EVALUATION OF CORE COMPETENCIES REQUIRED BY PROJECT MANAGERS TO EFFECTIVELY EXECUTE A CONSTRUCTION PROJECT

By

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ABSTRACT

Construction projects are deemed to be complex due to the uncertainties involved in such projects. The project management literature has outlined challenges that are found in construction projects. It points out that major challenges and problems found in construction projects include cost and schedule overruns. To achieve construction project success a project has to be completed within cost, time and quality standards or performance. To attain success has always been difficult due to the lack of skills and competencies required by construction project managers.

A project manager that has the desired competencies to effectively manage cost, time and quality standards in construction projects is needed. Poor management of construction projects is not only in South Africa but it's a global challenge. Through the combination of qualitative and quantitative research method (also known a mixed method) this study evaluates project manager's competencies with the objectives of determining the appropriate competencies that could assist a project manager to excellently execute construction projects. This thesis points out that for an effective project manager to successfully manage construction projects requires to have high strength on leadership competency to provide project leadership, communication competency to direct a way forward in a project and problem solving competency to provide feasible solutions.

Provision of project leadership refers to a project manager upholding effective working relationships with colleagues, influencing others to work without being pressurised and provision of vision for the team to know their direction. Direct a way forward in a project refers to a project manager effectively communicating project objectives, speaking to encourage team members to perform tasks efficiently and listen actively. Provision of feasible solutions refers to a project manager having an ability to identify a problem, seeking best solutions when dealing with problems and exhibiting creativity in problem solving.

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CHAPTER 1
BACKGROUND TO THE RESEARCH

1.1 INTRODUCTION

Construction projects are deceiving when completed because they appear to be easy and simple whereas they are too complex especially on execution phase. Completing a construction project within cost, quality and time is not easy for project managers due to the complexity and uncertainties that goes with construction projects. Therefore this study seeks to determine the competencies required by project managers to successfully manage construction projects through a mixed method. Wateridge and Crawford as cited by Beata, Kraneb, Ekambaramc and Prawelska-Skrzypekd (2014:247) assert that project managers add a significant value in different projects as well as impacting success of the projects. For project success a project manager that is capable is critical, and a number of studies have emphasized core competencies (Avots, Belassi, Tukel, Crawford, Sayles and Chandler as cited by Hwang and Jian Ng, 2013:2072).

Sumner and Powell (2013:1) state that a core competency is the knowledge, trait, skill, motive, attitude, value or other personal characteristic important in performing a job. Alternatively it is a hard skill that requires technical ability or a soft skill, whereby interpersonal skills are needed. Organizations that are successful in construction are ensuring that project managers obtain the necessary core competencies they desire to achieve project success. Huemann, Keegan and Turner as cited by Dziekoński (2017:175) state that project manager's responsibilities include a variety of undertakings from the project team administration to team leading, hence a project manager is ought to have an exclusive competencies and capabilities to implement a project successfully. According to Zakaria, Mohamed, Ahzahar and Hashim (2015:89), a project manager in construction industry is regarded as one among main parties and that in the shoulders of a construction project manager settles a success or failure of a project.

The South African Construction industry especially the managers that are involved in managing construction projects will benefit greatly on the outcomes of this research.

1.2 BACKGROUND

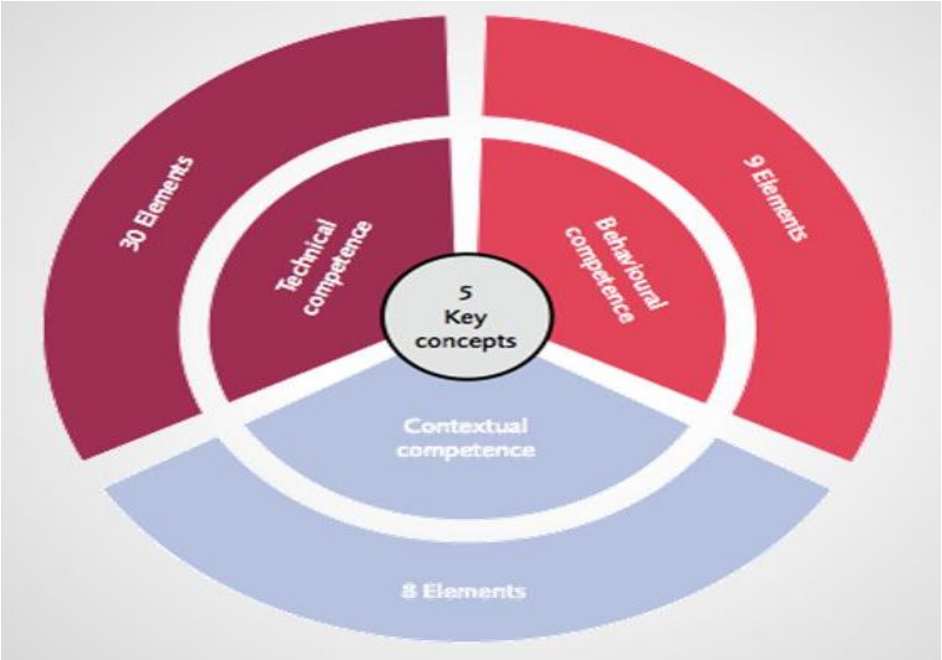
Alam, Gale, Brown and Khan as cited by Sumner and Powell (2013:2) state that for project managers to be effective they require both soft and hard skills. The hard skill competencies of the effective project managers has been observed by Project Management Body of Knowledge (PMBOK) as backing up the nine knowledge areas such as risk management, project quality management, project procurement management, project scope management, project cost management, project time management, integration management and communications management (Sumner *et al.,* 2013:2). The soft skills have been spotted as improving the effectiveness of a project manager and they include communication, leadership, written and verbal skills, attitude, capability to head-on with uncertainty as well as change (Stevenson and Starkweather as cited by Sumner *et al.,* 2013:2). Khamaksorn (2016:93) declares that the use of project management is a critical matter that involves application of accredited techniques, knowledge and skills so to effectively and efficiently execute a construction project through its life cycle.

Lock as cited by Khamaksorn (2016:93) points out that management of projects state and generate different rules together with regulations for technical terms as well as construction project management skills. Therefore knowledge about management of construction projects is the key in nowadays construction industry. Moreover project success is satisfying the expectations of the stakeholders and is measured by success factors that were agreed upon during project start (Khamaksorn, 2016:93). However some researchers have proven that project managers' competencies affect the project success (Jaselskis and Ashley as cited by Khamaksorn, 2016:93). Omidvar, Samad and Ali as cited by Khamaksorn (2016:93) mention that identification and development of project manager's competencies has become essential. Khamaksorn (2016:93) states that competent

project manager is important for a project to be successful and also that construction project managers have a task of delivering a physical product within project cost, quality, and scheduled time and also with safety needs. A project manager has to have knowledge together with skills to manage a project successfully as well as professionally (Hwang *et al.,* (2013:2072). The wheel of competence elements is grouped into the relevant competence domains, of which there are three: Technical, Behavioral, and Contextual.

Figure 1.1 below is the wheel of competence which presents the incorporation of all the competence elements necessary to a project manager that is effective.

Figure 1.1 The wheel of competence



Source: Khamaksorn (2016:94)

Narh (2013:1) mentions that effective project managers are characterized by having certain attributes that allows them to manage and execute project goals successfully. Project manager acquires these traits and qualities in the form of competencies through taught or acquired skills. Muller & Turner as cited by Narh (2013:1) state that once project manager's competencies are in line with the pro-

ject at hand, the project manager becomes more effective. These project manager's competencies manifest in the form of personal characteristics and knowledge to manage project personnel and improve project outcomes (Narh 2013:2).

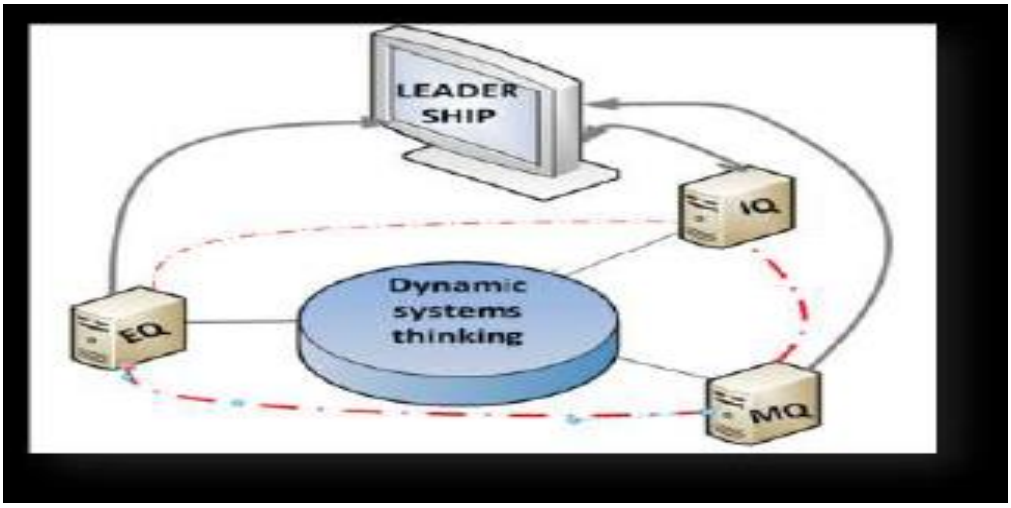
Thomas as cited by Narh (2013:2) believes that competencies are quantifiable, while a scholar such as Barber as cited by Narh (2013:2) is of the opinion that the measure of competency level is highly subjective due to individual variance. Mengel as cited by Narh (2013:2) grouped these competencies as emotional, managerial and intellectual competencies. Pant and Baroudi as cited by Narh (2013:4) state that emotional competencies are necessary for managing staffs and teams in order to utilize their competencies to perform work at hand for the benefit of a project. However Narh (2013:4) views project manager's emotional quality as the ability to be empathetic and relate with project team members. According to Dulewicz and Higgs as cited by Narh (2013:5) emotional quality has seven dimensions namely: conscientiousness, emotional resilience, influence, interpersonal sensitivity, intuitiveness, motivation and self-awareness.

Managerial quality is the ability to organize or direct a project team to deliver project goals in time and according to the expectations of a client (Narh, 2013:4). The time a project manager knows how to manage project stakeholder relations and assign them to their responsibilities is regarded as effective (Lampel as cited by Narh, 2013:4). According to Dulewicz and Higgs as cited by Narh (2013:4), there are five main areas which have been summed up to four that needs managerial competence in a project which are resource management that speak to the ability to coordinate and manage resources available for the project, achieving that speak to the ability to persist or endure during the life cycle of a project and to achieve objectives of a project, communication meaning an ability to engage with and convey relevant information to all stakeholders and lastly empowering and developing which speak to the ability to motivate and encourage team members to perform tasks efficiently.

Muller & Turner as cited by Narh (2013:3) state that leadership competency of a project manager is the ability to organize and bring together support of team

member's towards achieving project objective and goals. The constituents of leadership are shown in figure 1.2 below.

Figure 1.2 Constituencies of leadership



Source: Narh (2013:3)

Figure 1.2 explains leadership through intellectual quality, managerial quality and emotional quality. Furthermore it shows that leadership competency encompasses the dynamics of systems thinking inlight of intellectual qualities, emotional qualities and managerial qualities.

According to Dulewicz and Higgs as cited by Narh (2013:3), when leadership competence, is viewed through intellectual quality. It has three main components which are critical analysis and judgement that refers to the ability of being able to critically analyze information from different sources though investigation and questioning to obtain facts in order to make informed decision, strategic perspective that speaks to the ability of being able to recognize the prons and corns including associated risks and opportunities on a project and lastly vision and Imagination that speaks to the ability of being able to see beforehand consequences of the decisions made on the project including direction of a project.

Omidvar as cited by Narh (2013:3) states that technical competencies outline a project manager's knowledge and understanding of numerous processes that are

integrated within project execution and are qualities seen in any effective project management. However according to Bredin as cited by Narh (2013:5) technical competencies refers to the ability of being strategic and effective in managing resources and risks with direct or indirect impact on iron triangle. Assessment of technical competencies was traditionally based on cost, quality and time but now risk mitigation has been integrated as one of technical competencies. Technical competencies take into consideration the ability of compiling, handing-over and understanding of process involved in project execution (Barber as cited by Narh, 2013:5). The differences in technical competencies exist because they are project based however their importance on projects is indisputable (Omidvar Narh, 2013:5).

According to Narh (2013:5) a successful project manager is ought to be balanced in knowledge and have both leadership and technical competencies. Leadership competencies of a project manager are very essential compared to technical qualities and they include managerial, intellectual and emotional qualities whereas technical competencies include project execution features such as procurement, scope, communication, resource, risk, cost, time, quality and health and safety management.

For a construction project manager to be a good leader, he/she has to play a leadership role (Kerzner as cited by Burger,Verster & Zulch, 2015:51). Leaders are ought to be competent and desire knowledge that is technical, interpersonal skills as well as skills of project management (Culp and Smith as cited by Burger *et al.,* 2015:51). To people leaders offer vision and motivation therefore lack of knowledge affects project manager's leadership(Heldman as cited by Burger *et al.,*2015:51).Technical competencies of a project manager can be developed through training since they are project based (Narh, 2013:5). Technical knowledge of built environment is not required by a construction project manager, he/she can rely merely on project management knowledge (Burger *et al.,* 2015:53).

Devi (2013:25), states that it is vital for project managers to have diversity of managerial skills to be able to achieve project objectives since modern projects are complex in nature and the very key knowledge and skills necessary for a project manager are as follows:

- Management knowledge and skills: finance and accounting; sales and marketing; research and development; manufacturing and distributions; strategic planning; tactical planning; operational planning; organization structures; organizational behavior; personnel administration; managing work relationships.
- Human knowledge and skills: refers to the ability to work with people and through people.
- Technical knowledge and skills: refers to an understanding of and ability in a specific kind of activity, especially one involving methods, processes, procedures, or techniques.
- Business knowledge and skill: on small projects, this can be a tough challenge because project managers are also managing the project control function.

SACPCMP as cited by Burger *et al.,* (2015:51) assert that for a construction project manager to effectively implement construction projects is ought to have project management and technical competencies as shown in table 1.1. Table 1.1 provides the technical knowledge areas and the knowledge that is required for a specific area. The provided knowledge arears refers construction science, process, finance and design processes.

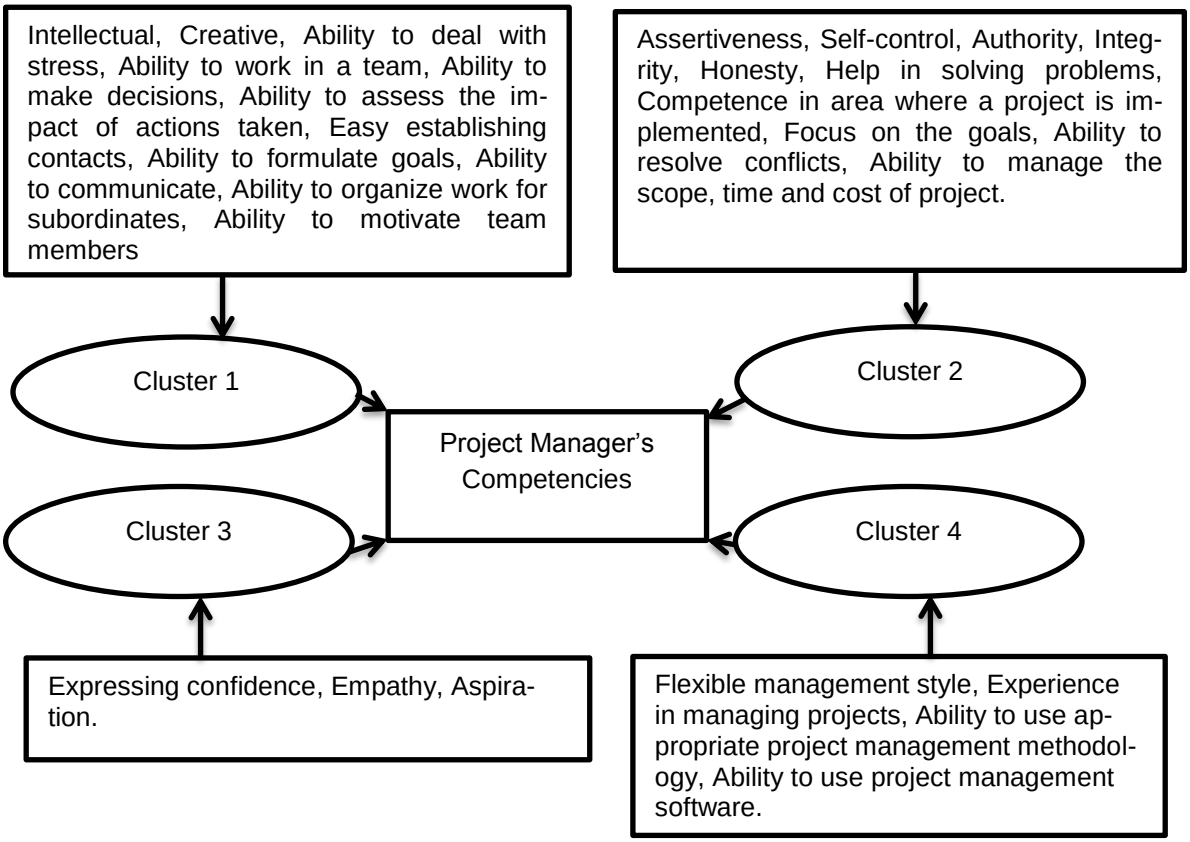
Table 1.1 Technical knowledge of construction project manager

Technical knowledge areas	*Required knowledge*
Knowledge of construction science	Understanding structures
	Understanding construction and building sciences
	Understanding construction and building finishes
	Knowledge of building materials
Knowledge of construction processes	Site, plant and equipment
	Formwork systems
	Quality management
	Health and safety management
	Environmental management
	Organisational/Management structures
	General building sequences
	General output and production factors
	Basic knowledge of building trades
Knowledge of design processes	Sequence of design processes
	Time required for design processes
Knowledge of financial and cost factors	Financial processes
	Cost of construction

Source: Burger *et al., (*2015:44)

According to Ly, Anumba, and Carrillo as cited by Khamaksorn (2016:95), construction project and organization should invest on Personal Knowledge Management (PKM) as the core of personal productivity processes in order to develop and implement project management knowledge and skills for constructions' project manager during their roles. Khamaksorn (2016:96) states that in order for a project manager to manage construction project successfully he/she first requires to exercise and cultivate project management competencies for construction. However this may be caused by construction project managers equipping themselves through learning and improving their technical and management skills of construction by taking relevant courses for professional development. According to Dziekoński (2017:179) the construction project manager's competencies shown in figure 1.3 are made up of managerial skills shown in cluster 1, personality characteristics and interpersonal abilities shown in

Figure 1.3 Construction project manager's competencies model



Source: adopted from Dziekoński (2017:179)

cluster 2, emotional intelligent characteristic shown in cluster 3 and complementary elements shown in cluster 4.

