of importance of project quality management. Table 4-11 and 4-12 shows that quality factors are important for the successful completion of a project.

Table 0-13: Percentage distribution of Project Quality Management factors at Arabsa

A	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Plan Quality Management	*41.9%*	*54.8%*	*3.2%*	*0.0%*	*0.0%*
Manage Quality	*58.1%*	*25.8%*	*16.1%*	*0.0%*	*0.0%*
Good measurement process	*32.3%*	*61.3%*	*0.0%*	*0.0%*	*6.5%*
Control Quality	*58.1%*	*29.0%*	*6.5%*	*6.5%*	*0.0%*
Act Early	*45.2%*	*48.4%*	*0.0%*	*6.5%*	*0.0%*
Financial Matters	*54.8%*	*38.7%*	*6.5%*	*0.0%*	*0.0%*

Table 0-14: Percentage distribution of Project Quality Management factors at Bulbula

B	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Plan Quality Management	*54.5%*	*36.4%*	*6.1%*	*3.0%*	*0.0%*
Manage Quality	*57.6%*	*36.4%*	*6.1%*	*0.0%*	*0.0%*
Good measurement process	*42.4%*	*51.5%*	*6.1%*	*0.0%*	*0.0%*
Control Quality	*39.4%*	*54.5%*	*6.1%*	*0.0%*	*0.0%*
Act Early	*42.4%*	*51.5%*	*6.1%*	*0.0%*	*0.0%*
Financial Matters	*51.5%*	*33.3%*	*15.2%*	*0.0%*	*0.0%*

Project Resource Management Success factors

Based on their experience respondents were expected to indicate the importance level of the project Resource management success factors and the data in both sites indicate that the factor are important for success of a project.

Table 0-15: Percentage distribution of Project Resource Management factors at Arabsa

A	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Availability of Resource management plan	*48.4%*	*45.2%*	*0.0%*	*6.5%*	*0.0%*
Estimation of resources for activities	*41.9%*	*51.6%*	*6.5%*	*0.0%*	*0.0%*
Obtain resources	*45.2%*	*35.5%*	*12.9%*	*0.0%*	*6.5%*
Develop Team	*35.5%*	*48.4%*	*16.1%*	*0.0%*	*0.0%*
Manage Team	*25.8%*	*74.2%*	*0.0%*	*0.0%*	*0.0%*
Control Resources	*67.7%*	*32.3%*	*0.0%*	*0.0%*	*0.0%*

Table 0-16: Percentage distribution of Project Resource Management factors at Bulbula

B	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Availability of Resource management plan	*39.4%*	*60.6%*	*0.0%*	*0.0%*	*0.0%*
Estimation of resources for activities (i.e. team, material, equipment, supplies…)	*45.5%*	*54.5%*	*0.0%*	*0.0%*	*0.0%*
Obtain resources	*42.4%*	*57.6%*	*0.0%*	*0.0%*	*0.0%*
Develop Team	*21.2%*	*78.8%*	*0.0%*	*0.0%*	*0.0%*
Manage Team	*27.3%*	*72.7%*	*0.0%*	*0.0%*	*0.0%*
Control Resources	*27.3%*	*66.7%*	*6.1%*	*0.0%*	*0.0%*

Project Communication Management Success factors

Here, the respondents were expected to indicate the level of importance of project communication management. The analyzed data computed in both sites based on frequency percentage method shows that scope factors are important to complete a project successfully.

Table 0-17: Percentage distribution of Project communication Management factors at Arabsa

A	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Plan Communications Management	*45.2%*	*48.4%*	*6.5%*	*0.0%*	*0.0%*
Manage Communications	*16.1%*	*83.9%*	*0.0%*	*0.0%*	*0.0%*
Monitor Communications	*9.7%*	*71.0%*	*19.4%*	*0.0%*	*0.0%*
Technological Maturity	*25.8%*	*51.6%*	*16.1%*	*6.5%*	*0.0%*
Flow of Information and process	*32.3%*	*61.3%*	*0.0%*	*6.5%*	*0.0%*

Table 0-18: Percentage distribution of Project Communication Management factors at Bulbula

B	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Plan Communications Management	*36.4%*	*54.5%*	*9.1%*	*0.0%*	*0.0%*
Manage Communications	*15.2%*	*75.8%*	*9.1%*	*0.0%*	*0.0%*
Monitor Communications	*21.2%*	*63.6%*	*15.2%*	*0.0%*	*0.0%*
Technological Maturity	*33.3%*	*57.6%*	*9.1%*	*0.0%*	*0.0%*
Flow of Information and process	*42.4%*	*42.4%*	*15.2%*	*0.0%*	*0.0%*

Project Risk Management Success factors

The objective of these questions is to see the awareness of the project executioners towards project Integration Management. The percentage distribution of the respondents is shown in the table 4-17 and 4-18 below and the respond in both sites implies that the factors of project integration management are important

Table 0-19: Percentage distribution of Project Risk Management factors at Arabsa

A	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Plan Risk Management	*32.3%*	*67.7%*	*0.0%*	*0.0%*	*0.0%*
Identify Risks	*32.3%*	*61.3%*	*6.5%*	*0.0%*	*0.0%*
Perform Qualitative Risk Analysis	*22.6%*	*74.2%*	*3.2%*	*0.0%*	*0.0%*
Perform Quantitative Risk Analysis	*22.6%*	*48.4%*	*29.0%*	*0.0%*	*0.0%*
Plan Risk Responses	*32.3%*	*48.4%*	*12.9%*	*6.5%*	*0.0%*
Implement Risk Responses	*25.8%*	*58.1%*	*16.1%*	*0.0%*	*0.0%*
Monitor Risks	*48.4%*	*35.5%*	*12.9%*	*3.2%*	*0.0%*

Table 0-20: Percentage distribution of Project Risk Management factors at Bulbula

B	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Plan Risk Management	*45.5%*	*45.5%*	*9.1%*	*0.0%*	*0.0%*
Identify Risks	*60.6%*	*30.3%*	*9.1%*	*0.0%*	*0.0%*
Perform Qualitative Risk Analysis	*33.3%*	*57.6%*	*9.1%*	*0.0%*	*0.0%*
Perform Quantitative Risk Analysis	*24.2%*	*63.6%*	*9.1%*	*3.0%*	*0.0%*
Plan Risk Responses	*15.2%*	*63.6%*	*18.2%*	*3.0%*	*0.0%*
Implement Risk Responses	*18.2%*	*69.7%*	*12.1%*	*0.0%*	*0.0%*
Monitor Risks	*12.1%*	*81.8%*	*6.1%*	*0.0%*	*0.0%*

Project Procurement Management Success factors

Table 4-19 and 4-20 below shows the reply of the respondents in both sites and the respond showed that project procurement management factors are important to complete a project successfully.

Table 0-21: Percentage distribution of Project Procurement Management factors at Arabsa

A	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Plan Procurement Management	*48.4%*	*48.4%*	*0.0%*	*3.2%*	*0.0%*
Bid/Supplier list	*29.0%*	*64.5%*	*6.5%*	*0.0%*	*0.0%*
Conduct Procurements	*25.8%*	*64.5%*	*9.7%*	*0.0%*	*0.0%*
Control Procurements	*32.3%*	*61.3%*	*3.2%*	*3.2%*	*0.0%*

Table 0-22: Percentage distribution of Project Procurement Management factors at Bulbula

B	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Plan Procurement Management	*33.3%*	*66.7%*	*0.0%*	*0.0%*	*0.0%*
Bid/Supplier list	*24.2%*	*75.8%*	*0.0%*	*0.0%*	*0.0%*
Conduct Procurements	*30.3%*	*69.7%*	*0.0%*	*0.0%*	*0.0%*
Control Procurements	*33.3%*	*66.7%*	*0.0%*	*0.0%*	*0.0%*

Project Stakeholder Management Success factors

Here, the respondents were expected to indicate the level of importance of project stakeholder management. The analyzed data computed in both sites based on frequency percentage method shows that scope factors are important to complete a project successfully.

Table 0-23: Percentage distribution of Project Stakeholders Management factors at Arabsa

A	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Identify Stakeholders	*25.8%*	*64.5%*	*6.5%*	*3.2%*	*0.0%*
Plan Stakeholder Engagement	*29.0%*	*71.0%*	*0.0%*	*0.0%*	*0.0%*
Manage Stakeholder Engagement	*38.7%*	*48.4%*	*12.9%*	*0.0%*	*0.0%*
Monitor Stakeholder Engagement	*38.7%*	*54.8%*	*3.2%*	*3.2%*	*0.0%*

Table 0-24: Percentage distribution of Project Stakeholders Management factors at Bulbul

B	Extremely Important	Very Important	Neutral	Low Important	Not Important at all
Identify Stakeholders	*30.3%*	*69.7%*	*0.0%*	*0.0%*	*0.0%*
Plan Stakeholder Engagement	*30.3%*	*54.5%*	*15.2%*	*0.0%*	*0.0%*
Manage Stakeholder Engagement	*21.2%*	*66.7%*	*12.1%*	*0.0%*	*0.0%*
Monitor Stakeholder Engagement	*30.3%*	*66.7%*	*3.0%*	*0.0%*	*0.0%*

Relative Importance Index

Section II and Section III of the questionnaire were analyzed using Relative Importance Index (RII). Thus, the questions answered by the respondents were ranked based on the analysis conducted using RII. Base on the importance of each factor, the point scale is assigned as follows: 5 point for extremely important, 4 points for very important, 3 points for neutral, 2 points for low important and 1 point for not important at all.