Figure 1.3 indicates that construction project manager's cluster 1 competences are managerial skills for a project manager, cluster 2 competencies are team managing skills supporting managerial skills, cluster 3 competencies are project manager's human skills to deal with his emotions and for others and cluster 4 competencies normally result from training, certification and knowledge of tools.

According to Iacob (2013:242), for a person to be recognized as a project manager he/she has to be chosen and a project needs to be in existence. A project manager is regarded as a major resource together with project team. In the leadership position the project manager takes planning responsibility, implementation and project closure and possesses the following six competencies namely: team

building, organization, communication, leadership, adaptability and technological skills. Table 1,2 provides the project manager's competencies.

Table 1.2 Project Manager Competencies

Competency	Explanation
Team building	• Means that a project manager ensures that there are activities that are undertaken to assist individuals function as a team because a solid united team is essential for project success. • A project manager always monitors the behavior of a project team to see whether any steps can be taken to resolve project team problems.
Organization	• Refers to a project manager being able to organize all what is important towards the benefit of a project such as project reports, project resources, capable project team,
Communication	• Refers to a project manager being able to effectively communicate to encourage team members to perform tasks efficiently. • Using communication to close the gap between stakeholders who have different backgrounds. • Actively listens, provide a feedback and communicates project objectives.
Leadership	• Implies that a project manager oversee that a project reaches its objectives successfully. • The project team is capable to work together to achieve goals of the project. A project manager upholds effective working relationships with colleagues.
Adaptability	• This means that a project manager has to be able to withstand the changes that come along managing projects together with barriers and associated project risks. • Project manager being mentally strong to accept that things may not go according to what was planned when the project was initiated.Project manager being able to think quickly and adjust the plans according to the present situation.
Technological skills	• Means that a project manager should be have computer skills. Follow up on the latest methods and techniques of managing projects since technology is forever improving.

Source: adopted from Meredith & Mantel as cited by Iacob (2013:242)

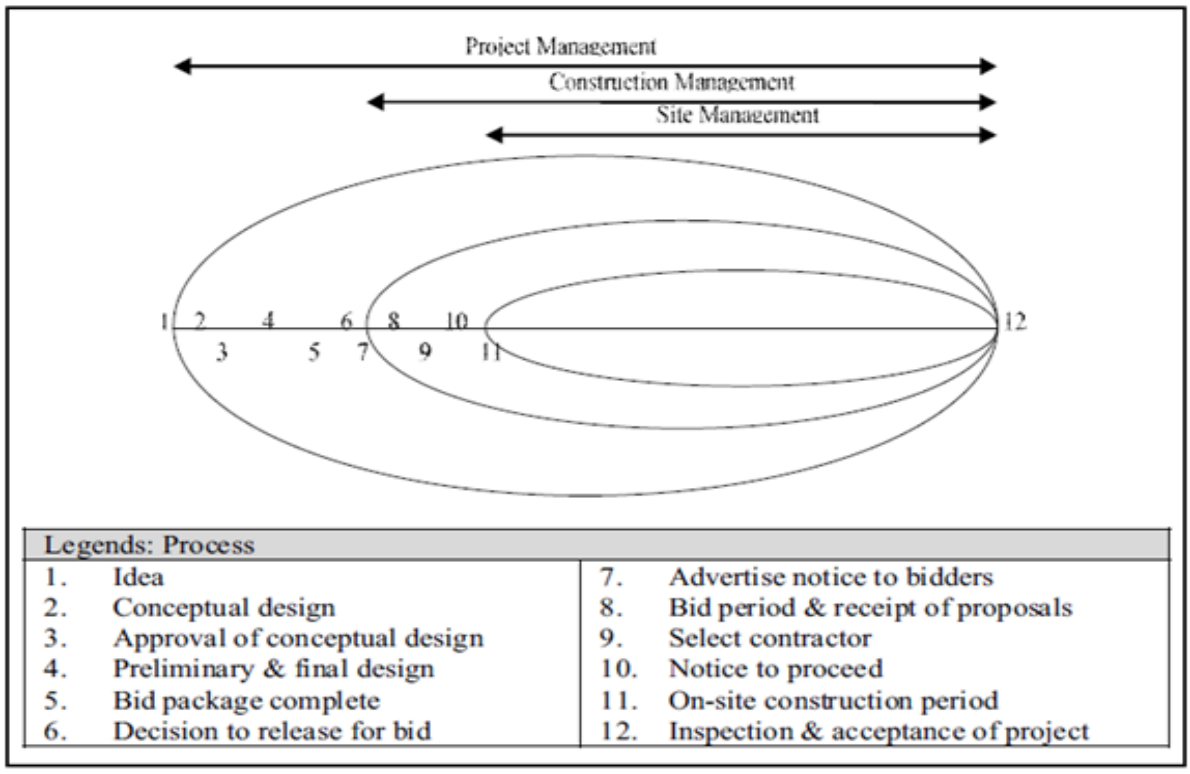
As indicated in Table 1.2 the role that is played by a project manager towards project success is very critical and can't be disputed. Furthermore Table 1.2 provides the value or importance of the six competencies that a project manager should be equipped with in order to efficiently and effectively carry-out project responsibilities to achieve the project goals. Although these may not be the only competencies required by a project they still remain very important.

Mouchi, Rotimi and Ramachandra (2011:98) state that uncertainty in project scope and requirements, poor documentation and insufficiency of design details technical and buildability issues, size and staging of project activities, size and nature of relationships between the project participants, cultural issues related to location and resource availability and organizational requirements for project execution are seven main aspects that complex construction projects depend on. Therefore to deal with such aspects when managing construction projects that are complex a project manager needs to have planning and risk management, communication and people skills and technical skills and experience, and
a good vision and focus on end results as set of skills.

The success of project managers in managing a project depends on their competence, especially the leadership style containing emotional intelligence, management focus together with intellectual proficiencies (Devi, 2013:28). Mouchi *et al.,* (2011:98) concurs that no matter how complex construction projects are, project success is attainable so long the competent project manager with the right skills is utilized to do the project.According to Mohammad, Yaman, Hassan and Ismail (2016:475), there is lot of work accidents in construction industry and a poor status for handling problems, whereby many projects fail to meet deadlines, cost targets and quality targets. In worse cases time risk and cost over-runs can compromise the economic sustainability of the project, creating a potentially profitable investment not achievable. Construction is subject to more risks when compared to many other activities due to exclusive attributes such as the time they take, complex processes, irregular environment, financial strength and organizational structures that are dynamic.

For any nation construction industry is very important and is an indicator of any nation's economic growth through roads, buildings, bridges that are developed physically. The success of construction projects is an essential matter for most governments, customers and publics (Alzahrani and Emsley, 2013:313). Chitkara as cited by Bodicha (2015:99) states that construction project like any other project goes through the project life cycle starting from idea conceptualization, planning, design, and financing and this process goes on until the project is completed and setup for use. Figure 1.4 below illustrates the overall phases of common construction project life cycle. The project starts from an idea (number 1) and end on inspection and acceptance of project (number 12). From number 2 to number 11 are activities to be done in order to convert the idea to a complete and acceptable project.

Figure 1.4 Overall phases of a general construction project life cycle



Legends: Process			
1.	Idea	7.	Advertise notice to bidders
2.	Conceptual design	8.	Bid period & receipt of proposals
3.	Approval of conceptual design	9.	Select contractor
4.	Preliminary & final design	10.	Notice to proceed
5.	Bid package complete	11.	On-site construction period
6.	Decision to release for bid	12.	Inspection & acceptance of project

Source: Mohammad *et al.*, (2016:3)

Normally a project manager manages the construction project adjacent to several other people who are involved like design engineer, construction engineers etc.

The construction project is increasingly becoming complex as it contains risks together with doubt and needs diversified professional skills to cultivate a proper plan at different phases of the life-cycle of a project (Bodicha, 2015:100). An effective planning is required for the success of a construction project from execution to the closing (Chitkara as cited by Bodicha, 2015:100). Sunindijo (2015:2) states that construction project brings encounters and doubts that challenge project manager's competence. Each project is incomparable in many different ways due to project challenges that are unique and needs that takes place throughout the life cycle of a project. The construction industry likewise is obviously fragmented and consists of long supply chain that is long. A project manager therefore needs to work with a number of diverse stakeholders such as a project team (El Sabaa as cited by Sunindijo, 2015-2). In the midst of project complexity and dynamic environment a project manager is still needs to play an important role of integrating project components to achieve project success. Therefore a project manager needs a set of skills that can influence cost, time and quality performance in construction projects. Katz as cited by Sunindijo (2015-3) identified those skills as technical skills, human skills and conceptual skills.

According to Sunindijo (2015-4) interpersonal influence has good influence on project duration performance; emotional intelligence, interpersonal skill, apparent sincerity, budgeting effect, project cost performance; visioning, emotional intelligence, interpersonal skill, transformational leadership, interpersonal influence, apparent sincerity, quality management, documentation and contract administration influence project quality performance. Fryer (1979) as cited by Odusami,and Asce (2000; 61) identified managing change, identifying opportunities, dealing with problems, decision making, and social skill as the five important managerial abilities of construction managers, rating highly important social skills and rating managing change as least important.

A link between project manager's competencies and success of projects in construction industry has been identified to be existing (Khamaksorn, 2016:95). Therefore core competencies of a project manager that lead to construction project success are of special interest in this study.

1.3 PROBLEM STATEMENT

Due to poor performance or mismanagement of construction projects which leads to cost overruns, schedule overruns and poor quality this research needs to be conducted. The construction project is increasingly becoming complex as it contains risks together with doubt and needs diversified professional skills to cultivate a proper plan at different phases of the life-cycle of a project (Bodicha, 2015:100). In worse cases time risk and cost over-runs can compromise the economic sustainability of the project, creating a potentially profitable investment not achievable. According to Mohammad, Yaman, Hassan and Ismail (2016:475) there is lot of work accidents in construction industry and a poor status for handling problems, whereby many projects fail to meet deadlines, cost targets and quality targets. Bayley (2009) cited by Abbasi, Wajid, Iqbal and Zafar (2014:37), states that other reasons for failing of the London Millennium Dome construction project was the financial mismanagement and poor project execution. According to Rwelamila (2017:5), the Transnet new multipurpose product pipeline (NMPP) in South Arica had a final cost of R23.4 billion while initially cost-planned at R12.7 and was lagging by three years on schedule. Donnelly (2012) cited by Rwelamila (2017:5), states that Eskom Medupi Power Station in South Africa went up to R56bn more than the budgeted cost due to poor scope management and specification. According to Sunindijo (2015-3), a project manager needs a set of skills that can influence cost, time and quality performance in construction projects. Therefore, the research seeks to discover on how effective construction project can be achieved through the determination of project manager's competencies.

1.4 RESEARCH OBJECTIVES

1.1 Primary objectives

- To determine the project manager's competencies that ideally enables effective project execution.

1.2 Secondary objectives

- To examine what type of competencies are ideal for effective team leadership.
- To assets the need for communication as a competency for effective project execution.
- To analyze the use of conflict / problem solving is a competency that allows for effective project execution.
- To evaluate the effect of decision making as a competency for effective project execution.

1.5 RESEARCH QUESTION

The above statements led to the following research questions:

- What types of competencies are required to lead project teams to operate effectively?
- How important is the role of communication as a competency for effective project execution?
- How does problem and conflict ability (competency) influence the atmosphere necessary for effective project execution?
- To what extent does decision making as a competency impact the motivation of project team members to perform?

1.6 RESEARCH METHODOLOGY

Research methodology is a methodical approach used to resolve a research problem and can also be known as a science of learning on how a study investigation is conducted scientifically (Kothari, 1990:8).

1.6.1 Literature Review

The theoretical background of this research has been established by a literature review that emanated from the relevant project management journals and text-

books. The literature review played quite a significant role in structuring this research.

1.6.2 Research design

The blue-print of the research plan together with a structure is planned for collection, measurement as well as analysis of data utilized to answer the research questions (Blumber, 2008:195). Beck (1991) as cited by Dulock (1993:156) states that qualitative and/or quantitative data depending on the research question or purpose will be created from a descriptive study. Therefore this research will follow a descriptive research design. Dulock (1993:155) states that descriptive survey refers to the collection of information from a portion of targeted population to determine the practices, characteristics, norms etc. and an example of a descriptive survey is a questionnaire or interview. In this study the quantitative and qualitative (mixed method) research methodology was used.

1.6.3 Target population

It is essential to obviously outline the target population in any survey, which Collis and Hussey (2003:157) define as “A population is any precisely defined set of people or collection of item which is under consideration”. The target population therefore in this research consisted of professionals that are currently involved in construction project execution and work in close proximity with the project manager. These professionals were Programme Managers, Project Planners, Project Controllers, Construction Laborers, Project Engineers, Clerk Of Works, Project Scheduler, Health and Safety Officers, Construction Managers and Administrators. These professionals should be able to point out the skills and competencies required by project managers since they work hand in hand with a construction project manager.

1.6.4 Sampling frames, sampling and sample size

According to Black (2012:228), a benefit of utilizing the stratified random sampling method is that it has the possibility of reducing sampling errors. Fink (2006:49) states that another benefit of the stratified random sampling is that the

surveyor may choose a sample that represents the various groups and patterns of characteristics in the desired portion. Therefore this study has adopted the stratified random sampling.

For this study a minimum of 100 professionals who are in construction projects were sampled. The researcher believed that the more respondents participate, the more the study gives a significant meaning.

1.6.5 Data collection method and research instrument

The self-administered questionnaires served as the primary data collection method in this dissertation together with the interviews. The interviews were conducted because the respondents required clarity in some of the questions so to get better understanding of what was required by the study. Only five respondents were interviewed and the rest of the respondents responded through the questionnaires. It is valuable to conduct interviews because they may provide information that observations and questionnaires could not reveal (Blaxter, Hughes and Tight, 2006: 172).

The questionnaires were subdivided into three sections which are: biographical information, effective project manager competencies and the characteristics of an effective project manager. Questionnaires as a technique for collecting data was chosen due to its benefit of putting the responded at ease to respond at an appropriate time.

1.6.6 Data Analysis

Floyd and Fowler (2009:145) state that it doesn't matter what method is used to collect information but once data have been collected by the survey, it should be converted to a form suitable for analysis. Therefore MoonStats which is the software that provides statistical tools for data exploration and data description was used for analyzing the data due its accuracy and powerfulness when interpreting the statistical outcomes or results. The graphs and tables were generated from

the data collected from the survey. Each graph and each table represented a response from each question of a questionnaire. The graphs and tables were then analyzed and the results were interpreted as written in this research.

1.7 ETHICAL CONSIDERATION

Research ethics is essential in our everyday living research activities and necessitates that researchers defend the dignity of their subjects and issue out well the information that is investigated (Fouka & Mantzorou, 2011:1). Dawson (2002:146) states that numerous human beings are eager to reveal a lot of private information during the study, therefore a researcher must ensure that both the participants and the information given are dealt with honesty, confidentiality and respect; this is then called research ethics. Before the participants participated in this study the researcher has ensured the following:

- **Informed consent:** The participants were offered a choice to participate or not to and furthermore they were informed to withdraw any time they feel like because the participation is voluntary.
- **Right to privacy:** The nature and quality of participant's performance was kept strictly confidential.
- **Honestly with professional colleagues:** The findings were reported in a complete and honest fashion, without the misrepresenting of what has been done or intentionally misleading other as to the nature of it. The data was not fabricated to support a particular conclusion.

The researcher believes that a good practice research is to provide privacy or secrecy to participants while performing the project research.

1.8 CHAPTER CLASSIFICATION

Chapter 1: Introduces the study and provides background of literature reviewed to develop the study objectives, research questions, research design and methodology, population, sampling, data collection instrument and analysis.

Chapter 2: This chapter provides a background and holistic view of construction projects on global basis and in South Africa.

Chapter 3: This chapter provides information on hard and soft skills as well as other factors around project management success and project success.

Chapter 4: This chapter concentrate on research design, research methodology and the data collection tools, processes and data analysis.

Chapter 5: Covers the data captured from the research instrument, the illustrations, analysis and interpretation.

Chapter 6: Summary of the research findings, conclusions and recommendations.

1.9 SUMMARY OF THE CHAPTER

This chapter introduces the study and provides a background of literature reviewed, study objectives, research questions, research design and methodology, population, sampling, data collection instrument and analysis are all stated. Moreover this chapter gives an outline of what other chapters entails. Project manager's role towards the success of a construction project or any project for that matter is very crucial and can never be undermined. Therefore it is crucial that competencies of a project manager that is effective be evaluated for the sake of construction project success.

CHAPTER 2
BACKGROUND AND HOLISTIC VIEW OF CONSTRUCTION PROJECTS GLOBALLY AND IN SOUTH AFRICA

2.1 INTRODUCTION

Construction industry is regarded crucial for a nation's growth as well as for the practical development of construction projects like bridges, roads and buildings. And it is also an indication of economic growth of such nation (Alzahrani *et al.,* 2012:313). Omran, Abdulbagei and Gebril (2012:18) concur that construction industry is included amongst the most essential economic activities that adds towards economic growth of a nation. Construction industry must satisfy the demand for housing, building constructions such as; social and commercial buildings, heavy engineering constructions and industrial constructions including factories. The construction industry has established itself as a cutting edge of the progressing world due its increasing demands to sort the world as a better habitation for human beings. Consequently construction projects are looked at with broader perceptions, whereby project objectives need more extensive energies (Mouchi *et al.,* 2011:89).

The construction industry in South Africa is broad as it includes projects stretching from residential development and non-residential buildings like retail facilities, offices, individual home-owners private projects as well as houses (Pwc, 2013:27).The weighty South African construction sector contributes substantial worth to the country and its citizen (PWC, 2016:20). CIDB (2017:2) concurs that construction industry has added approximately 8% to the total formal employment and informal employment since 2008 in South Africa since.

2.1.1 Types of Construction

The activity of construction is the essential fragment of a country's infrastructure development as well as industrial development and must be looked-after for the sake of economy's healthy growth (Babu, 2015:17). According to Chitkara (1998:4) there are three divisions of construction industry which are known as:

buildings, industrial and infrastructure. Table 2.1 below provides these three sectors of construction.