The relative importance index (RII) was calculated using the following formula

$$RII = \frac{\Sigma P.U}{N(n)}$$

Where,

RII = relative importance Index

P = Respondent's Rating

U = Number of respondents placing identical rating

n = total number of respondents

N = the highest attainable score (in this case 5)

General Success Factors

Table 0-25: General Success Factors ranked using RII

A	Relative Importance Index	B	Relative Importance Index
Clear and Defined Goal	***0.9613***	**Adequate Budget**	***0.9515***
Detailed Plan	***0.9290***	**Project Manager Capability**	***0.9152***
Support and Competence of project Consultant	***0.9226***	**Clear and Defined Goal**	***0.8970***
Commitment of Project Team	***0.9161***	**Detailed Plan**	***0.8970***
Top Management Support	***0.8968***	**Commitment of Project Team**	***0.8848***
Adequate Budget	***0.8903***	**Effective Communication**	***0.8848***
Project Manager Capability	***0.8839***	**On time fund availability**	***0.8848***
On time fund availability	***0.8839***	**Risk Managed**	***0.8788***
Project Control System	***0.8774***	**Top Management Support**	***0.8727***
Effective Coordination	***0.8581***	**Project Control System**	***0.8727***
Effective Procurement	***0.8581***	**Allocation of Sufficient Resources**	***0.8606***
Allocation of Sufficient Resources	***0.8452***	**Compliance With Rules and Regulation**	***0.8606***
Proven Technology	***0.8387***	**Effective Coordination**	***0.8545***
Realistic Schedule	***0.8258***	**Realistic Schedule**	***0.8485***
Effective Communication	***0.8194***	**Support and Competence of project Consultant**	***0.8424***
Compliance With Rules and Regulation	***0.8194***	**Effective Procurement**	***0.8364***
Risk Managed	***0.8194***	**Proven Technology**	***0.8182***
Past Experience	***0.7742***	**Past Experience**	***0.8061***

Table 0-26: Mean representation of the General Success Factors

	Mean Bulbula		Mean Arabsa
Adequate Budget	***1.24***	**Clear and Defined Goal**	***1.19***
Project Manager Capability	***1.42***	**Detailed Plan**	***1.35***
Clear and Defined Goal	***1.52***	**Support and Competence of project Consultant**	***1.39***
Detailed Plan	***1.52***	**Commitment of Project Team**	***1.42***
Effective Communication	***1.58***	**Top Management Support**	***1.52***
Commitment of Project Team	***1.58***	**Adequate Budget**	***1.55***
On time fund availability	***1.58***	**On time fund availability**	***1.58***

Risk Managed	***1.61***	**Project Manager Capability**	***1.58***
Project Control System	***1.64***	**Project Control System**	***1.61***
Top Management Support	***1.64***	**Effective Coordination**	***1.71***
Compliance With Rules and Regulation	***1.70***	**Effective Procurement**	***1.71***
Allocation of Sufficient Resources	***1.70***	**Effective Communication**	***1.74***
Effective Coordination	***1.73***	**Allocation of Sufficient Resources**	***1.77***
Realistic Schedule	***1.76***	**Proven Technology**	***1.81***
Support and Competence of project Consultant	***1.79***	**Realistic Schedule**	***1.87***
Effective Procurement	***1.82***	**Compliance With Rules and Regulation**	***1.90***
Proven Technology	***1.91***	**Risk Managed**	***1.90***
Past Experience	***1.97***	**Past Experience**	***2.13***

However, the overall sequential merged relative importance index rank computation of both sites was:

Table 0-27: Overall Merged rank of the sites using RII

Clear and Defined Goal	0.9281
Adequate Budget	0.9219
Detailed Plan	0.9125
Project Manager Capability	0.9000
Commitment of Project Team	0.9000
Top Management Support	0.8844
On time fund availability	0.8844
Support and Competence of project Consultant	0.8813
Project Control System	0.8750
Effective Communication	0.8688
Effective Coordination	0.8563
Allocation of Sufficient Resources	0.8531
Risk Managed	0.8500
Effective Procurement	0.8469
Compliance With Rules and Regulation	0.8406
Realistic Schedule	0.8375
Proven Technology	0.8281
Past Experience	0.7906