Table 2.1 Types of construction

Construction types	Explanation
Buildings	• Comprises both non-residential and residential buildings (Chitkara, 1998:4). • Building construction industry is faced with challenges, such as growing project complexity and scope requirements, but shorter deadlines (Antunes and Gonzalez, 2014:209). • In this day and age building projects are becoming very complex and difficult (Babu, 2015:17). • Successful building construction projects are regarded as those projects finished within scheduled time, planned budget, in agreement with project specifications and provide stakeholders' satisfaction, Yaman as cited by Helen, Emmanuel, Lawal, and Elkanah,(2015:57)
Infrastructure	• Consists of heavy civil, highways or heavy engineering works such as large public works, construction of dams, bridges, highways, railways, water/wastewater and distribution utility (Chitkara, 1998:4). • Infrastructure projects can be categorized as large construction projects that use huge amount of resources in terms of materials, money, labor, time and equipment, Morley as cited by Hyari and Kandil (2009:66).
Industrial	• Comprises things like refineries, process chemical, power generation, mills and manufacturing plants (Chitkara, 1998:4). • In industrial sector construction projects will often require sophisticated interface with technology licensors that demand construction techniques be varied to suit the nuances of their technology transfer (PMI, 2007:5) • Specialized industrial construction ordinarily includes very large scale projects with a high degree of technological complexity, such as oil refineries, steel mills, chemical processing plants and coal-fired or nuclear power plants (Hendrickson, 2008:6).

Source: Authors construction

Furthermore it outlines the differences between the three sectors of construction and details what building, infrastructure and industrial construction sector consists of. However although these construction sectors are different they all generate or create something that has never existed before and bring it forth to reality. Therefore a role of construction projects for is very important for the development of societies.

2.2 CHALLENGES FACED BY SOUTH AFRICAN CONSTRUCTION INDUSTRY

Construction industry directly impacts people as well as the general public and its enhanced efficiency together with its efficiency will improve productivity, quality, safety, health, environmental effects and value for cash to the South African society (Marx, 2010:189). Human beings are regarded as the most important assets for businesses since they possess numerous expert abilities that are essential to bring projects to success. However construction industry of South Africa has grown meaningfully in size over the previous ten years, causing shortage of industrial skills at all levels (CIBD, 2016:26).

According to PWC (2016:16) South African construction industry's development has deteriorated in latest years due to the following:

- Deterioration in business confidence and unstable employment availability and labour with respect to supply and demand;
- Reduction of government's spending on infrastructure projects;
- Industrial competition that has continued to drive down margins;
- Narrow growth into new markets, which has been hindered by unstable commodity prices and exchange rates;
- Poor performance has also been of concern. There is a pressure for companies to deliver projects due to the competitive nature of the market together with lack of skills;
- Contracts poor execution causes margin erosion and losses. This involves a risk of poor quality control on site that causes rework, increased costs and contracts delayed delivery; and

- The construction industry is extremely dependent on water and electricity supply to construction sites. However the cost of water and electricity has increased significantly in recent years, and lengthy power outages and water shortages results to production lost, which disturbs project targets (PWC, 2013:17).

Construction is normally an industry that drags behind and will need a broad economic development to show a considerable regaining, before any significant growth can be anticipated in the construction segment (PWC, 2016:6). The construction industry of South African was largely knocked hard when the infrastructure development rises towards the 2010 FIFA World Cup were tailed by a worldwide downturn and/or low growth (PWC, 2013:5).The main contributors towards poor quality in South African construction are likely to be procurement-related obstacles which involve the following (CIBD, 2010-2011:83): sector

- the procurement and delivery model
- fraud and corruption, or political interference (including cronyism and nepotism);
- insufficient information to be able to select professional services and/or contractors based on quality criteria;
- the use of procurement systems based on price and preference only, and not taking into account functionality (or quality); and
- insufficient information to be able to select professional services and/or contractors based on quality criteria.

Pertaining occupational safety management South African construction industry faces quite a number of exclusive challenges (Pwc, 2013:27):

- Due to the wide variety of projects and changing conditions, one can debate that a limited number of tasks or activities are really repetitive;
- Construction workers are more exposed to naturally occurring unsafe conditions such as strong winds, heat, cold, rain and lightning;
- Normally construction workers are employed from project-to-project and may spend only short time on any one project site. Therefore there are dynamics

associated with this for project work and workers also. This then means that workers must make and remake productive and safe working relationships with other workers whom they may not necessarily know. This may also affect safety at the work site;

- Construction projects especially large ones are complex and dynamic. Numerous employers may concurrently work on site with the combination of contractors changing with the phases of the project;
- The difficult safety administration hierarchy of principal contractor, subcontractor and sub-subcontractor necessitates strong administrative, communication and leadership skills;
- A project may include a large proportion of inexperienced, illiterate, temporary and transient workers who may not be fluent in the common language at times during a construction period;
- Construction workers may have several employers and no full employment. In order to make up for non-busy times, lot of construction workers have other jobs at the same time, which is more likely to increase the health and safety burden. Although construction work must often be done in teams, it is difficult to develop effective; and
- The administrative cost of effective health and safety management is rarely included or fully included in project costing.

2.3 PROJECTS AND PROJECT LIFE CYCLE (PLC)

2.3.1 Projects

The word project has many different definitions. According to Larson & Gray, (2011:5) project is non-permanent work which is done to generate a product/ service of a special kind. In the project context the word temporary refers to the fact that a project has a life span. There are various reasons why a project can end namely: objectives have been or haven't been met, project needs no longer existence and also when the client referring to sponsor, customer or champion, terminates a project (PMBOK, 2012:2). The main features of a project include a well-said objective, demarcated life length with a start and finish date, normally the inclusion of numerous sections and specialists, usually undertaking some-

thing for the very first time and precise cost, time, as well as performance requirements (Larson *et al.,* 2011:2).

MPBOK Guide as cited by Bodicha (2015:101) states that lot of organizations define project according to their own understanding and conceptualization. Nonetheless, all these different definitions have ambiguity which is similar in almost all projects due to a consequence of common shared features that characterizes these projects. The features are as follows;

- Temporary nature of projects that have a defined beginning and an end and are constrained by scope, cost, time, and quality;
- Uniqueness – projects involve elements that are new and were never done before as mentioned above. This implies that risk and uncertainty is naturally associated with such project;
- Complexity – different projects including technical, commercial, interfaces and/or relational vary in complexity due to size and resources required to be undertaken. These complex issues bring risks to projects;
- People – basically project is about people and it's a group of people who undertake project. This group of people includes project team, project manager, clients, customers, suppliers, contractors and subcontractors are unpredictable and may end up introducing risks and uncertainty into projects;
- Stakeholders – projects involve some dominant group of people who impose requirements, expectations and objectives on the project. These stakeholders may introduce risks at the time of project execution and acceptance either by giving conflicting and/or overlapping requirements;
- Change – all projects involves movement from the present known to the future unknown as they create changes. This movement from present to the future involves risks which is likely to affect the project outcomes;
- Assumptions and constraints – when defining project scope, it is always absolutely necessary to take guess as people make assumptions and design for the future under constraints. These assumptions and constraints may be misleading thus end up introducing risks and uncertainty into projects; and

- These risks and uncertainty defines what a project is all about. (Belassi &Tukel, 1996).

According to PMBOK (2012:3), a project can be undertaken to address a product that can be either a component of another item, an enhancement of an item, or an end item in itself, a service or a capability to perform a service (e.g., a business function that supports production or distribution), an improvement in the existing product or service lines (e.g., A Six Sigma project undertaken to reduce defects); or a result, such as an outcome or document (e.g., a research project that develops knowledge that can be used to determine whether a trend exists or a new process will benefit society). Furthermore the examples of projects include, but are not limited to developing a new product, service or result, effecting a change in the structure, processes, staffing, or style of an organization, developing or acquiring a new or modified information system (hardware or software), conducting a research effort whose outcome will be aptly recorded, constructing a building, industrial plant, or infrastructure or implementing, improving, or enhancing existing business processes and procedures.

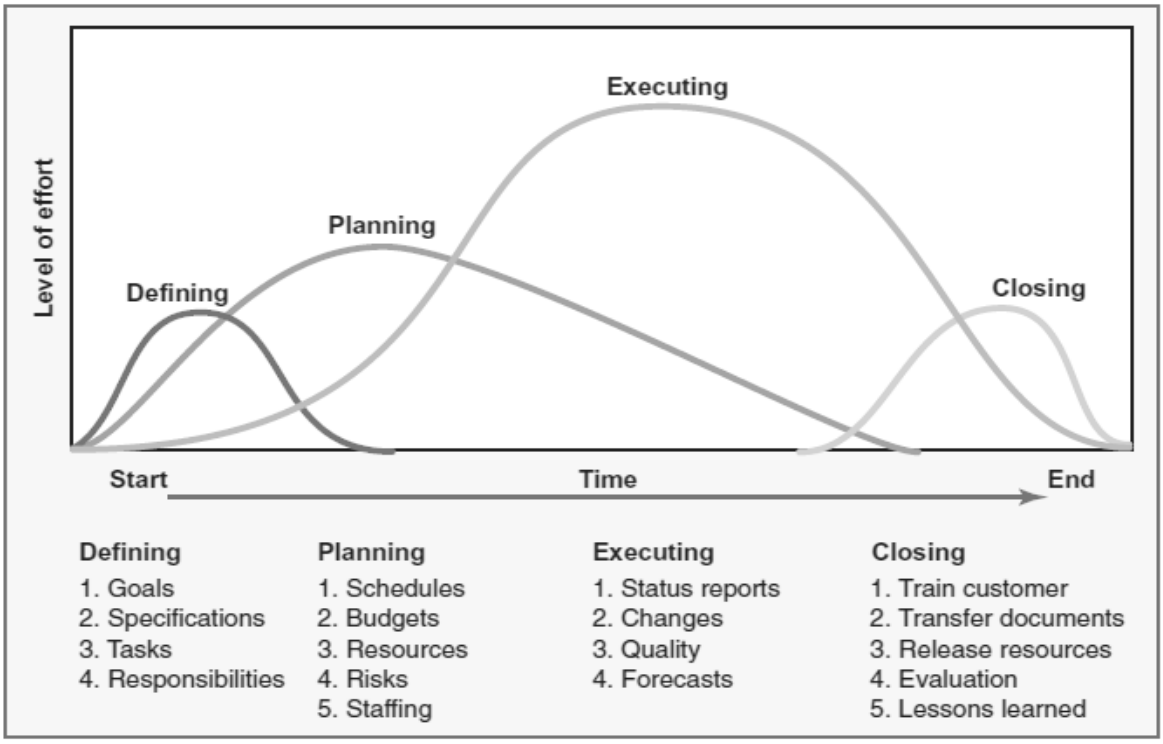
There is quite a number of various project life cycles models available in the literature of project management. Nevertheless these project life cycles does point out that there is restricted life length in projects and also there are expected alterations in the level of effort and focus during the project life span (Larson *et al.,* 2011:7). Life of a project can be defined as a chain of stages that are commonly successive a project pass through from its beginning to the end. The project life cycle offers the simple structure for dealing with the project, irrespective of the task to be accomplished. The project life cycle phases, names and numbers are specified by the organizational management as well as control requirements of the organization/organizations that are partaking in the project, project nature and the environment where is applied (PMBOK, 2012:2).

2.3.2 Project life cycle

The typically four sequentially project life cycle phases are shown by figure 2.1 generic project life cycle, namely: defining, planning, executing, and delivering (Larson *et al.,*2011:7)

- Defining phase**:** Stipulations and conditions under which a project should occur are defined; project objectives are established; teams are formed; main responsibilities are assigned.
- Planning phase: The level of effort increases and plans are developed to determine what the project will involve, what quality level should be maintained, when it will be scheduled, whom it will benefit, and what the budget will be.
- Executing phase: This phase refers to the actually implementation of the project whereby the most important part of the project work takes place both physical and mental. The physical product is produced such as a bridge, a report, a software program. Execution is controlled through time, cost, and specification measures. Questions like is the project on schedule, on budget, and meeting specifications? What are the forecasts of each of these measures? What revisions/changes are necessary? are being asked here.
- Closing phase: Closing includes three activities: delivering the project product to the customer, redeploying project resources, and post-project review. Delivery of the project might include customer training and transferring documents. Redeployment usually involves releasing project equipment/materials to other projects and finding new assignments for team members. Post-project reviews include not only assessing performance but also capturing lessons learned

Figure 2.1 A generic project life



Source: adopted from Larson *et al.,* (2011:7)

However according to Bricknell, Fraser, Goldman, Kara, Labuschagne, Maritz, McGregor, Radford, A and Linde (2012:7-8) most typical project life cycle stages include the following:

- Defining Stage: This stage is also known as initiation stage. At this stage a project is projected, planned at a high level and project stakeholders commit to it in different ways.
- Planning Stage: This stage includes detailed project planning, starts just after initial commitment and ends after all project participants has agreed on the thorough project plan.
- Executing Stage: This stage takes into account the authorization, execution; monitoring and controlling work up until the customer agrees to the project deliverables.
- Delivering Stage: This stage is also referred to as closing or finalizing stage. This stage takes into consideration all activities after the customer acceptance

in order to ensure that the project is completed, lessons are learned, resources are reassigned and contributions are recognized.

De Wit(1988:166) states that emphasis importance in a project, varies from one stage to another additionally the quality, time and cost trade-off differs for every project stage, furthermore during project initial stage, schedule is very important, whereas cost becomes secondary while quality becomes thirdly when it comes to importance. Furthermore in a project the cost takes over as a controlling interest, while project schedule becomes a secondary. Once a project has been done, schedule together with cost issues simply are overlooked and quality takes over as the main.

2.4 CONSTRUCTION PROJECTS

Construction can be defined as an undertaking whereby an infrastructure is created as well as superstructure and related facilities are formulated. Consequently it involves all works of civil engineering and all kinds of building projects including; housing as well as maintenance and fixing of existing structures (Wells, 1984:10). Another definition by du Plessis (2002:4) states that construction is a general process/ procedure for the recognition of human settlements and the formulation of infrastructure that backs up growth. This involves removal and beneficiation of raw materials, manufacturing of construction materials and components, construction of the project cycle from initiation to an end, and the management as well as built environment operation. However according to Zakaria (2015: 89) a construction project entails a variety of entities that come together to accomplish a certain task in a particular time. The construction project is divided into three stages known as: conception, designing and construction Hammadi, and Nawab, (2016:87).

Construction projects are generally not similar to other projects because of the following characteristics they possess (PMI, 2007:5):

- Construction projects produce deliverables such as: a facility that will make or house the means to make a product or provide service facilities such as dams, highways, parks, institutions, entire developments (high rises and edu-

cational, military housing or airports) or infrastructures that deliver water, electricity, telecommunications, or wastewater disposal,

- Construction projects inherently contain a high degree of risk in their projections of cost and time as each is unique
- Construction projects frequently needs to have by regulations, a team of hired specialists and construction disciplines involved on the project.
- Constructions projects deal with geographical differences and natural events in every case and may have a significant effect on the environment.
- Construction projects frequently need huge amounts of materials and physical tools to move or modify those materials.

Takin and Akintoye (2002:545) mentioned that the development of construction projects includes many people, some processes, dissimilar stages and stages of work and much more contribution from both public businesses and private businesses with the key aim of accomplishing project success.

Usually the mistake in construction project management is to look above the unclear attributes of the environment of a project and trust that projects are deterministic (Quiros, 2004:3).

2.5 CONSTRUCTION PROJECT MANAGEMENT

Construction project management (CM) is a specialized service that utilizes specific, project management methods or systems to manage the project planning, project design, and project, from the start to finish. The word management in the project environment speaks to planning, organizing, executing, monitoring against the baseline and then use corrective action for control (Weideman, 2000:2). According to Kikwasi (2012:53) construction projects management considers risk seriously. Evaluating how a construction project performs as well as its management regarding to success or failure is not an easy thing to do, not only because of the rising projects' complexity particularly, but also due to the presence of numerous diverse participants in the construction process (Varajão, Dominguez, Ribeiro and Paiva, 2014:584).

According to Koskela as cited by Ismail *et al.,* (2016:7) construction management process is “where the detail designed is transformed into a construction/fabrication plan and into day-to-day coordination and control of processes on site or in a factory”. The construction project management desire latest managerial know-how together with understanding of the design as well as processes of construction (Micheal, Deepak, Venishri and Tong, 2014: 80). Information on construction project management is a vital matter in construction industry of nowadays (Khamaksorn, 2016:90). Construction management is literally, “where the rubber meets the road” (Devi, 2013:28).

The communication and team management capability are as well more essential for managing construction projects successfully (Chen, Partington, & Qiang, 2009:482). According to Hendrickson (1989:2) the functions of project management in construction are as follows:

- Specifying project objectives and plans including defining the scope, preparing the budget and schedule, setting performance requirements, and selecting project participants.
- Maximization of efficient resource utilization through procurement of labor, materials and equipment according to the prescribed schedule and plan.
- Implementation of various operations through proper coordination and control of planning, design, estimating, contracting and construction in the entire process.
- Development of effective communications and mechanisms for resolving conflicts among the various participants.

2.6 CONSTRUCTION PROJECT FAILURE CAUSES

A project can be taken as an accomplishment of a particular objective, which comprises of a sequence of events and tasks that take up resources. It must be done at a stated specification, having precise beginning and finishing dates (Munns, and Bjeirmi, 1996:81). Chan and Kumaraswamy, (1997:55) concurs that a successful project is done on time, on specified budget and meets stated quality specification that is satisfactory to customers and to all participants.

Another definition by Assaf and Al-Hejji (2006:349) states that delay in construction is the time moreover either further than completion date mentioned in a contract, or further than the date that the parties approved together for the completion of a project. Construction time is regarded as a yardstick for measuring how a project perfoms (Hammadi *et al.,* 2016:87). Zeitoun and Oberlander as cited by Love (2002:22) states that construction projects are not known for being beyond budget and time.

2.6.1 Global challenges in Construction Projects

This section looks at the challenges faced by construction projects that have been undertaken around the world. Time is the fundamental requirement at which a project should be completed and cost should always be within the project budget for project success. However it is unfortunate that construction projects are not completed within the pre-determined time frames and cost around the world (Hussin, Rahman and Memon, 2013:16). Azhar, Farooqui, and Ahmed (2008) as cited by Hussin *et al* (2013:16) allude that in both developed and developing countries this is a main concern. The literature reviewed discusses the factors around delay causes and overruns in construction projects.