The aim of the question under Project Integration Management is to understand the view of the project executioners regarding project integration management. The table 4.24 below is the feedback of the respondents which show the importance level of each integration factor based on their experience. The identified factors at Bole Arabsa site are ranked from 1st up to 6th and availability of project management plan is ranked first followed by monitor and control project work, Direct and manage project work, project charter that authorizes existence of a project, change control and close project with scores of 0.8903, 0.8710, 0.8258, 0.8194, 0.7484 and 0.7290 respectively. On the other hand, the respondents at Bole Bulbula ranked availability of project management plan first and it is followed by monitor and control project works, project charter that authorizes existence of a project, direct and manage project work, change control and close project with score of 0.8545, 0.8545, 0.8364, 0.8364, 0.7515 and 0.6788 respectively.

Table 0-28: Project Integration Management Success Factors Rank in RII method

A	Relative Importance Index	B	Relative Importance Index
Availability of Project management Plan	***0.8903***	**Availability of Project management Plan**	***0.8545***
Monitor and Control Project Work	***0.8710***	**Monitor and Control Project Work**	***0.8545***
Direct and Manage Project Work	***0.8258***	**Project charter that Authorizes existence of a Project**	***0.8364***
Project charter that Authorizes existence of a Project	***0.8194***	**Direct and Manage Project Work**	***0.8364***
Change Control	***0.7484***	**Change Control**	***0.7515***
Close Project or Phase	***0.7290***	**Close Project or Phase**	***0.6788***

The table 4-25 below shows the degree of relevance of Project Scope Management success factors and the questions were designed to know the view of the project executioners. Among the identified five factors, plan scope management is ranked 1st by Bole Arabsa staff member and the factor is followed by work breakdown, process of determining, documenting and managing stakeholders needs and requirements, clear and detail project scope and finally control scope factors. The scores of the factors based on their respective rank are 0.9097, 0.8581, 0.8258, 0.8258 and 0.7871. The table also shows the respondents rank of Bole Bulbula site. Based on the computation of the data using RII method, clear and detail project scope is ranked 1st and followed by plan scope management, work breakdown structure, process of determining, documenting and managing stakeholders needs and requirements and control scope. The respective scores of the respondents are 0.9273, 0.9030, 0.8606, 0.8545 and finally 0.8061.

Table 0-29: Project Scope Management Success Factors Rank in RII method

A	Relative Importance Index	B	Relative Importance Index
Plan Scope Management	***0.9097***	**Clear and detail Project Scope**	***0.9273***
Work breakdown structure	***0.8581***	**Plan Scope Management**	***0.9030***
process of determining, documenting & managing Stakeholders needs & requirements	***0.8258***	**Work breakdown structure**	***0.8606***
Clear and detail Project Scope	***0.8258***	**process of determining, documenting & managing Stakeholders needs & requirements**	***0.8545***
Control Scope	***0.7871***	**Control Scope**	***0.8061***

In this question, the respondents were expected to show the importance of project Schedule Management based on their experience. The table below shows the RII distribution of the respondents towards the success variables. Based on the calculation, the factor that was ranked 1st by Bole Arabsa staff members is schedule plan and identify and document activities to be performed, develop project schedule, control as per the schedule, sequencing activities based on their relationship and estimate activity duration are ranked sequentially. The sequential scores of the factors are 0.8968, 0.8645, 0.8387, 0.8323, 0.8065 and 0.7935. The respondent at Bole Bulbula ranked schedule plan 1st and it is followed by develop project schedule, identify and document activities to be performed, sequencing activities based on their relationships, estimate activity durations and control as per the schedule. Their sequential score are 0.8970, 0.8485, 08424, 0.8364, 0.8303 and 0.8303.

Table 0-30: Project Schedule Management Success Factors Rank in RII method

A	Relative Importance Index	B	Relative Importance Index
Schedule Plan	***0.8968***	**Schedule Plan**	***0.8970***
Identify and document activities to be performed	***0.8645***	**Develop Project Schedule**	***0.8485***
Develop Project Schedule	***0.8387***	**Identify and document activities to be performed**	***0.8424***
Control as per the Schedule	***0.8323***	**Sequencing activities based on their relationships**	***0.8364***
Sequencing activities based on their relationships	***0.8065***	**Estimate Activity Durations**	***0.8303***
Estimate Activity Durations	***0.7935***	**Control as per the Schedule**	***0.8303***

Here, the respondent's response indicated the degree of relevance of Project Cost Management success factors and their responses were shown in the tables below using RII method. The staff members of Bole Arabsa site ranked Determine Budget as 1st factor and followed by plan cost management, control costs, estimate costs and reliable cost data for estimation. Their sequential score are 0.8774, 0.8710, 0.8387, 0.8258 and 0.7871. On the other hand, based on the respondent of the staff at Bole Bulbula site, estimate costs is ranked 1st and it is followed by plan cost management, reliable cost data for estimation, determine budget and control costs. The score of the factors is 0.8970, 0.8909, 0.8667, 0.8667 and 0.8424 respectively.

Table 0-31: Project Cost Management Success Factors Rank in RII method

A	Relative Importance Index	B	Relative Importance Index
Determine Budget	***0.8774***	**Estimate Costs**	***0.8970***
Plan Cost Management	***0.8710***	**Plan Cost Management**	***0.8909***
Control Costs	***0.8387***	**Reliable cost data for estimation**	***0.8667***
Estimate Costs	***0.8258***	**Determine Budget**	***0.8667***
Reliable cost data for estimation	***0.7871***	**Control Costs**	***0.8424***

In this question the respondents are asked to identify the level of importance of the success factors of Project Quality Management based on their field experience and their response is presented in the tables below using RII method. The identified factors at Bole Arabsa site are ranked from 1st up to 6th and financial matter is ranked first followed by manage quality, plan quality management, control quality, act early and good measurement process with scores of 0.8968, 0.8839, 0.8774, 0.8774, 0.8645 and 0.8258 respectively. On the other hand, the respondents at Bole Bulbula ranked manage quality first and it is followed by plan quality management, good measurement process with score of 0.9030, 0.8848, 0.8727, 0.8727, 0.8727 and 0.8667 respectively.

Table 0-32: Project Quality Management Success Factors Rank in RII method

A	**Relative Importance Index**	B	**Relative Importance Index**
Financial Matters	***0.8968***	**Manage Quality**	***0.9030***
Manage Quality	***0.8839***	**Plan Quality Management**	***0.8848***
Plan Quality Management	***0.8774***	**Good measurement process**	***0.8727***
Control Quality	***0.8774***	**Act Early**	***0.8727***
Act Early	***0.8645***	**Financial Matters**	***0.8727***
Good measurement process	***0.8258***	**Control Quality**	***0.8667***

The aim of this question is to understand the view of the project executioners regarding the success factors under Project Resource Management. The below table 4.29 is the feedback of the respondents which show the importance level of each resource management factors based on their experience using RII method. Based on the calculation, the factor that was ranked 1st by Bole Arabsa staff members is control resource and availability of resource management plan, Estimation of resources for activities, manage team, develop team and obtain resource are ranked sequentially. The sequential scores of the factors are 0.9355, 0.8710, 0.8710, 0.8516 0.8387 and 0.8258. The respondent at Bole Bulbula ranked Estimation of resources for activities 1st and it is followed by obtain resource, availability of resource management plan, manage team, develop team and control resource. Their sequential score are 0.8909, 0.8848, 08788, 0.8545, 0.8424 and 0.8424.

Table 0-33: Project Resource Management Success Factors Rank in RII method

A	Relative Importance Index	B	Relative Importance Index
Control Resources	***0.9355***	**Estimation of resources for activities (i.e. team, material, equipment, supplies…)**	***0.8909***
Availability of Resource management plan	***0.8710***	**Obtain resources**	***0.8848***
Estimation of resources for activities (i.e. team, material, equipment, supplies…)	***0.8710***	**Availability of Resource management plan**	***0.8788***
Manage Team	***0.8516***	**Manage Team**	***0.8545***
Develop Team	***0.8387***	**Develop Team**	***0.8424***
Obtain resources	***0.8258***	**Control Resources**	***0.8424***

Here, the respondents indicated the degree of relevance of Project Communication Management success factors and using RII method, their responses were shown in the tables below. The staff members of Bole Arabsa site ranked plan communication management as 1st factor and followed by flow of information and process, manage communication, technological maturity and monitor communication chronologically. Their sequential score are 0.8774, 0.8387, 0.8323, 0.7935 and 0.7806. On the other hand, based on the respondent of the staff at Bole Bulbula site, plan communications management is ranked 1st and it is followed by flow of information and process, technological maturity, manage communications and monitor communications. The score of the factors is 0.8545, 0.8545, 0.8485, 0.8121 and 0.8121 respectively.