2.6.1.1 Causes of Delays and overruns on projects

Construction projects have matchless level of expertise obtained over thousands of years and boast an array of planning and controlling techniques. Still, many construction projects are frequently delayed (Quiros, 2004:1).According to Kikwasi (2012:54) construction projects are conducted at a specified time, the situation that calls for good time management in specifically abolishing all possibilities of delays and disruptions. Delay as stated in construction is elongated construction duration and disruptions are proceedings that interrupt the programme of construction. During the implementation of construction projects delays and disruptions are among the faced challenges (Kikwasi, 2012:52).

Alaghbari, Kadir, Salim and Ernawati (2007:96) state that external and internal causes are two categories of causes of project construction delays. Table 2.2 represents such kind of delays.

Table 2.2 Internal and external causes of delay in construction projects

Internal Causes	
a) Contractor's responsibility	**b) Consultant's responsibility:**
• delay in delivering materials to site	• absence of consultant's site staff;
• site material shortage;	• Consultants lack of experience.
• construction mistakes and defective work	• lack of experience on the part of the consultant's site staff; (managerial and supervisory personnel);
• Poor skills and experience of labour;	• Delayed and slow supervision in making decisions;
• Shortage of site labour;	• Incomplete documents
• Low productivity of labour;	• Slowness in giving instructions.
• financial problems;	**c) Owner's responsibility:**
• Coordination problems with others;	• Lack of working knowledge;
• Lack of subcontractor's skills;	• Slowness in making decisions;
• Lack of site contractor's staff;	• Lack of coordination with contractors;
• Poor site management; and	• Contract modifications (replacement and addition of new work to the project
• Equipment and tool shortage on site.	• financial problems (delayed payments, financial difficulties, and economic problems).
External Causes	
• Lack of materials on the market;	• Poor economic conditions (currency, inflation rate, etc.);
• Lack of equipment and tools on the market;	• Changes in laws and regulations;
• Poor weather conditions;	• Transportation delays; and
• Poor site conditions (location, ground, etc.);	• External work due to public agencies (roads, utilities and public services).

Source: adopted from Ahmed, Azhar, Kappagntula, and Gollapudil, (2003:8)

As indicated by Table 2.2 internal causes include issues arising from designers, owner, consultants and contractors whereas the external causes may arise from

government, materials suppliers, or the weather (Ahmed, Azhar, Kappagntula, and Gollapudil, 2003:8).

Chalabi and Camp as cited by Momani (2000:54) states that delay together with cost overruns of construction projects are fully reliant on on the very initial stages of the project.

A study conducted by Kumaraswamy and Chan (1998:62) on causes of construction delays in Hong Kong has established variances in acuities as to causes of delays by dissimilar groups of members in building as well as in civil engineering works, proposed that biases of different industry groups might direct blame for delays to other groups. Chan and Kumaraswamy (1997) identified five major causes of construction delay as: poor risk management and supervision, unanticipated site conditions, slow decision making, client-initiated variations and work variations Noulmanee, Wachirathamrojn, Tantichattanont and Sittivijan as cited by Hammadi (2016:88) studied delay causes in highway construction in Thailand and established that delays are result of people participating in projects; nonetheless major causes arise from inadequacy of sub-contractors, organizations that lack sufficient resources, incomplete and unclear drawings and deficiencies between consultants and contractors. Al-Momani (2000:58) studied delay causes in hundred and thirty public projects within Jordan and established that key causes of delay were related to the changes of the user, designer, conditions of the site, late deliveries, weather, quantity increase and economic conditions.

Al-Kharashi and Skitmore (2008:20-22) declared that the core causes of delay in Saudi Arabia construction sector for public projects is the absence of qualified and experienced personnel. A study by Ahmed, Azhar, Castillo and Kappagantula, (2002:33-34) identified ten very vital causes in Florida as building permits approval, change order, changes in drawings, incomplete documents, inspections, changes in specifications, decision during development stage and shop drawings and approval. Sambasivan and Soon (2007:526) identified ten most critical causes of delay in Malaysian construction industry as contractor’s poor planning, poor management of site by contractor, contractor’s lack of experience, inadequate client’s finance and completed work payments, glitches with subcontractors, ma-

terial shortage, labor supply, equipment availability and failure, poor communication between project participants, and errors throughout the construction stage.

El-Razek, Bassioni and Mobarak (2008:838-840) investigated delay on the building construction project in Egypt, based on the survey and overall results established that the most critical causes are: contractor financing at construction phase; owner failing to pay the contractor on time; owner's design changes or his agent at construction phase; insufficient payments at construction; and no use of professional construction or contractual management.

Patil and Bhangale, (2016:342) states that cost overruns is a serious problem faced by high-rise building construction projects in India and has also established that there are 5 most important aspects that causes cost overruns in high-rise constructions namely: rework, high cost of transportation, specification of material changes, high rise of material price, construction plants common breakdown and equipment.

Kaming, Olomolaiye, Holt and Harris (1997:93) revealed that increase of material cost due to inflation, erroneous material estimation and level of complexity are the main factors that influence time and cost overruns in Indonesian high rise projects. On the other side under time overrun, the most important factors causing delays are: changes on designs, labor poor productivity, poor planning, and shortages of resource.

Haseeb, Lu, Bibi, Dyian and Rabbani (2011:18) states that most usual factors of delay causes in Pakistan are natural disasters such as earthquake and flood. Lack of experience, poor planning, financial and payment difficulties, poor site management, shortage of materials and equipment have been acknowledged as other factors that causes delays.

Kikwasi (2012:58) states that even now there are number of causes of delays and disruptions in Tanzania whose impact place construction projects at high risk that affect project performance. Problems of funding, contractor payment delays, changes of designs, information delays, compensation matters, poor project management and disagreement on the valuation of completed work has been

identified as such causes. Likewise effects of these delays are negative social impact, idling resources, disputes, time and overruns cost overrun.

Hammadi *et al.,* (2016:87) sates that the overruns or time extensions in a project are caused by a number of factors in Saudi Arabia such as performance of project stakeholders, designers change or errors, resource availability and economic conditions. Commonly at project construction phase more delays occur due to unexpected aspects such as ground conditions, restrictions and environmental concerns.

Chileshe and Berko (2010:78) established that reasons of cost overrun in Ghanian road construction sector are delaying monthly payments that are due to contractors, also the force majeure and labor productivity.

2.6.1.2 The Effects of Construction schedule overruns

Effects of schedule overruns are the significances that will happen once causes of schedule overruns are not recognized and dealt with successfully. Pourrostam and Ismail (2011:454) identified and ranked the major effects of construction project schedule overruns as follows:

a) Time overrun

Sunjka and Jacob (2013: 641-7) states that a project is said to have gone through a schedule overrun once its specified completion time has been pushed forward. Schedule overrun denotes that a project is late for completion or late for delivery in reference to the time specified by project stakeholders

b) Cost overrun

Construction delays causes increase in the whole project cost, henceforth completing timely projects are advantageous to all people involved in projects Hammadi *et al.,* (2015:87). Once a project is done at a cost beyond what it was planned for, is known to have gone through budget overrun Sunjka (2013: 641-7).Gkritza and Labi as cited by Pourroustam and Ismail (2011:450) states that cost overruns may be followed down to “root causes” that are frequently related

to initial phases of a project such as planning or design and that root causes of this nature involves; poor quantity estimation, design changes or errors, changes of project schedule, changes in the scope, unanticipated site conditions, increase of material costs and labour (which may be caused by inflation), and likely unexpected happenings. Pourroustam *et al.,* (2011:4546) recognize the following as the causes of cost overruns; arise in labour cost, working force, materials and equipment and other factors. The major causes of the cost overrun are change orders, mistakes in the contract, changes in drawings, changes of the organization and organizational regulatory changes. Haseeb *et al.,* (2011:37)

c) Dispute and Claims:

Arguments and claims come up due to the losses earned through schedule overruns Sunjka *et al.,* (2013:641-7). Disputes usually end up in evaluating three factors of overruns namely: who created the overrun or who does the fault belongs to, how much delay happened and therefore what financial awards would be made Sunjka *et al.,* (2013:641-12]. Sunjka *et al*., (2013:641-12] suggested that Critical Path Method known as CPM is mainly helpful in dealing with the second of the above factors and in some instances may be used to contribute in finding out at least a percentage of the financial awards. The major causes of disputes are either slow payments or late payments for the work that is completed or work in progress, interference of the client, issues of neighbor, change in requirements, spreading of work, poor communication within project participants, subcontractor matters etc. (Haseeb *et al*., 2011:34-35).

d) Arbitration:

Sunjka *et al.,* (2013:641-7) states that projects would have extra costs and time consequences in relation to the engagement of professional arbitrators in cases of disputes that go through arbitration.

e) Litigation:

Disputes, due to schedule overruns, can lead to court cases for resolution especially when large penalties are at stake (Sunjka et al., 2013:641-7) Haseeb *et al.,*

(2011:34) defines litigation as negotiations and visiting to court to resolve the complications and it eats up a long duration to resolve the glitches.

f) Total project abandonment:

According to Sunjka *et al*., (2013:641-7) schedule overruns in the project implementation might possibly result to complete desertion if concerns resulting to the overruns are not resolved as soon as possible. Haseeb *et al.,* (2011:34) refers to the total abandonment of the construction project as completely ending project activities or putting the project on hold for a lengthy duration and that the major causes of desertion in Pakistan are changes are changes of the organization, regulatory changes, finances, payments and force majeure. Haseeb *et al.,* (2011:34) further states that countless large construction projects in Pakistan are temporarily or permanently deserted because of financial crisis, force majeure and organizational changes.

2.7 SOUTH AFRICAN PROJECTS

Banaitiene & Banaitis (2012:431) states that construction industry is diverse, very complex and projects are exposed to uncertain environment because of factors such as planning, design complexity, construction complexity, existence of various interest groups (owner, consultants, contractors, suppliers, etc.), resources (manpower, materials, equipment, and funds) availability, environmental factors, economic environment, political environment and statutory regulations. As a result, the South African construction industry is facing several problems and challenges such as poor performance of construction projects.

South Africa has experienced some outstanding cost overruns in a number large scale projects such as the Soccer City stadium in Johannesburg budgeted for R1.9 billion and escalated to R3,3 billion (van Bebber, 2010: online). Flyvberg (2005:135) suggested that average cost overruns for infrastructure projects can be round about 20.4% for roads, 33.8% for bridges and tunnels and 44.7% for rail.

Ramabodu and Verster (2010:141) established that Free State Province's public sector construction projects are not exempted from cost overruns just like any other developing country and its true that cost overrun:

- Seems to be more prominent in countries that are still developing.
- Seems to occur all over the world.
- Hasn't reduced over the past seven decade's years that denote that no better knowledge is gained regarding this matter.
- And cost underestimation cannot be clarified by error and seem to be well explained by strategic misrepresentation which is: lying with a view to get projects started (Flyvberg,Holm and Buhl, 2004:3-4).

A study of influence on loading shedding of South African construction industry conducted by Coetzee, Drian; Els, Mart-Mari (2016:275) states that cost and time overruns in projects are challenges that are experienced nearly every time in construction projects and that load shedding may cause delays in time overruns and these can affect not only current projects, but also future projects, as time constraints and adjusted deadlines affect their execution. Time is directly linked to cost, therefore as the time of a project goes beyond the scheduled time because of load shedding, this would likely affect the cost project cost.

Mukuka, Aigbavboa and Thwala (2015:1698) studied the effects of construction project schedule overruns in Gauteng and have established that there are 10 major effects that cause schedule overruns namely: cost overruns, creates stress to the client, disputes, extension of time, loss of profit, poor quality of work due to hurrying the project, acceleration losses, bad reputation with contraction team, claims and delay in getting profit by the client.

A study on aspects influencing success of construction projects in Mahikeng by emerging contractors conducted by Mavetera, Sekhabisa, Mavetera and Choga.(2015:24) established that cost, quality, time and scope are main factors that dictates the success or the unsuccessful delivery of a project by emerging contractors and also that project manager's capability or incapability to do other enabling knowledge areas such as, human resources management, project integra-

tion, risk management, procurement management and communications management as well as utilizing of project management tools and techniques have an influence on the capability to deliver successful projects. Noted management functions in the study includes planning, organizing, leading and controlling

Truman and King (2013:5) mention some other reasons for project failures as follows:

- Project management team failure to effectively plan work, or, when a plan is created to properly execute that plan.
- Inappropriate provision of suitable resources such as human resource and work force to the project.
- Lack of cost control and changes during project execution phase.
- Inability in creating appropriate project schedules, to maintain those schedules during project execution phase.

2.8 SUMMARY

This chapter discusses the construction projects in detail both globally and in South Africa. The discussion highlights projects and its life cycle at large, construction projects, construction project management, construction project failure causes, project challenges faced by South African construction industry. The chapter starts by pointing out the role of construction industry and its contribution to the livelihood of South African community in terms of employment.

CHAPTER 3
HARD AND SOFT SKILLS AS WELL AS OTHER FACTORS AROUND PROJECT MANAGEMENT SUCCESS AND PROJECT SUCCESS

3.1 INTRODUCTION

"Construction is a people business. In this business you are hired for your technical skills, fired for your lack of people skills, and promoted for management skills" (Skipper & Bell, 2006a: 75). People together with their abilities, knowledge and skills in the modern world and also in domestic specialized literature have been specified as the very important point of each project management (Kalinová, 2007:29). Successful construction project managers should have a wide variety of skills and experience to assist them to lead a team and oversee various projects. Among the seven skills that a project manager requires to have, the most important skills among the rest skill is planning and setting target on the construction project (Zakaria *et al.,* 2015:94). According to the literature of project management that has been published, hard skills and soft skills are essential to the successful performance of effective project managers (Sumner *et al.,* 2013:2). Azim *et al.,* 2010:399) concurs that a successful project manager utilizes hard skills to sketch out the well suitable course of action for the project and thereafter uses his soft skills to implement the plan and manage the people in order to attain project success.

Gillard (2009:724) asserts that it is becoming more obvious that success in the role of project manager cannot be achieved with a technical skill set alone but also by soft skills, as the field of research surrounding project management keeps on growing, however Pant *et al.,* (2008:125) states that PMBOK recognizes hard skills as much more important in managing projects compared to soft skills. According to Sampson (2007:41) the skills required for project management are now often divided 50/50 into traditional 'hard' skills, such as risk management and scheduling, and 'soft', people oriented skills, such as interpersonal communication. The effective project manager's hard skill competencies has

been noticed by Project Management Body of Knowledge (PMBOK) as backing up the nine knowledge areas such as risk management, quality management, procurement management, project scope management, cost management, time management, integration management and communications management (Sumner *et al.,* 2013:2). The hard skills deals with subjects like business case, change management, cost control, estimating, project life cycles, work breakdown structures, project organization, network analysis, earned value analysis, risk management, quality management, tender analysis, and procurement whereas soft topics include health and safety, stakeholder analysis, team building, leadership, communications, information management, negotiation, conflict management, dispute resolutions, value management, configuration management, financial management, marketing and sales, and law (Lester, 2007:8). Kloppenborg, (2011:5-6) states that soft skills include communication and leadership activities and hard skills can include risk analysis, quality control, scheduling, budgeting work and so forth; soft and hard skills work together. Azim, Gale, Lawlor-Wright, Kirkham, Khan and Alam (2010:392) assert that hard skills in the project management environment generally denotes to processes, procedures, tools and techniques; whereas the soft" skills refer to dealing with human issues, i.e. the "people" part of the project.

The development of hard skills and soft skills is important, and training together with professional development programs has a positive impact on improving these competencies (Sumner *et al*., 2013:2).

3.2 HARD SKILLS

Technical skills are being recognized as one of the minimal requirements for a project manager (Gillard, 2009:728). Technical skill involves specialized knowledge and analytical ability in the use of the tools and techniques of the specific discipline, e.g., construction engineering or information systems. (El-Sabaa, 2001:2). Human skills of project managers have the greatest influence on project management practices. On the other hand, the technical skills, relatively speaking, have the least influence (El-Sabaa, 2001:6). The effectiveness of pro-

ject managers in managing finances, schedule, quality, and act as the main liaison with the success of a project (Zakaria *et al.,* 2015:89). Zielinski (2005: 22) points out that “If you had asked project-management gurus five years ago to name the most important competencies project managers should have, most would have said technical skills. There's no doubt about the importance of technical skills concerning the role they play to successfully coordinate a project. Management of scope, cost, risk, resources and schedule are all regarded as critical skills. It is a fact that the quality of up-front planning and a project leader's skill at preplanning as project conditions change can determine a project's fate all on its own (Gillard, 2009:725).

The project manager requires some level of technical skills for the following reasons: (Odusami and Asce, 2002:62).

- For understanding of integration of technical features of the project to conform to the projects requirements in terms of schedule, budget, and specification,
- To be able to resolve technical challenges that may take place during project design and implementation stages;
- In coordinating the work of the technical specialists, to be able to understand the nature of the work and to communicate with them on a technical level; and
- In the decision-making process, to be able to assess the degree to which alternative solutions can have impact on the project’s budget, performance, specification and schedule.

3.2.1 Risk Management (RM)

Risk management is directly related to successful project completion, generally seen as one of the most important procedures and capability areas in the field of project management and has received quite a lot of attention lately. Construction projects are recognized as risky projects associated with strict risk management by contracts (Utting, 2010:264). Verzuh (2005: 85) defines risk management as the means by which uncertainty is systematically managed to increase the likelihood of meeting project objectives. According to Jayasudha and Vidivelli,

(2016:6943), risk assessment is a tool used to discover those project risks and manage it accordingly with proper treatment and is defined as a method that purposes to discover and estimate risks to personnel and property affected upon by a project. However according to Arrenvalagana and Mohamed (2016:101), risk management in a project includes discovering influencing factors that could possibly impact negatively a project's cost schedule or quality baselines; quantifying the associated potential impact of the identified risk; and implementing measures to manage and mitigate the potential impact. Project and risk cannot be separated (PMBok, 2012:309). Project Risk Management involves the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project. The purposes of project risk management are to increase the probability and impact of positive events, and lessen up the probability and impact of negative events in the project. Risk management for a project starts long before the beginning of design or construction (Patil, 2010:372)

According to Verzuh, (2005: 86) projects goes through unexpected project events nonetheless some project managers are prepared for it and language of project risk management explains this phenomenon.

- Known unknowns represent identified potential problems, such as the possibility of a strike when a labor contract expires, or enough rain to stall a construction project during winter in Seattle. We don't know exactly what will happen, but we do know it has a potential to damage our project and we can prepare for it.

- Unknown unknowns are the problems that arrive unexpectedly. These are the ones you honestly couldn't have seen coming. But seasoned project managers do expect them, because they know something unexpected always happens.