Table 0-34: Project Communication Management Success Factors Rank in RII method

A	Relative Importance Index	B	Relative Importance Index
Plan Communications Management	***0.8774***	**Plan Communications Management**	***0.8545***
Flow of Information and process	***0.8387***	**Flow of Information and process**	***0.8545***
Manage Communications	***0.8323***	**Technological Maturity**	***0.8485***
Technological Maturity	***0.7935***	**Manage Communications**	***0.8121***
Monitor Communications	***0.7806***	**Monitor Communications**	***0.8121***

In this question the respondents are asked to identify the level of importance of the success factors of Project Risk Management based on their field experience and their response is presented in the tables below. Among the identified seven factors, plan risk management is ranked 1st by Bole Arabsa staff member and the factor is followed by monitor risks, identify risks, perform qualitative risk analysis, implement risk response, plan risk response and finally perform quantitative risk analysis. The scores of the factors based on their respective rank are 0.8645, 0.8581, 0.8516, 0.8387, 0.8194, 0.8129 and 0.7871. The table also shows the respondents rank of Bole Bulbula site. Based on the computation of the data using RII method, identify risks is ranked 1st and followed by plan risk management, perform qualitative risk analysis, perform quantitative risk analysis, implement risk response, monitor risks and plan risk response. The respective scores of the respondents are 0.9030, 0.8727, 0.8485, 0.8182, 0.8121, 0.8121 and finally 0.7818.

Table 0-35: Project Risk Management Success Factors Rank in RII method

A	**Relative Importance Index**	B	**Relative Importance Index**
Plan Risk Management	***0.8645***	**Identify Risks**	***0.9030***
Monitor Risks	***0.8581***	**Plan Risk Management**	***0.8727***
Identify Risks	***0.8516***	**Perform Qualitative Risk Analysis**	***0.8485***
Perform Qualitative Risk Analysis	***0.8387***	**Perform Quantitative Risk Analysis**	***0.8182***
Implement Risk Responses	***0.8194***	**Implement Risk Responses**	***0.8121***
Plan Risk Responses	***0.8129***	**Monitor Risks**	***0.8121***
Perform Quantitative Risk Analysis	***0.7871***	**Plan Risk Responses**	***0.7818***

The tables below show the degree of relevance of Project Procurement Management success factors and the questions were designed to know the view of the project executioners. The identified factors at Bole Arabsa site are ranked from 1st up to 4th and plan procurement management, bid/supplier list, control procurement and conduct procurement with scores of 0.8839, 0.8452, 0.8452 and 0.8323 respectively. On the other hand, the respondents at Bole Bulbula ranked plan procurement management first and it is followed by control procurement, conduct procurement and bid/supplier list with score of 0.8667, 0.86667, 0.8606 and 0.8485 respectively.

Table 0-36: Project Procurement Management Success Factors Rank in RII method

A	Relative Importance Index	B	Relative Importance Index
Plan Procurement Management	***0.8839***	**Plan Procurement Management**	***0.8667***
Bid/Supplier list	***0.8452***	**Control Procurements**	***0.8667***
Control Procurements	***0.8452***	**Conduct Procurements**	***0.8606***
Conduct Procurements	***0.8323***	**Bid/Supplier list**	***0.8485***

The purpose of this question is to understand the view of the project executioners regarding the success factors under Project Stakeholders Management. The below tables 4.33 is the feedback of the respondents which show the importance level of each stakeholder management factors based on their experience using RII method. The identified factors at Bole Arabsa site are ranked from 1st up to 6th and plan stakeholder engagement is ranked first followed by monitor stakeholder engagement, manage stakeholder engagement and identify stakeholders with scores of 0.8581, 0.8581, 0.8516 and 0.8258 respectively. On the other hand, the respondents at Bole Bulbula ranked identify stakeholders first and it is followed by monitor stakeholder engagement, plan stakeholder engagement and manage stakeholder engagement with score of 0.8606, 0.8545, 0.8303 and 0.8182 respectively.

Table 0-37: Project Stakeholder Management Success Factors Rank in RII method

A	Relative Importance Index	B	Relative Importance Index
Plan Stakeholder Engagement	***0.8581***	**Identify Stakeholders**	***0.8606***
Monitor Stakeholder Engagement	***0.8581***	**Monitor Stakeholder Engagement**	***0.8545***
Manage Stakeholder Engagement	***0.8516***	**Plan Stakeholder Engagement**	***0.8303***
Identify Stakeholders	***0.8258***	**Manage Stakeholder Engagement**	***0.8182***

Chapter Five

5.1 Conclusion and Recommendation

5.1.1 Introduction

This chapter attempts to present the conclusion of the research project based on the analysis, provide a recommendation for the Institutes and suggestions for further research for interested readers.

5.2 Conclusion

The primary objective of this section is to address the research objectives that are identified in Chapter 1.

5.2.1 To identify the critical success factors in construction of condos.

The aim of this objective is to identify the critical success factors in the building construction industry for effective implementation of the factors in order to complete projects successfully. In this research paper the project success factors are identified from different literature and they categorized into two: general success factors and success factors identified under Project Management Book of Knowledge.

For the following identified reasons it is possible to conclude that the identified factors are important for the success of a project: First, the general success factors are the review and summary of 63 published journals (Fortune, et al., 2006) and other similar published journals. Since the identified factors occurrence is high in most of the journals, it is possible to arrive at conclusion that the factors identified in this research paper are critical for successful completion of a project and have to be identified when conducting similar building construction Projects. Secondly, the project professionals in both sites had categorized the factors in accordance with the levels (Extremely Important, very important, neutral, low importance and not important at all). According to the data analysis, most of the respondents agree on the importance of the factors for successful completion of a project. However, the respondents within the profession showed differences in their ranking of items for instance clear and defined goal is ranked 1st by Bole Arabsa respondents, however, the respondents at Bole Bulbula ranked it in 3rd place. Thus, it is possible to conclude that the factors that determine the success of a project differ between the sites.

5.2.2 To see the awareness of the project executioners towards PMBOK area.

The factors are identified from 10 knowledge areas identified in PMBOK. In both sites, the respondents indicated the rank level of the factors based of their past experience. According to the data, many respondents agree on the importance of the factors with little discrimination between the factors. However, most of the respondents are aware of that the factors and considered them as an important factors for similar building construction projects. Like the general factors, the respondents differ on the degree of importance of the success factors. For instance, upon identifying and ranking the Project Quality Management factors, adequate budget is ranked 1st at Bole Arabsa respondents, however, it was ranked 5th by Bole Bulbula professionals. Thus, it is possible to conclude that the project executioners in both sites have awareness on the importance of the management body of knowledge area even if their degree of understanding is differs.

5.3 Recommendation

Whether it is small or huge, projects will face some challenges when they are engaged in building construction. Thus, this study recommends that all the project executioners have to understand the importance of the identified 18 general success factors and success factors under 10 knowledge area of project management in order to tackle the challenges including the respondents ranked the factors as low important or who are neutral. Understanding the success factors will enable the project executioners to perform the construction of condominium projects in a better way within time, on or near budget and with a desired quality and performance.

The data analysis showed that there is a difference between the respondents within and between the sites. Thus, it is reasonable to recommend that there should be a framework which brings the professional to reduce the overlap within the existing factors. Since there is a difference within the professionals, it is also suggesteaad to see the experience and trends of large construction companies whether it is internally (like Tsehay Real-estate, sunshine real-estate…) or globally.

Further research can be made for other kind of projects like dam construction, IT projects and so on. It will help to compare the results with the findings from this research. The combined result and effort has the potential to provide inputs for improving and identifying the most critical success factors.

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Dear sir/Madam

I am undertaking a research project on the topic *FACTORS THAT DETERMINE THE SUCCESS OF BUILDING CONSTRUCTION PROJECTS: A CASE STUDY OF BOLE ARABSA CONDOMINIUM Vs BOLE BULBULA* to fulfill the partial requirements for the Master degree in Project Management, at Addis Ababa University College of Commerce. To this end, I kindly request you to complete the attached questionnaire regarding the building construction factors. Although your response is of the utmost importance to me, your participation in this survey is entirely voluntary.

Please do not enter your name or contact details on the questionnaire. It remains anonymous. Information provided by you remains confidential and will be reported in summary format only.
Should you have any queries or comments regarding this survey, you are most welcome to contact
Mobile 0911-25-23-26 or e-mail at tewodros9945@gmail.com.
With best regards,

Tewodros Berhanu
May 01, 2018
Addis Ababa

ANNEX

Section 1: Background & General Information

This research questionnaire is intended for the purpose of studying the factors that leads a project to be successful. Thus, please give your answer by ticking on the box provide. The confidentiality of your personal information is kept. Thanks in advance for your co-operation.

1. Name of Company:____
2. Position in Company:

   ☐ Project Manager ☐ Supervisor

   ☐ General Manager ☐ Equipment Manager

   ☐ Engineer ☐ Others:
3. Gender:

   ☐ Male ☐ Female
4. Please mention your level of education:

   ☐ Diploma ☐ Bachelor ☐ MSC/MBA Master ☐ PHD ☐ Other
5. Year of Experience in Construction Projects?