Every project manager understands risks are inherent in projects and that no amount of planning can overcome risk, or the inability to control chance events (Larson *et al.,* 2011:211). In order to apply risk management in project management it is important to classify and characterize risks in such a way, that users

are provided with a unified classification system that facilitates appropriate communication and decision making (Elkjaer and Felding, 1999 :17).

Project risk management is the process concerned with identifying, analyzing and responding to project risk. Hwang *et al.,* (2013:274).

A continuous process of planning, risk management will help the project manager to overcome the adverse events and maximize those of positive events. (Iacob, 2013:245). The more the risk is involved in an activity; the high is the cost of the consequences if the wrong decision is made (Jayasudha *et al.,* 2016:6944).

Successful implementation of effective risk management would assist project success thru reduced cost overrun, delayed delivery and ensure project deliverables is up to the customer expectations (Arrenvalagana and Mohamed, 2016:108) .According to Verzuh, (2005: 89), PMBok, (2012:89) and Larson *et al*., (2011:213) the risk management process is as shown below by figure 3.1.

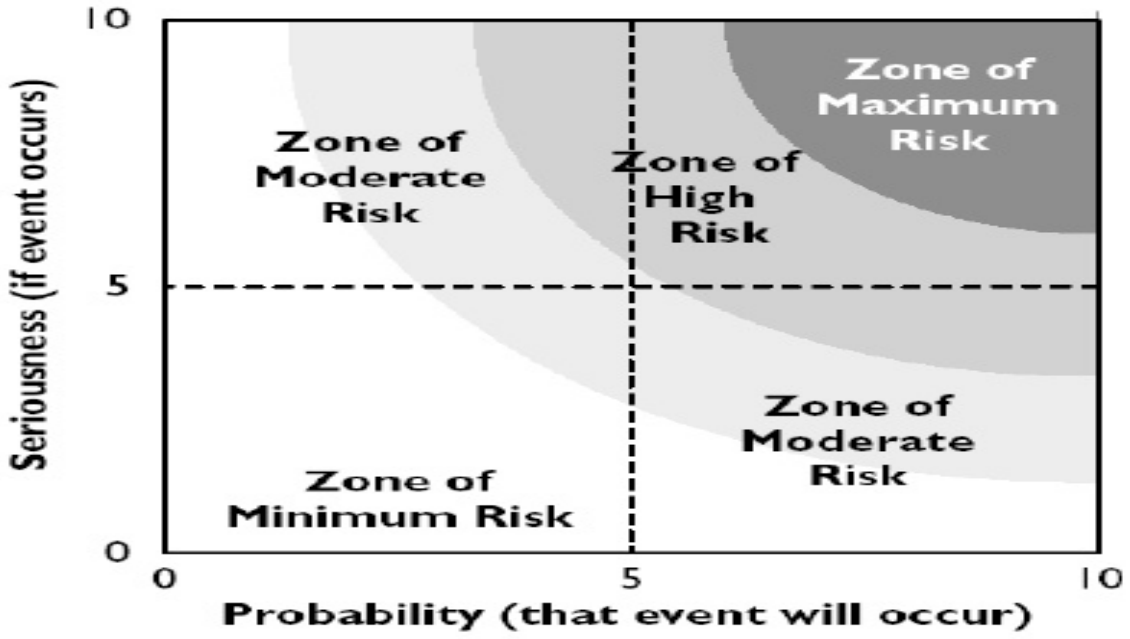
Figure 3.1 Risk Management process



Source: adopted from PMBOK (2012:108-193)

Risk = Probability of an event × Consequence of loss due to that event per event (Steyn, Basson, Crruthers, du Plessis, Kruger, Pienaar, Prozesky-Kuscke, van Eck and Visser, 2010:336). Graphical representation of risk ratings can be made by plotting graph between probability and seriousness figure-3.2 explains this (Jayasudha and Vidivelli, 2016:6944).

Figure 3.2 Risk rating graphical representation



Source: Jayasudha *et al.,* (2016:6945)

According to Jayasudha *et al. (*2016:6945), the general type of risks in relation to a project which the project manager should consider while managing project risks includes the ones shown in Table 3.1. Table 3.1 represents the general project risks.

Table 3.1 General Project Risks

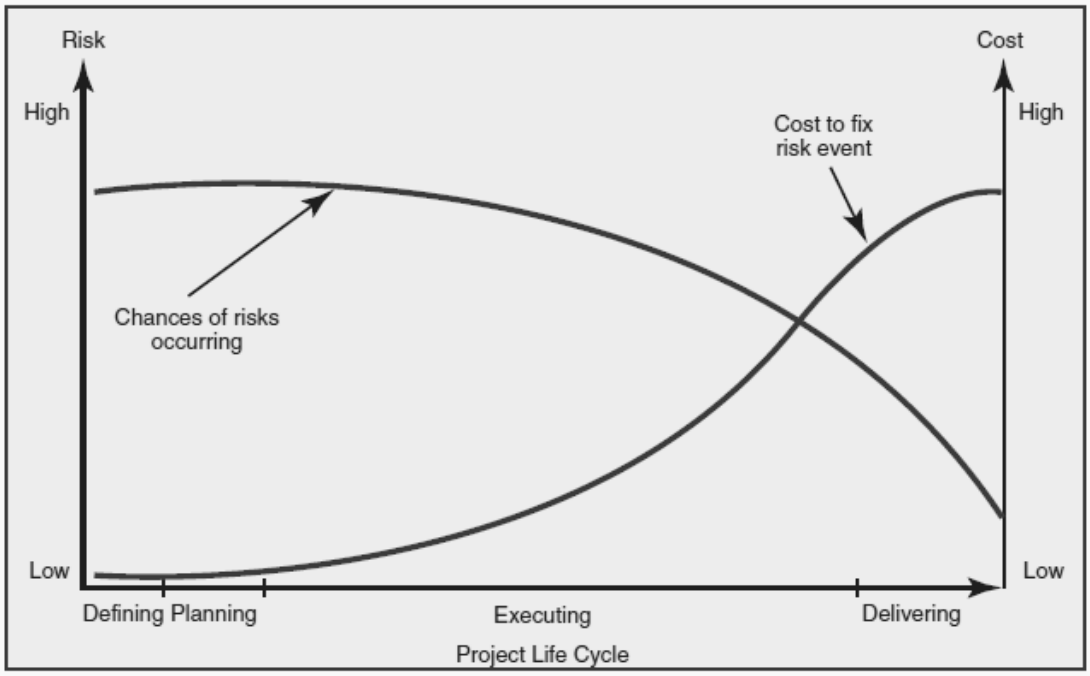
Item	Risk	Risk Description
A	Delivery/operation	This risk factor involves issues or concerns associated with actual engineering, procurement, construction execution, and operation of the project, including non-traditional approaches such as a public owner's use of design-build contracts.
B	Technology	The ability to overcome the technological risks of the project. This risk factor involves issues or concerns associated with the technologies involved in the execution methods and operational technology of the project.
C	Financial	The ability to overcome the financial risk of the project through to final completion and operation. This risk factor involves issues or concerns associated with the financing of the project, including the execution period and operations or equity financing.
D	Procurement-contractual	The ability to overcome the risks associated with the procurement of, or contracting for, the execution and operation of the project. This risk factor involves issues or concerns associated with the contractual and procurement approaches systems-processes used for both project execution and operation.
E	Political	The ability to overcome the political risk of the project, including local, state, and national political opposition and code and regulatory impediments. This risk factor involves issues or concerns associated with the local, regional, and national political and regulatory situation confronting the project.

Source: Jayasudha *et al.,* (2016:6945)

According to PMBOK (2012:310), project risk is an uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives such as scope, schedule, cost, and quality. A risk may have one or more causes and, if it occurs, it may have one or more impacts. Figure 3.3 represents

the chances of risks that are likely to occur and the costing that is associated with the risk. As can been the risks are quite high at the defining and execution phase but get low as the project gets completed.

Figure 3.3 Risk event graph over the project life cycle



Source: adopted from Larson *et al.,* (2011:212)

3.2.2 Project Scope Management

Project scope management is for ensuring that all the work required (and only the required work) is included in order to successfully complete a project (Dinsmore and Cabanis-Brewin, 2011:8). PMBOK (2012:105) asserts that project scope management involves the processes required to guarantee that the project has all the work required, and only the work required, to complete the project successfully, additionally managing the project scope is mainly concerned with defining and controlling what is included and not included in the project.

The scope should be established under the direction of the project manager and customer and should be characterized by project objective, deliverables, mile-stones, technical requirements, limits and exclusions, reviews with customer. The project manager is accountable for ensuring that there is an agreement with the

owner on project objectives, deliverables at each stage of the project includeing technical requirements (Larson *et al.,* 2011:102). Verzuh (2005:202-203) states that project managers must try to balance the project scope against the following project constraints:

- **Time:** the project will not be done by the time agreed upon at the onset.
- **Money:** it is possible for the project to deliver a project on time and within required quality but the cost is too high.
- **Resource:** projected cost is acceptable but the project schedule suggests that more people, material or equipment is not available. One could possibly afford them but there are none to hire.

Larson *et al.,*(2011:102).states that project scope is a definition of the end result or mission of your project such as a product or service for your client/customer and that to be regarded as complete it should be checked against the following:

- **Project objective:** define the overall objective to meet your customer's need(s).
- **Deliverables:** define major deliverables—the expected out-puts over the life of the project.
- **Milestones:** milestone is significant event in a project that normally occurs at the end of a project phase where the deliverables are available for the review and plans together with recommendations are made for other phases. Milestones should be natural, important control points in the project and be easy for all project stakeholders to know.
- **Technical requirements:** more often than not, a product or service will have technical requirements to guarantee a proper performance.
- **Limits and exclusions:** the limitation of the scope should be clearly defined because failure to do so can lead to false expectations and to spending resources and time on the wrong problem. Exclusions assist in defining the boundary of the project by stating exactly what is not within the project requirements.
- **Reviews with customer:** completion of the scope checklist ends with a review with your client either internal or external. The main concern here is to

ensure that what was agreed upon from the onset is exactly what has been produced. At this stage the expectations of a client are expected to be met for satisfaction. Project budget, time and performance are looked at.

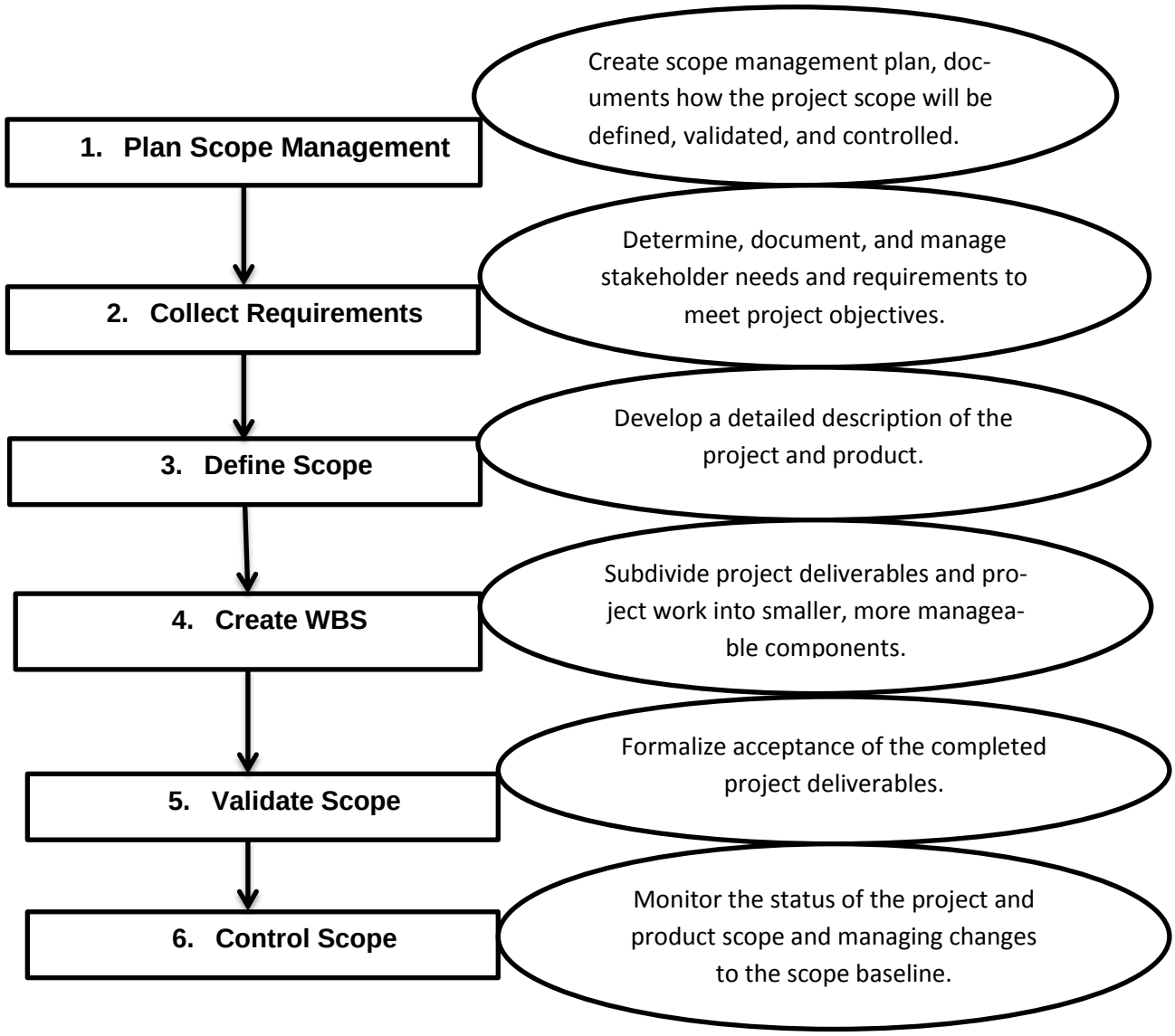
PMBOK (2012:108-109) states that scope management plan is a constituent of the project or program management plan that outlines how the scope will be defined, established, monitored, controlled, verified and is the main input into the Develop Project Management Plan process, and the other scope management processes. The components of a scope management plan include process:

- for preparing a fully described project scope statement;
- that allows the creation of the WBS from the fully described project scope statement;
- that establishes how the WBS will be maintained and approved;
- that stipulates how formal acceptance of the completed project deliverables will be attained; and
- to control how requests for changes to the fully described project scope statement will be processed. This process is directly linked to the Perform Integrated Change Control process.

The scope management plan can be formal or informal, broadly framed or highly detailed, based on the needs of the project.

The Project Scope Management processes have to be well integrated with the other Knowledge Area processes in order for the project work to result in delivery of the stated product scope (Duncan, 1996:47). Figure 3.4 represents the processes that are involved in the project scope management (PMBOK, 2012:108-109).

Figure 3.4 Project Scope Management process



Source: adopted from PMBOK (2012:108-109)

Furthermore it states the six stages involved in a project scope management process and outline the activities that are done in each stage of the process for clarity and easy the understanding. As can be seen in figure 3.4 the process is sequential meaning that each stage follows the other from stage one up to stage six. The purpose of following the project scope management process is to ensure that all the elements of scope are taken care of and risk of scope creep are reduced.

3.2.3 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 (PMBOK 2012, 193). The key to effective cost control is the management of the approved cost baseline and the changes to that baseline (PMBOK, 2012:215) however project cost control and good project schedule are impossible without a time-phased budget (Larson *et al.,* 2011:275). Project cost control includes the following:

- Influencing the factors that create changes to the authorized cost baseline;
- Ensuring that all change requests are acted on in a timely manner;
- Managing the actual changes when and as they occur;
- Ensuring that cost expenditures do not exceed the authorized funding by period, by WBS component, by activity, and in total for the project;
- Monitoring cost performance to isolate and understand variances from the approved cost baseline;
- Monitoring work performance against funds expended;
- Preventing unapproved changes from being included in the reported cost or resource usage;
- Informing appropriate stakeholders of all approved changes and associated cost; and
- Bringing expected cost overruns within acceptable limits.

According to Burke (2013:42) the characteristics of project cost management and its features include direct cost, estimating continuum, establishing budgets, establishing budgets, fixed cost, variable costs, labour cost, procurement costs, bottom-up estimating, top-down estimating and unit rates. Table 3.2 provides elements of project costs as illustrated below.

Table 3.2 Elements of project costs

ELEMENT	MEANING
• **Direct Cost**	These are costs that are charged in relation to the activity performed in a project, e.g. labour,
• **Estimating Continuum**	This refers to the estimation of changes that would gradually occur as the project progresses during the project life cycle.
• **Establishing Budgets**	The project budget is established through top-down estimate where experienced management is used to estimate project budget or bottom-up estimate where the quotations are used to build up a budget that is more accurate.
• **Fixed cost**	These are the costs that must be incurred throughout the project life cycle such as bulldozer or crane truck.
• **Variable Costs**	These are costs that change during the project life cycle such as such as the laborers who get more of less depending on the activities that needs to be done during the project life cycle.
• **Labour Cost**	These costs are paid to the laborers or employees and they include the salaries, taxes and employee general benefits.
• **Procurement Costs**	These are costs that relate to the contracts of goods or services that should be supplied such as an agreement that a house must be built within certain specifications at a specified cost.
• **Bottom-Up Estimating**	These are estimates that are done by people who are directly involved in performing the work. This is normally more accurate compared to the top down approach.
• **Top-Down Estimating**	These estimates are usually done by the well experienced management staff to determine the project duration and project cost. This is normally less accurate when compared to the bottom-up approach.
• **Unit Rates**	These are rates used to cost labour activities such as digging of the trench or cost material such as one bolt. When the unit costs are summed up they build up a project cost.

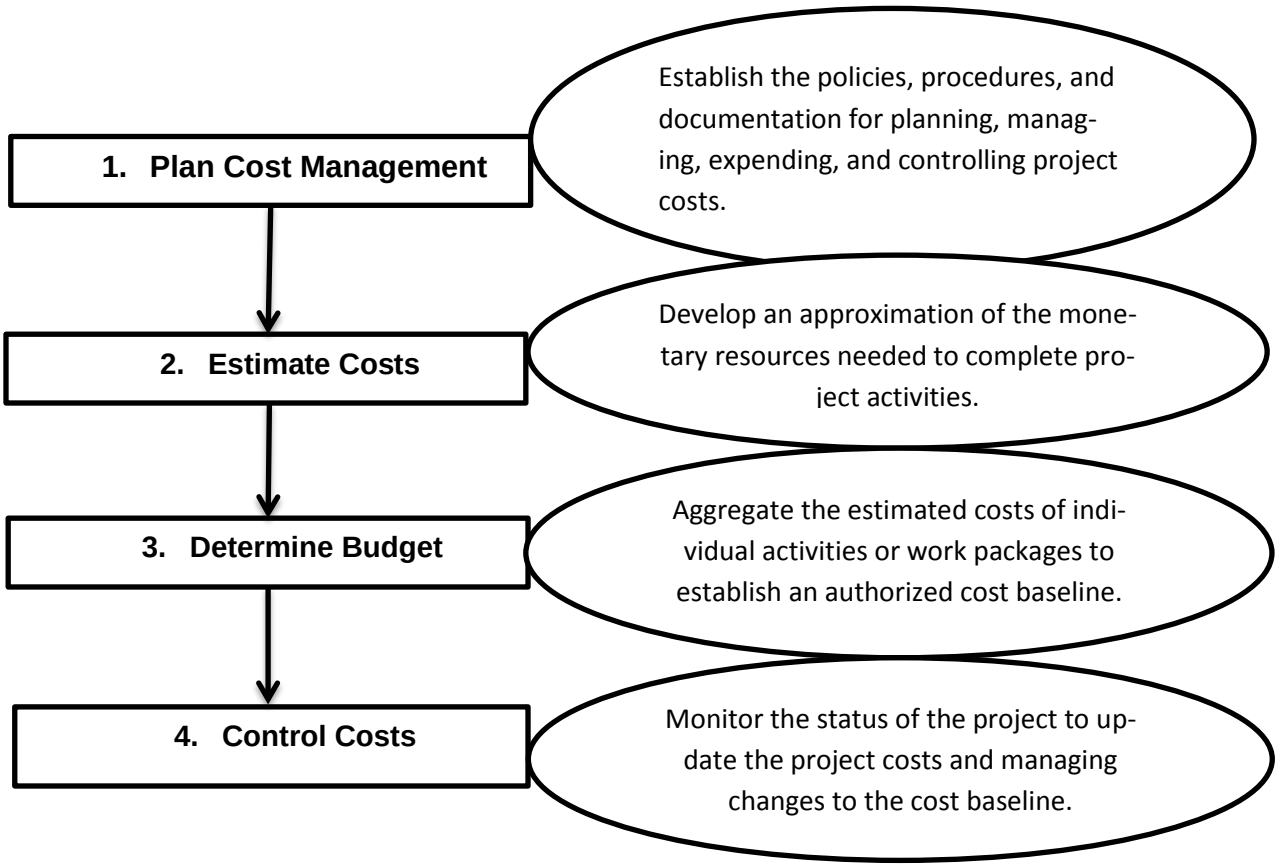
Source: adopted from Burke (2013:42)

Furthermore Table 3.2 provides elements that are involved in project cost management and provides detailed explanation of each element with examples.

These cost elements are meant to ensure that a project has enough budgets that last till project completion in order to finance project resources.

Steyn *et al.,* (2010:161) states that project cost management is the common thread that occurs through the life cycle of any project. Figure 3.5 represents the cost management process involved in projects (PMBOK 2012, 193).

Figure 3.5 Project Cost Management process



Source: adopted from PMBOK (2012:108-193)

Furthermore it states the four stages involved in a project cost management process and outline the activities that are done in each stage of the process for clarity and easy the understanding. As can be seen in figure 3.5 the process is sequential meaning that each stage follows the other from stage one up to stage four. The main purpose of cost management in a project is to ensure that the project done within the approved budget and that the cost is adjusted accordingly should there be a need during the project life cycle.

3.3 SOFT SKILLS

Project managers utilize a mixture of technical, personal, and conceptual skills to analyze circumstances and interact appropriately with team members, appropriate interpersonal skills permits project managers to capitalize on the strengths of all team members (PMBOK, 2012:282). According to Gillard (2009:728) the need for excellent interpersonal, or soft skills, are necessary requisites for success, and although some would disagree, others advocate that these are skills that can be taught (and learned) rather than skills that are inborn or genetic.

According to Ingason and Jonasson (2009) as cited by (Archer, Verster, & Zulch, 2010:434) states that the project management profession has in the past strongly emphasized technically supported methods of planning and execution as a core competence, and continues to do so today, however, while project management today remains strongly focused on this traditional objective or hard perspective, there now seems to be an increasing focus on the more subjective and soft factors such as leadership, motivation, group dynamics, interpersonal communication, culture and ethics – that could be regarded as essential to all professional endeavors.

Gillard (2009:725) asserts that many companies consider soft skills … namely: negotiation, conflict management, communication and persuasion, as higher-order skills."Daniel Goleman as cited by Crosbie (2005:46) defines soft skills as emotional intelligence and put forward that possession and use of soft skills contribute more to an individual's ultimate success or failure than technical or intelligence. Lechler (1998) as cited by Skulmonski and Hartman (2009:62) argue that soft competencies contribute more to project success than technical activities such as planning and control. To effectively manage and lead in a project environment, a person should develop both soft and hard skills, which include communication and leadership (Kloppenborg, 2011:6).

3.3.1 Leadership

Effective leadership is depended on the level of maturity of the followers and the agreeableness and congruence between the leader and followers (Jowah, 2013:708). Skipper and Bell, (2006a:75) defines leadership as 'soft' skills which refers to vision, working together, motivation, building trust among the players, ethics. According to Nixon, Harrington and Parker (2012) as cited by Riaz, Tahir and Noor (2013:100) leadership is an effective tool to be used by the project manager which moderately influence project result, otherwise, absence of leadership skills are directly related with project failure. Project leadership is the ability to lead in most powerful manner while leading the others in project work Strider (2002) as cited by Riaz *et al.,* (2013:101).Leadership, in contrast, is a process of leading others for achievement of project objectives "motivating and guiding people to realize their potential and achieve tougher and challenging organizational goals (Anantatmula,2010:19).

Leadership is a vital factor of effective management but its function and direct influence on project success or failure in term of internal and external factor has not been addressed in literature even leadership performance founded moderately ambivalent (Nixon *et al.,* 2012) as cited by Riaz *et al.,* (2013:99). The leadership fundamental function is to produce change and set direction to cope with change which is not similar to planning or long-term planning, but perplexity between both often take place among people Birkinshaw, Hamel and Mol (2008) as cited by Riaz *et al.,* (2013:99). Project leadership impact on improving project management practices in order to reduce uncertainty and complexity associated with project pursuit). To achieve project objectives in complex working environment, vibrant leadership induces the need of change, inspire for new ways of thinking and problem solving, and motivate for working together Nixon *et al.,* (2012) as cited by Riaz *et al.,* (2013:101)

The indispensable leadership and managerial knowledge, skills, competencies and characteristics guarantee successful completion of projects through right decisions at right time and by utilizing right people at right places. The significance

of leadership being a requisite for project brilliance has been rendered all over the literature of project management Kerzner (1987) as cited by Riaz *et al.,* (2013:100) and a mean for motivating people for change Patterson (2010) as cited by Riaz *et al.,* (2013:100) which is influential for overall project ethnicity Shore (2008) as cited by Riaz *et al.* (2013:100). Shenhar (2004:573) states that from successful projects it is seen that project leaders wear 'bigger hats' to deal with both leadership and management roles. The imminent effects of leadership skills and contextual factors in context of leaders while managing important activities associated with planning for organizational change through effective management of projects needs to be addressed Battilana, Gilmartin, Sengul, Pache and Alexander (2010:434).

Kouzes & Posner, 2002a as cited by Skipper *et al.,* (2006a: 77) states that there are five basic leadership practices namely: challenging the process, enabling others to act, encouraging the heart, modelling the way and inspiring a shared vision. Table 3.3 below represents the practices of leadership in project context.

Table 3.3 Practices of leadership in project context

Leadership qualities	Explanation
• **Inspiring a shared vision**	Making the project team members understand what a project is all about and what it aims to achieve.
• **Modelling the way**	Exhibiting the way things must be done so that the project team members or project stakeholders can follow suite.
• **Challenging the process**	Thought-provoking the traditional way things are normally conducted.
• **Enabling others to act, and**	Create an environment where the project team members are able to perform their duties.
• **Encouraging the heart.**	Enable a strong driving force to project team members.

Source: adopted from Kouzes & Posner (2003)

Additionally Table 3.3 provides an explanation of each of the five leadership practise and put it into context that a leader has to be visionary, lead by an example, allow others to perform as well as motivating others. These practises can be achieved by anyone who aspires to be a leader and they are an example of what leadership is all about particularly in the project context.

Lewis (2003: 133) argued that leadership is essentially an influence process, so the more the manager knows about how to persuade people to do something, the more likely he will be to get results. According to Kotter (1990) as cited by Skipper *et al.,* (2006a: 75) leadership is about establishing direction, aligning people, and motivating and inspiring others. According to Gharehbaghi & McManus (2003) as cited by Archer *et al.,* (2010:433) leadership is vision, motivation, organization and action. Leadership is a complex process by which a person influences others to accomplish a mission, task, or objective and directs the organization in a way that makes it more cohesive and coherent. Effective leadership is based on inference experience and instinct. According to Toor and Ofori (2008a: 628), the people side of project management or what many would call leadership, is paramount to the successful delivery of desired results.

According to Gharehbaghi *et al.,*(2003: 56-57) a good leader must

Know and understand his/her people and look out for their well-being;

- Keep her/his people informed and know how to communicate with them;
- Help others exert their influence and must share leadership;
- Have good communication skills;
- Have good judgement;
- Be persuasive, patient and persistent;
- Be a professional who possesses good character traits such as honesty, trustworthiness, competence, commitment, integrity, courage, straightforwardness, imagination, and
- Be loyal to the organization, perform selfless service and take personal responsibility.

Posner as cited in Burger and Verster, (2009) indicated the importance for project managers to improve their ability to communicate, organise, build teams and offer leadership they also require to have a unique and authentic leadership style that is coherent with their personality and is consistent with their personal values and motivations (Toor & Ofori, 2008a: 624). It seems clear that a person would lead people in accordance with his or her personality characteristics (Lewis, 2003: 3). Ideal project leaders are able to engage the team members at a personal level and encourage them, empower them and inspire them to participate in the project (Burke & Barron, 2007: 263). Leaders are able to gain commitment from people (Lewis, 2003: 3).

Project manager's leadership skills are interconnected with all the other management skills and this has revealed that project management is not an end in itself, but rather its whole drive is to make other managerial skills happen (Burke *et al.,* 2007: 222). Ahmed, Azmi, Masood, Tahir and Ahmad (2013) as cited by Riaz *et al.,* (2013:100) states that the project managers eloquent clear vision of project and communicate to project team in order to make a project strategy well related to business strategy. The project managers create a project strategy well connected to business strategy (Shenhar, 2004:570). A construction project consists of a diversity of individuals and organizations which are all gathered to achieve a specific task in a specific time. Therefore, leadership is an important characteristic for construction manager in managing construction projects.

Leadership skills can improve construction productivity, where its outcomes include effectiveness, satisfaction, and extra effort. A key element in the success of a company is good leadership skills of a project manager and a project can be managed with minimal problems occur (Zakaria 2015:89). It becomes important to understand and adopt leadership skills and competences to cope with modern challenges of project which affect on success or failure of project. The function of project managers is rapidly evolving from managing or directing to leading the projects who must possess essential knowledge, skills, and new emerging concept of leadership (Riaz, *et al.,* 2013:96). The construction project manager needs leadership skills to manage a project effectively (Zulch, 2014:173).

3.3.2 Communication

Edum-Fotwe and McCaffer (2000:114) states that communicating includes an exchange of information and that effective communication is an extensive skill which includes a considerable body of knowledge that is not exclusive to the project context. The project manager regularly needs writing, oral and listening skills for communicating. Communication strategies must be upon an in-depth understanding of the ways that humans work together, the key principles of social dynamics and learning theory also the ways in which people deliver, accept and understand words and pictures (Aulich, 2013:92). Zulch, (2014:178) concurs that essential skills that project managers require in order to effectively communicate might for instance be the skills of writing and speaking. Managers need to be able to write (emails, documents, memos, reports and up to proposal) and speak in a level of language expected of leaders. These are the core skills needed in communication. Effective communication includes active listening hence project managers are required to consider listening carefully to what others ought to say (Fisher, 2011:998).

Oxford (2002) as cited by Hudson, Grisham, Srinivasan and Moussa, (2005:6) states that to communicate is to share or exchange information or emotion and communication is the action of communicating. Three types of communication such as a) vertical communication meaning the up and down flow of communication based on hierarchical relationships b) horizontal communication, meaning communication with peers; and c) diagonal communication meaning upward relationships with managers and diagonal communication with contractors and/or suppliers or team members of other departments (Campbell ,2011 as cited by Zulch, 2014:177)

Zulch, (2014:172-177) posits that leaders lead through effective communication and further describes the role that communication plays in the leadership role of a project manager as follows:

- Communication as part of leadership is crucial in executing and managing projects as well as for communication between the construction project team and stakeholders.
- Knowledge of the features and leadership styles used by construction project managers will play part in solving communication problems.
- Communication with people remains the fundamental part of a leadership while the preferred style of communication varies from leader to leader and also from project to project.
- The features of chosen leadership style will conclude how a project leader deals with team members and influence the effectiveness of communication with the team hence the construction project managers should take up a certain style of leadership or combination of styles.
- Through communication it is crucial that a project manager enhance the balance between the requirements of the project activities, the requirements of the project team and the requirements of the individual. Heldman (2011) as cited by Zulch, (2014:176) states that “the better the project manager communicating, the smoother the project will go”, confirm the importance of communication.
- Good communication skills permit foster and generate an understanding and trust required to encourage others to follow a leader. Without effective communication a manager achieves little and is not regarded as an effective leader.
- The majority of communication during a construction project may be spent on speaking and listening, and less time on reading and writing. Communication actions such as speaking, listening, reading and writing require expertise to be used successfully.
- Communication is a strong force that influences project success hence the project leader is required to develop a leadership style that nurtures effective and efficient communication with stakeholders.

Priyadharshini and Kumar, (2015:1493-1495) asserts that poor or ineffective communication management among project participants is one of the numerous issues that contribute to the failure of projects which is why there is a huge prob-

lems in construction projects. Zulch, (2016:1) concurs that ineffective communication and poor application of communication skills in construction project management result to undesired project outcomes and that the lack of proper communication skills model for project management may contribute to ineffective project communication. Campbell (1997) cited by (Assah-Kissiedu, Fugar and Badu, 2010:20) also revealed that in the UK, construction arguments normally arise because of poor communication between the parties and ineffective communication on site. It is vital to determine the skills required to communicate effectively for the value of the project (Zulch, (2014:176).

Effective communication normally between the parties before and during construction of the project must be a priority (Assah-Kissiedu *et al.,* 2010:23).

Priyadharshini *et al.,(*2015:1494) defines communication as follows:

- **Project Communication** - Project communication is the interchange of project-certain information with the stress on generating an understanding between the sender and the receiver. Everyone on the project team is responsible for project communication.
- **Effective Communication** - Effective communication refers to the information that is provided in the right format, at the right time, and with the right impact. Effective communication is one of the most important factors contributing to the success of a project.
- **Efficient Communication** - Efficient communication refers to the provision of only the required information.

Leadership as a communication skill and communication as a leadership skill are very vital nevertheless the project manager will achieve nothing without communication skills (Zulch, 2014:176).

Communication capabilities are crucial when managing conflict that could be damaging to the project (Hudson *et al.,* 2005:6). Since good communication skills are required to be able to influence effectively, all communication methods can be thought of as a way of influencing others (Lewis 2003: 133), Hudson *et al.,* (2005:3) summarized studies conducted by Barber and Tietje (2004), Tas and

LaBrecque (1996), Strang Accessed (2005); Weinkauf and Hoegl (2002) about leadership competencies which identified communication competencies that relates closely completely to the personal features of the project manager as decisive, assertive in leadership, social skills, diplomatic, interpersonal skills display, tactful, conflict resolution, persuasive, persistent, information flow securing, feedback provision, team developing and coaching. Table 3.4 below provides the project manager's communication competencies.

Table 3.4 Project manager communication competencies

• **Communication competencies**	**Explanation**
• **Display assertive leadership**	This refers to a project manager's way of responding whereby his/her point of view is in conflict with the one of others.
• **Display responsiveness management**	Be able to manage the response by responding in time or when necessary to do so.
• **Display interpersonal skills**	The project manager should be able to convey and translate the information in an effective manner. Also being able to interpret the emotions of the project team members/ stakeholders.
• **Be decisive**	Brings up sound decisions while representing integrity, follows up a decision-making process. Makes decisions based on relevant information.
• **Display social skills**	These are the skills a project manager needs to interact, social communicate and create a healthy environment for social interaction.
• **Be fluent in speaking**	Effectively communicate by ensuring that right information is conveyed articulately in a right manner and that what is said has logic and needs no further explanation.
• **Be diplomatic**	Refers to the conduct of peaceful manner when a project manager negotiates and persuades others.
• **Be tactful**	Ability to deal with others sensitively and skillfully without offending.

• **Be persuasive**	To be able to make project team members to do what favors positive outcomes of the project and be able to strike good deals for project success.
• **Be persistent**	Be determined to achieve to achieve the project success against any opposition that seems to be the barrier.
• **Secure information flow**	Ensure that information is shared continually through the channels of communication.
• **Resolve conflicts**	Project manager shows an ability to identify a problem, seeks best or amicable solutions when resolving conflicts.
• **Coach and develop the team**	Be able to guide, advise, encourage and motivate the project team.
• **Give feedback**	Keep on updating the project team about what is happening in a project.

Source: adopted from Hudson *et al.,* (2005:3)

Table 3.4 explains the importance of the communication competencies of a project manager. These competencies indicate that a project manager needs to be effective in communication and that once a project manager lack these kind of competencies a project has a high possibility of failing to achieve its objectives.

Communication and people skills are seen as important skills to be applied by a project manager, yet it is not very successfully applied or developed (Archer *et al.,* 2010:438). Issues concerning design, payment and compensation, variations in scope and others must be communicated effectively, efficiently and in a timely manner by the originator to the recipient. Effective communication must be supported by a good record keeping by all parties. Before the works begin, the parties should foresee possible future problems and establish procedures to organize and preserve complete and accurate records concerning the progress of work (Assah-Kissiedu *et al.,* 2010:27).

3.3.3 Conflict Management

Verzuh, (2005:269) states that conflict management skill makes people to bring constructing ideas into different perspectives to build better ideas and maintain better team relations. Differences can arise from knowledge, where knowledge will change the friction (increase or decrease) that is present in the interactions that occur, and requires the careful understanding of a leader to guide and balance it (Hudson *et al.,* 2005:4). Conflict is a preventable outcome of group problem solving and that conflict management skills are necessary for building up cooperative problem solving capability in a team because when a number of people need to make up a decision there bound to be a conflict Verzuh, (2005:263). Yui and Cheung (2006) as cited by Zakaria *et al.,* (2015:92) defines conflict as the difference between two or more trusts, the clash of ideas in solving a problem, or interest in project management. A conflict management that is constructive results to improvement and better performance (Sudhakar, 2015:230).