   ☐ 0 – 2 years ☐ 3 – 5 years ☐ 6-10 years ☐ Above 10 years
6. Number of staffs:

   ☐ < 50 staff ☐ 51 – 100 staff ☐ 101 – 200 staff ☐ > 200 staff
7. Type of Organization:

   ☐ Private ☐ Government ☐ NGO's

   ☐ Other ____________________

Section II: Project Management General Success Factors

The purpose of this section questionnaire is to show the extent of factors that are significant for the success completion of a project. Thus, you are kindly requested to show the degree of relevance of the following general factors. Thanks in advance for your co-operation.

[1= Extremely Important, 2= Very Important, 3= Neutral, 4= Low Important, 5= Not important at all]

No.	General Factors	1	2	3	4	5
1	Clear and Defined Goal					
2	Detailed Plan					
3	Top management support					
4	Project Manager capability					
5	Commitment of Project Team					
6	Adequate Budget					
7	Realistic Schedule					
8	Proven Technology					
9	Allocation of sufficient Resources					
10	Effective communication					
11	Effective Project activity coordination					
12	Effective Procurement					
13	Compliance with the rules and procedures					
14	Support and competence of project Consultant					
15	On time fund availability					
16	Project control system					
17	Risk addressed/Managed					
18	Past Experience					

Section III: Project Management Body of Knowledge (PMBOK) Success Factors

In this section, the questionnaire is designed to show the extent of factors that are significant for the success of a project as per PMBOK book developed by Project Management Institute (PMI). Thus, you are kindly requested to show the degree of relevance of the following factors as per their category. Thanks in advance for your co-operation.

[1= Extremely Important, 2= Very Important, 3= Neutral, 4= Low Important, 5= Not important at all]

Project Integration

No.	Integration Factors	1	2	3	4	5
1	Project charter that Authorizes existence of a project					
2	Availability of Project Management Plan					
3	Direct and Manage Project Work					
4	Monitor and Control Project Work					
5	Change Control					
6	Close Project or Phase					
7	Other factor if any,____					

Project Scope

No.	Scope Factors	1	2	3	4	5
1	Plan Scope Management					
2	Process of determining, documenting & managing stakeholders needs & requirements.					
3	Clear and detail project Scope					
4	Work breakdown structure					
5	Control Scope					
6	Other factor if any,____					

Project Schedule

No.	Schedule Factors	1	2	3	4	5
1	Schedule Plan					
2	Identify and document activities to be performed					
3	Sequencing activities based on their relationships					
4	Estimate Activity Durations					
5	Develop Project Schedule					
6	Control as per the Schedule					
7	Other factor if any,____________________					

Project Cost

No.	Cost Factors	1	2	3	4	5
1	Plan Cost Management					
2	Estimate Costs					
3	Reliable cost data for estimation					
4	Determine Budget					
5	Control Costs					
6	Other factor if any,____________________					

Project Quality

No.	Quality Factors	1	2	3	4	5
1	Plan Quality Management					
2	Manage Quality					
3	Good measurement process					
4	Control Quality					
5	Act Early					
6	Financial Matters					
7	Other factor if any,____________________					

Project Resource

No.	Resource Factors	1	2	3	4	5
1	Availability of Resource management plan					
2	Estimation of resources for activities (i.e. team, material, equipment, supplies…)					
3	Obtain resources					
4	Develop Team					
5	Manage Team					
6	Control Resources					
7	Other factor if any,____					

Project Communication

No.	Communication Factors	1	2	3	4	5
1	Plan Communications Management					
2	Manage Communications					
3	Monitor Communications					
4	Technological Maturity					
5	Flow of Information and process					
6	Other factor if any,____					

Project Risk

No.	Risk Factors	1	2	3	4	5
1	Plan Risk Management					
2	Identify Risks					
3	Perform Qualitative Risk Analysis					
4	Perform Quantitative Risk Analysis					
5	Plan Risk Responses					
6	Implement Risk Responses					
7	Monitor Risks					
8	Other factor if any,____					

Project Procurement

No.	Procurement Factors	1	2	3	4	5
1	Plan Procurement Management					
2	Bid/Supplier list					
3	Conduct Procurements					
4	Control Procurements					
5	Other factor if any,____					

Project Stakeholder Management

No.	Stakeholder Management Factors	1	2	3	4	5
1	Identify Stakeholders					
2	Plan Stakeholder Engagement					
3	Manage Stakeholder Engagement					
4	Monitor Stakeholder Engagement					
5	Other factor if any,____					