According to PMBOK (2012:282) the success of project managers in managing their project teams often depends too much on their capability to resolve conflict and different project managers may utilize different conflict resolution methods. Factors that influence conflict resolution methods include the following:

- Relative importance and intensity of the conflict,
- Time pressure for resolving the conflict,
- Position taken by persons involved, and
- Motivation to resolve conflict on a long-term or a short-term basis.

The project manager and project team must be watchful for clash that could arise and implement the flowing strategies to deal with conflict Verzuh, (2005:263):

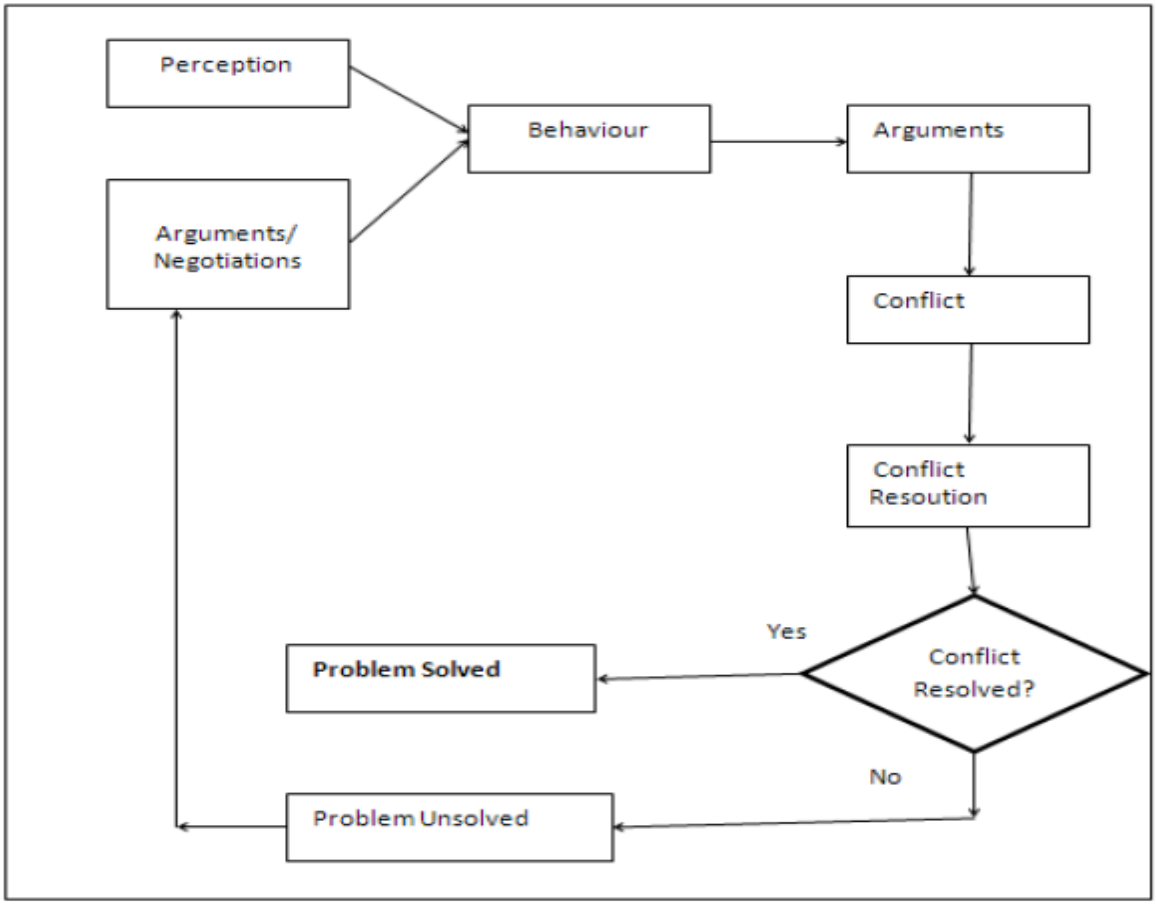
- **Prevent Conflict:** avoid the stress that comes with conflict by looking at mechanisms of high performance team. Factors that contribute to the smooth operating team include effective listening clear problem solving process ground rules and good meeting management.

- **Acknowledge the conflict:** identify the differences or disagreements and acknowledge the associated emotions that surface. Describing the conflict assist in focusing to the problem itself than people involved in a conflict.
- **Frame the conflict in reference to the project:** Clearly consider how the decisions taken will affect other decisions. Understand the context of the decision within the project also show the urgency to solve the problem.
- **Focus on interests, not positions**: Rather than digging and defending positions, each side of the conflict should be explicit about their interest, goals and requirements for the outcome. This focus reveals all that have in common, a starting point for building a mutually satisfying solution.
- **Trade places:** try to explain the situation looking at other person's point of view. Understand that person's reluctance to embrace your proposal. Pay attention as a person describes you're your point of view to you.
- **Separate identifying and selecting alternatives**: let the group stay focus on finding possible solutions and put down rules that encourage generation of ideas not evaluating them. Tactics such as this one result to new thinking by collaborating different ideas.
- **Agree on process, if not outcome:** If no solution or agreement is reached by both parties involved, rather focus on making up a process for deciding that both sides can accept, eg, organize a third party that can be trusted to make a decision.

Ogunbayo (2013: 2255) declares it is important for the project managers to obtain training in conflict management for the basic knowledge on how to resolve project conflicts while further knowledge will be developed on the actual practice furthermore project managers are required to establish whether the conflict is within or outside the project when dealing with it and be dynamic in knowing which conflict management style to adopt during project life cycle so to ensure that project objectives are accomplished. As a project manager it's very difficult to resolve conflicts that normally arise during construction expectedly project manager or project lead face the major conflicts during construction and are required to keep the project in order (Zakaria *et al*., 2015:92).

Conflict life cycle outline the dynamic nature of conflict comprising different events or phases of conflict in projects as illustrated in figure 3.6.This is the process model of conflict clarifying the different internal events of conflict and their interaction (Sudhakar, 2015:218). Figure 3.6 below represents the conflict life cycle.

Figure 3.6 Conflict Life Cycle



Source: Sudhakar (2015:214)

Conflict management capabilities involves: reduction of conflict within project teams; exposing or avoiding conflict, but enabling resolution; pinpointing out the social behavior revealed in conflict situations; supporting the creation of healthy argumentative cultures, and being able to find agreement with others; aiming for win-win situations; and reacting calmly to personal attacks and forgiving such attacks (Hudson *et al*., 2005:3).

3.3.4 Emotional Intelligence

The capability to identify, assesses, and manages the personal emotions of one-self and other people, as well as the collective emotions of groups of people. (PMBOK, 2012:537). Emotional intelligence has a greater impact on performance than intellect (Jałochaa, Petter-Kraneb, Ekambaramc, and Prawelska-Skrzypekd, 2014:251) Mersino (2007:8) defines emotional intelligence as the ability to recognize and regulate emotions in ourselves and others, which by implication is the ability to self-manage one's emotions and both understand and manage the emotions of others.

Goleman as cited by Gonzalez (2012:83) reported that emotional intelligence is important about two times as much for success compared to technical skills.

It seems that the project manager's emotional intelligence has an impact on his or her perception of the success of the project and four components of emotional intelligence could imposed on a project manager's perception of success of the project (Turner & Muller, 2005:59).

According to Dulewicz and Higgs (2005) as cited by Turner & Muller (2010:447) the emotional and intellectual dimensions are as described in point 3.3.4.1 and 3.3.4.2:below:

3.3.4.1 Intellectual competence

- Critical analysis and judgment: the leader gathers relevant information from a wide range of sources, probing the facts, identifying advantages and disadvantages. Sound judgements and decisions making, awareness of the impact of any assumptions made.

- Vision and imagination: the leader is imaginative and innovative. He or she has a clear vision of the future and foresee the impact of changes on implementation issues and business realities.

- Strategic perspective: the leader is aware of the wider issues and broader implications. He or she balances short and long-term considerations and identifies opportunities and threats.

3.3.4.2 Emotional competencies

- Self-awareness: the leader is aware of his or her own feelings and able to recognize and control them.
- Emotional resilience: the leader is able to maintain consistent performance in a range of situations. He or she retains focus on a course of action or the need to obtain certain results in the face of personal challenge or criticism.

- Intuitiveness: the leader arrives at clear decisions and is able to drive their implementation in the face of incomplete or ambiguous information by using both rational and 'emotional' perceptions.

- Interpersonal sensitivity: the leader is aware of, and takes account of, the needs and perceptions of others in arriving at decisions and proposing solutions to problems and challenges.

- Influence: the leader can persuade others to change a viewpoint based on the understanding of their position and the recognition of the need to listen to this perspective and provide a rationale for change.

- Motivation: the leader has drive and energy to achieve clear results and make an impact.

- Conscientiousness: the leader displays clear commitment to a course of action in the face of challenge and matches 'words and deeds' in encouraging others to support the chosen direction.

3.3.5 Problem Solving and Decision Making

Problem solving skills involve a combination of problem definition and decision making which is concerned with problems that have already occurred. The problem definition aspect requires distinguishing between causes and symptoms. Equally the problems may be technical (differences of opinion about the best way to design a product), managerial (a functional group is not producing according to plan), or interpersonal (personality or style clashes). The project manager's deci-

sion regarding the defined problems may call for quick response. Project Manager as a Strategist/Entrepreneur needs to offer groundbreaking resolutions for the product as well as the business processes including in the delivery of the project's outcome. (Edum-Fotwe *et al.,* 2000:114).

For a leader it is necessary to know how to solve a problem, how to distinguish the source of the problem, identify practical solutions, and the last action is to implement it. Between the elements in problem solving is included in the problems to be solved and decisions need to be made to solve the problems that have occurred (Odusami, 2002:62).

According to PMBOK, (2012:284) effective decision making includes a skill of negotiating and influencing the organization as well as the project management and that the decision making guidelines contains, focus on goals to be served, follow a decision-making process, study the environmental factors, analyze available information and develop personal qualities of the team members. Table 3.5 provides the decision making guidelines.

Table 3.5 Decision making guidelines

Decision Making Guidelines	Explanation
• **Focus on goals to be served**	The decision to be made must be in line with what needs to be achieved.
• **Follow a decision-making process**	Following up a process ensures that all the factors around a decision are being considered and dealt with.
• **Study the environmental factors**	Be able to have a knowledge and understanding of factors around before taking a decision.
• **Analyze available information**	Scrutinize the information at hand in order to make up a decisive
• **Develop personal qualities of the team members**	Encourage team members to come up with the information that may assist in making a decision.
• **Stimulate team creativity**	This involves thinking out of the box, brainstorming, flow-

	ing of ideas that easy decision making.
• **Manage risk**	Be able foresee things that may hinder a decision and take the necessary steps.

Source: adopted from PMBOK, (2012:284)

Table 3.5 also shows that in the project environment decision making doesn't really require an inductive thinking but more of deductive thinking. Furthermore it illustrates that before any decision can be made facts must first be determined through the availability of factual information and that the necessary processes of decision making needs to be followed for effective decision making.

3.3.6 Team Building and influence

Project team members need to collaborate, share, collate and integrate information and knowledge to realize project objectives and thus project managers who allow the team to take responsibility for their work will attain more from team members Zulch (2014:180). As a project manager also must engage in team building skills as necessary for the success of a project. For every decision made by a project manager or a leader should be known by their subordinates, because people definitely need to know what exactly is required of a leader, or a sharing of knowledge and learning, and in the selection process for an original team leader (Raiden et al., 2004 cited by (Zakaria *et al.,* 2015:92).

In matrix environment project managers frequently have little or no direct authority over team members, their ability to influence stakeholders on a timely basis is critical to project success. The main influencing skills include (PMBOK, 2012:282):

- Ability to be persuasive and clearly articulate points and positions;
- High levels of active and effective listening skills;
- Awareness of, and consideration for, the various perspectives in any situation; and

- Gathering relevant and critical information to address important issues and reach agreements while maintaining mutual trust.

3.3.7 Negotiating

According to Edum-Fotwe (2000:114) negotiations occur around many issues, during the life of a project, many of which involve the project manager. The following situations are often encountered during the course of a construction project, and for which the negotiation skills of the project manager are called for.

- Scope, cost, and schedule objectives
- Changes to scope, cost, or schedule
- Contract terms and conditions
- Resource availability and utilization

3.3.8 Project Success and Project Management Success

The objectives of project success and project management success are often inter-twined (Munns *et al.,* 1996:82). A project team may then be incorrectly acknowledged or accused depending on when a project is considered a success or failure (Ika, 2009:13). It was this deceptive inconsistency that led de De Wit(1988:165) to propose a distinction between project success and project management success. The actual meaning of the concept of success is still very broad. Implicitly or explicitly the authors generally discuss project success with the opinion that they are talking about project management success or more than successful project management (the project success) (Ika, 2009:13). Project management success and projects success are two different things (Cooke-Davies, 2002:186)

Scholars such as (Baccarini, 1999; Cooke-Davies, 2002; Wite, 1988) conducted studies to clear out a distinction between project success and project management success when trying to measure success as the two although related may be very different. Pheng and Chuan (2006) as cited by (Alzahrani *et al.*, 2013:314) pointed out that the successful achievement of cost, time, and quality objectives were regarded as project management success. Alternatively, project

success deals with the final project objectives. Project management success is an internal measure of project efficiency while project success is concerned with a project's external effectiveness (Shenhar *et al.,* 1997:6). De Wit(1988:164) asserts that good project management can contribute towards project success but is unlikely to be able to prevent project failure.

3.3.8.1 Project Success

Project success has long been regarded as the ability to fall within time, cost and quality constraints (Ika, 2009:13) however according to de De Wit(1988:165) the project is considered an overall success if the project meets the technical performance specification and/or mission to be performed, and if there is a high level of satisfaction concerning the project outcome among key people in the parent organization, key people in the project team and key users or clientele of the project effort. Success of a project rests on the project manager's ability to understand when and how to use hard skills and implement soft skills for the purpose of working within an organization; defining the business value, clarifying vision, determining requirements; providing direction; team building; resolving issues and mitigating risk (Belzer 2001:1). An improved appreciation of the role of project management within projects must first be established in order for a project to be regarded as successful, and this role must be placed within the context of a wider project alongside other outside criteria and long-term expectations (Munns *et al.,* 1996:86).

Managerial skill and leadership skill are surely the two of the key qualities of a project manager. Once these two project management qualities are successfully combined and applied, the success rate of the project will most probably increase. Management is the 'hard' skills which refer to planning, directing, organizing, and keeping score. (Archer *et al.,* 2010:434-438). Effective management of people to implement a well chalked-out plan is the key to the success (Azim *et al.,* (2010:399). Managing projects successfully therefore requires a mixture of skills including interpersonal ability, technical competencies and cognitive aptitude, along with the capability to understand the situation and people and then dynamically integrate appropriate leadership behaviors (Strang, 2003a cited in

Pant *et al.,* 2008:124). Many projects fail to reach their optimum level of performance, not because of any lack of resources, equipment or systems, but purely because the human factors were not adequately addressed (Burke *et al.,* 2007: 223). To increase the possibility of project success, project management and the project manager are important factors (Chordas 2008: 66-69; Kerzner, 2013: 1-10; Trebilcock, 2007: 40).

Fryer (1985) as cited by Hwang *et al., (*2013:272) listed social skills, decision-making skills, problem-handling skills, ability to recognize opportunities, and management of changes as key personal attributes affecting project success.. According to Edum-Fotwe *et al.,* (2000:112) much of the knowledge needed to manage construction projects is unique to project management such as critical path analysis and project cash flow forecasting additionally modern project management practice demands other general and management knowledge, coupled with skills that extend beyond the technical aspects of traditional engineering areas.

Morris and Hugh Munns (1996:82) as cited by Munns *et al.,* 1996:82) suggest that the success of a project is reliant on having a definite goal, competition, satisfaction of the client, availability of the market*,* profitability, perceived value of the project, implementation process, goal that is realistic and third parties. Table 3.6 provides the nine project success elements.

Table 3.6 Project element success

Elements of Success	Explanation
• **Realistic goal**	The main objective of the project must be achievable and attainable.
• **Competition**	Project success becomes even more serious to business due to the competition and globalization
• **Client satisfaction**	The project should meet the requirements of a client and that a client must be happy with the final product or service.
• **A definite goal**	The objective of a project should be specified from the onset so that what the team works towards for is clear and understandable.
• **Profitability**	The project should be able to bring profit once it starts to operate in order to bring back investment used to initiate it.
• **Third parties**	Project may need inputs from different kinds of

	professionals that might be available in the organization.
• **Market availability**	The market that is interested in the project should be available to support your product or service.
• **The implementation process**	The way in which a product or a service should be used must be clear explained to avoid any risks that may occur when the product is not well implemented or used.
• **The perceived value of the project**	The project must bring value to those who will benefit from it either by improving people's lives.

Source: adopted from Morris and Hugh Munns (1996:82) as cited by Munns *et al.,* (1996:82)

Furthermore Table 3.6 illustrates that for a project be successful the tabulated elements needs to be taken into consideration and that a project that has no goal, doesn't seek to satisfy any client will definitely provide no profitability.

3.3.8.2 Project Management Success

Present project management organizational practices in the construction industry sector do not at all times guarantee project success. Successful construction project greatly depends on how the project has been managed and controlled however the main problem with projects management practices have always been mentioned as planning, project implementation, cost and time overruns and quality non-achievement (Alias, Zawawi, Yusof, and Aris, 2014:62). Dvir, Lipovetsky, Shenhar & Tishler as cited by Ika, (2009:13) states that project management success refers to efficiency, an internal concern to the project team, and project success embraces concerns for efficiency and effectiveness—in other words, all concerns, whether internal or external, short-term or long-term a state by (Shenhar *et al.,* 1997:6). Time and the measurability of specific project management objectives provide some parameters for drawing a distinction between the concepts of project success and project management success (Ika, 2009:13).

Project management success may ultimately lead to project success, but the opposite is not true: it is reasonable to assume that failure in project management may lead to project failure, except under fortuitous circumstances, but that the

project can also fail despite successful project management (Ika, 2009:13). de De Wit(1988:165) concurs that good project management can contribute towards project success but is unlikely to be able to prevent project failure.

Avots as cited by Munns *et al.,* (1996:82) states that the aspects that may cause project management to fail include incompetent project manager, poor establishment of project, poor definition of activities, lack of management support, absence of project management techniques, poor project planning and poor management of project management techniques.: Table 3.7 provides the possible causes of project management failure.

Table 3.7 The possible causes of project management failure

Causes of project management failure	Explanation
• **Inadequate basis for project**	A project needs to be set up to satisfy a certain purpose. A feasibility study also needs to be conducted before any project is initiated.
• **Wrong person as project manager**	An effective project manager with necessary skills and experience is required to execute a project.
• **Top management unsupportive**	A project manager can't function alone without the support of a top management because other decision needs top management support.
• **Inadequately defined tasks**	Roles, tasks and responsibilities must be clear defined from the planning stage of a project.
• **Lack of project management techniques**	A project manager should be skilled and educated to utilize the project management techniques which include Gantt Charts, WBS, RACI etc. These techniques make work quite easy for a project manager when managing a project. Lack of these is detrimental to the project.
• **Management techniques misused**	The project management techniques need to be used for the benefit of meeting the project objectives.
• **Project closed down not planned**	Project resources, cost, time and quality needs to be planned before a project can be undertaken. Poor

	planning is detrimental to the project management.
• **Lack of commitment to project**	Time, budget and resources needs to be part of a project during the project life cycle. A full dedication of those involved in a project is critical for a project.

Source: adopted from Avots as cited by Munns *et al.,* (1996:82)

Additionally Table 3.7 illustrates that a project that is established on poor basis, with an incompetent project manager, poorly explained duties, poor planning and lack of project support from the management is doomed to fail. It also shows that a project needs to be planned properly so that it can be driven by the competent project manager who understands project management techniques and that a top management needs to be supportive for project to be success.

Today's project manager fulfills not only traditional roles of project management but also must manage the project in the most efficient and effective manner with respect to sustainability (Hwang *et al.,* 2013:274).

One must always keep it in mind that successful project management techniques will add towards the realization of projects, nevertheless project management will not stop a project from being a failure. The right project will succeed almost without the success of project management, but successful project management could enhance its success (Munns *et al.,* 1996:86). Kalinová (2007:33) states that the low experience of project managers does not allow for the full development of important aspects of successful project management, such as the selection and preparation of team members, the development of cooperation, communication schemes, means of decision-making, acceptance of personal differences, prevention and settlement of conflicts, handling of objections, etc.

3.4 SUMMARY

The literature review that has been documented in this chapter has clearly displayed the importance of skills that a project manager is ought to have in order to successfully execute a construction project in fact any project. This chapter has

discussed both the hard (technical) and soft (interpersonal) skills required by a project manager. Project Manger's hard skills discussed in this chapter include project risk management (RM), project scope management and project cost management. On the soft skills the leadership, communication, conflict management, emotional intelligence, problem solving and decision making, negotiation, team building and influence were discussed. However literature review in this chapter has also revealed that it is crucial that a project manager possess both of these skills.

CHAPTER 4
RESEARCH DESIGN AND RESEARCH METHODOLOGY

4.1 INTRODUCTION

This chapter explains and discusses the research methodology that was adopted to undertake this study, with regard to the problem statement in order to meet the research objectives. It gives an overview of the geographical location where the research was conducted. The emphasis of the study is on the research design, targeted population, sample technique, sample size, data collection method, instruments used to interpret the data, assumptions made and limitations of the study. According to Young (1977:30) research is the scientific undertaking that pursues to find out new facts, validate or scrutinize acknowledged facts, analyze their order and also bring forth scientific tools notions that would enable trustworthy and valid study of human behavior. Walliman (2011:7) asserts that a research is mainly a term given to an undertaking that includes determining more or less methodical way things one never knew of and is about improving knowledge. Kothari (1990:1-2) states that research means a systematic method which consists of articulating a problem, building up a hypothesis, collection of facts or data, analysis of facts in relation to the problem at hand and also attaining certain conclusions which can be in the form of solutions(s) or in certain generalizations for some theoretical formulation.

4.2 RESEARCH DESIGN

A research design is the process of conditions for the gathering and analysis of data in a method that aims to put together significance to the research ambition with economy in procedure (Selltiz, Jahoda, Deutsch and Cook, 1959:60). According to Maylor and Blackmon (2005:55), research design is the plan to do a study by converting one's research methodology into certain research methods that are techniques to use in gathering and examining data. Research design is

the map that draws up how a research study will be conducted including questions who was involved, where would the research be done, in what environment, what would the time dimension of the research be and give an analysis of the data (Burger, 2013:159). Research design offers a structure for data collection and data analysis thereafter specifies appropriate research methods (Walliman, 2011:13). Leedy and Ormrod (2010, 2) states that research is an orderly procedure of collecting, analyzing and interpreting data so to increase an understanding of a phenomenon in relation with the concern. Panneerselvam (2004:12) posits that the research design gives a complete guideline for the collection of data; the following involves the essence of a research design:

- Research approach selection;
- Sampling plan design;
- Design of experiment; and
- Questionnaire design.

A research design that is suitable for a specific research problem mainly takes into consideration the following factors (Kothari, 1990:33):

- ways of getting information;
- researcher together with his staff availability and skills, where possible;
- aim of the problem to be investigated;
- nature of the problem to be investigated; and
- research work time and money availability.

According to Singh and Nath (2007:160) a good research design gives information concerning the selection of the sample population's treatments and controls that should be imposed.

Beck (1991) as cited by Dulock (1993:156) states that qualitative and/or quantitative data depending on the research question or purpose will be created from a descriptive study. Therefore this research will follow a descriptive research design. According to Dulock (1993:155) descriptive survey refers to the collection of information from a portion of targeted population to determine the practices, characteristics, norms etc. and an example of a descriptive survey is a question-

naire or interview. This study follows a mixed method (both quantitative and qualitative) survey.

4.3 RESEARCH METHODOLOGY THEORETICAL ASPECTS

The theoretical knowledge that builds up research methodology is prepared around the operational steps that form a research process for both quantitative research and qualitative research (Kumar, 2011:19). According to Dawson (2002:14) research methodology is the overall approach towards studying a topic and involves matters one needs to think about such as the constraints, dilemmas and ethical choices within a research. Research methodology is a way to methodically resolve a research problem and may also be known as a science of studying how a research is scientifically conducted (Kothari, 1990:8). In a research process one works within a structure of set of philosophies using methods that have been examined for validity and reliability, and also try to be objective and unbiased as much as possible (Kumar, 2005:14). According to Kothari (2005:10) research methodology provides a researcher with necessary techniques required when conducting a research, furthermore importance of knowing research methodology / a way research is conducted stems from the concerns below:

- For one who is preparing himself for a career of carrying out research, the importance of knowing research methodology and research techniques is obvious since the same constitute the tools of his trade. The knowledge of methodology provides good training especially to the new research worker and enables him to do better research. It helps him to develop disciplined thinking or a 'bent of mind' to observe the field objectively. Hence, those aspiring for careerism in research must develop the skill of using research techniques and must thoroughly understand the logic behind them.

- Knowledge of how to do research will inculcate the ability to evaluate and use research results with reasonable confidence. In other words, we can state that the knowledge of research methodology is helpful in various fields such as government or business administration, community development and so-

cial work where persons are increasingly called upon to evaluate and use research results for action.

- When one knows how research is done, then one may have the satisfaction of acquiring a new intellectual tool which can become a way of looking at the world and of judging every day experience. Accordingly, it enables us to make intelligent decisions concerning problems facing us in practical life at different points of time. Thus, the knowledge of research methodology provides tools to look at things in life objectively.

- In this scientific age, all of us are in many ways consumers of research results and we can use them intelligently provided we are able to judge the adequacy of the methods by which they have been obtained. The knowledge of methodology helps the consumer of research results to evaluate them and enables him to take rational decisions.

4.4 RESEARCH STRATEGY

The research strategy outlines the general approach to the research investigation (Walsh and Wigens, 2003:69). According to Schoonraad (2003: 129) research strategy is developed from the methodological paradigm which refers to qualitative or quantitative research. Johnson and Onwuegbuzie (2004:14-15) concurs that research strategy may take into consideration the utilization of qualitative or quantitative methods or even a mixture of both methodologies in one research. A researcher should set up a strategy to allow him or her to address a research question (Brannen, 2005:4). It is real that some discipline put more importance on quantitative research while some on qualitative research (Kumar, 2011:19). Qualitative and quantitative research has been chosen by the author as a method to be followed for the purpose of this study together with the survey as a measurement tool. Kothari (1990:30) asserts that quantitative research is quantity measurement based or amount based and is appropriate to phenomena that can be expressed in terms of quantity. Quantitative study designs are precise, well organized, tested for their validity and reliability, and can be clearly defined and recognized (Kumar, 2011:103). Thomas (2003:1) concurs that quantitative

method focuses on measurements and amounts (more or less, larger and smaller, similar and different) of the characteristics that are displayed by people and events that the researcher studies. According to Rubin and Babbie (2011:67) quantitative research methods emphasize the production of precise and generalizable statistical findings, and are generally more appropriate to nomothetic aims.

4.5 TARGET POPULATION

Target population refers to individuals or groups who are in a position to respond to the survey and to whom the outcomes of the survey apply (Ledwaba, 2012:23). Walliman (2011:94) states that in research context the word population doesn't immediately refer to a number of human beings but it's a collective term used to describe the total quantity of things (or cases) of the type which are the subject of a study and it may include specific types of objects, organizations, people or even events. Collis & Hussey (2009:62) concurs that a population speaks of a specifically defined body of people or objects that are under consideration in a study for statistical purposes. Churchill and Lacobucci (2002:630) posit that a population constitutes of all the elements that have a likelihood of being sampled to contribute in the study.

According to Goddard and Melville (2007:34) to study the entire population is regularly not practical or possible. The target population referred to in this study consists of professionals in South African construction industries that are currently active in construction projects. These professionals are members of the project team such as Programme Managers, Project Planners, Project Controllers, Construction Laborers, Project Engineers, Clerk Of Works, Project Scheduler, Health and Safety Officers, Administrators and Construction Managers. The reason for choosing professionals is because the researcher has an opinion that they have in-depth understanding of construction projects around Western Cape Province, South Africa, and that their participation may contribute immensely towards meeting the objectives of this research.

Walliman (2011:95) states that samples that do not entirely represent a population cannot be used to conclude about that population, furthermore populations possess characteristics such as the following:

- **homogeneous** – everything is similar or identical e.g cars of the same model, colour and size.
- **stratified** – comprise strata or layers, e.g. human beings with different standards of living: low, medium, high.
- **proportional stratified** – comprises strata of recognized proportions e.g. percentages of different nationalities of university students.
- **grouped by type** – comprises distinctive groups, e.g. sport– soccer, rugby, cricket, netball etc.
- **grouped by location** – different groups according to where they are e.g. animals in different habitats – water, forest, desert, home-based etc.

4.6 POPULATION VALIDITY

Le Comple and Goetz (1982: 32) state that in research validity is more on the accuracy and truthfulness of scientific discoveries. Golafshani (2003:599) concurs that validity determines whether the investigation really measures that which it was meant to measure or how truthful the investigation outcomes are. Wainer and Braun (1998) as cited by Golafshani (2003:599) define validity as "construct validity" in a quantitative research. Cooper and Schindler (2008:289) define validity as the ability of a research instrument to measure what it is intended to measure. Three main forms of validity can be recognized as content validity, criterion-related validity and construct validity as the following (Cooper and Schindler, 2008:318 – 320):

Population validity is the ability to generalize from the sample of individuals on which the research was done to the larger population of individuals and across different sub-populations within the larger target population (Johnson and Christensen 2012:257). Burns and Burns (2008:427) states that population validity refers to whether a sample of participants replies are precise valuation of the target

population and that with respect to population validity the question that must be asked is: to what degree is the sample truly representative of the target population?

4.7 SAMPLING OF THE TARGET POPULATION

According to Walliman (2011:93) sampling refers to the process of selecting a certain number of representatives that has the same characteristics and attributes of the population when one wants to study a large group. Sampling is an essential technique of behavioral research since the research work cannot be carried-out without using sampling (Singh *et al.,* 2007:160). Khan (2008:75) states that the term sampling refers to the selection of a certain part of a group or the group selection as a whole for ensuring that the whole information is well collected. Sample is regarded as an act, process or technique of choosing an appropriate sample or a representative of a population with the aim of finding out parameters or characteristics of that particular population (Latham, 2007:7).

Kothari (2004:153) posits that a sampling plan refers to the technique or a procedure that a researcher will follow when collecting sampling units where the conclusion about the population will be drawn and also that it's a plan for getting a sample from sampling plan. Panneerselvam (2004:12) describes sampling plan as a mechanism by which the study sampling units are selected from the population sampling frame, and sampling plan affects costs and time to do the study, hence it should be selected with the maximum care. Inferences

According to Kothari (1990:152) reasons for using sampling are because sampling has an advantage of saving cost and time as can be seen in the case of sample study and census study whereby sample study is less expensive and generate results timeously. Sampling enables very precise measurements for sample study and is normally done by trained and experienced investigators. Sampling still stands as the only way in cases whereby population has enormously (infinite) many members. Sampling still stands above the rest when a test includes the destruction of the item under investigation.Sampling normally ena-

bles sampling errors estimation and therefore assisting in getting information about some attributes of the population.

According to Walliman (2011:95-96) there are two kinds of sampling procedures:

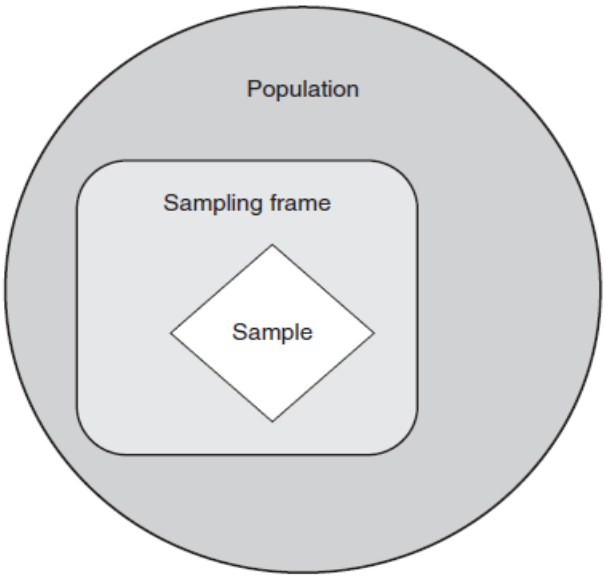
- **Probability sampling** – refers to unsystematic methods of selecting samples and provides a more reliable representation of the population.
- **Non-probability sampling –** refers to non-unsystematic selection methods and relies on the ruling of the researcher or on accident, generally it can't be used to make up a conclusion about a population.

Welman, Kruger, Mitchell and Kumar (2005::56) states that there are different kinds of sampling. Since the respondents are coming from different backgrounds of construction parts such as project controlling, quantity surveying, programme management, administration, clerk of works, project scheduling, project engineering, construction management, health and safety it was best to stratify the population in order to avoid the skewing of results towards a certain sector. Stratified random sampling technique involves dividing the population into homogeneous subgroups, and then taking a simple random sample from each group (Wamocha *et al.,* 2012:105). Sekaran (2003:282) postulates that the stratified random sampling method is the most efficient and it is a better choice when differentiated information is needed regarding various echelons within the population. Gerrish and Lacey (2010:148) argue that in quantitative sampling there are two basic types of errors, which are described below:

- **Random errors:** they create less bias, as it is assumed that this type of error is evenly distributed across the sampling frame and, therefore, the frame that is derived randomly, remains inaccurate but representative of the study population. Any errors will tend to average out across the sample.
- **Systematic errors:** they are not reduced with increased sample size. If a study aims to recruit GPs from a particular list, for example, but certain sorts of GP practices are routinely excluded from that list (for example, single handed practice), then these GPs cannot be selected and the error is not random.

According to Black (2012:228), an advantage of using the stratified random sampling method is that it has the potential to reduce sampling errors. Fink (2006:49) points out another advantage of the stratified random sampling, namely that the surveyor can choose a sample that represents the various groups and patterns of characteristics in the desired portion. The first step in stratification in this study was only construction projects in Western Cape were chosen for the study. The second stage was that, within the firms, only those who were affected directly by the project managers' functions were interviewed.

Figure 4.1 Frame of sampling with respect to population and sample



Source: Walliman (2011:94)

Figure 4.1 presents the frame of sampling with respect to population and sample and according to Walliman (2011:94) this refers to the fact that out of the population only a certain group will show interest in one's study and this phenomenon is known as sampling frame. A sample is a small representative of a population which is chosen for observations and analysis purposes (Al-Najjar, 2008:34).

4.8 SAMPLE SIZE

When selecting a sample one must try to attain two main aims of sampling which are the avoidance of bias in the sample selection and the achievement of maximum precision for a given outlay of resources (Kumar, 2011:42). The chosen

sample comprises of professional individuals from different sectors of construction industry such as project managers from civil and electrical background, private and public construction project managers around the Western Cape region in South Africa. Leedy (1997) as cited by Simpeh (2012:34) disputed that sample size depends on the level to which a sample population represents the qualities and characteristics of the overall population. Therefore the sample size selected on this study is a minimum of 100 respondents. Blumberg (2008:237) posits that the greatest means of deciding on a sample size is by considering aspects such as relevance of the population; parameters of interest; sampling frame; type of sample; sample size needed; and the cost. The less variable population is, the smaller is the sample size (Israel, 1992:2). A sample is a subgroup of the population (Collis and Hussey, 2009:209). Kothari (1990:14) states that a researcher must find a method of selecting a sample and further defines a sample design as precise plan determined before any data are truly gathered for attaining a sample from a specified population. According to Bhattacharya (2006:101) sample design is the theoretical basis and the practical means by which data is gathered so that the characteristics of a population can be inferred with known estimate errors. In quantitative studies, reducing the sampling error increases the sample size (Klenke, 2008:10). Calculating sample size needs a measure of the variability of differences, usually the standard deviation or variance to be anticipated in the population (Gerrish and Lacey, 2010:147).

4.9 METHOD OF DATA COLLECTION

The mission of data collection commences after a research problem has been defined and research design or plan drawn out (Kothari, 1990:95). According to Omran, Abdalrahman and Hamid (2011:160) data collection is regarded as a vital phase of information gathering from the essential sources in order to accomplish the research objectives. Both questionnaires and interviews were used as a form of data collection however it should be noted that some respondents were not available for interview. Therefore only those that were available at a reasonable geographical area were interviewed. Those that were far and not available ques-

tionnaires were provided to them. Another reason for considering interviews as a form of data collection was for clarifying any uncertainty right at the spot should it come up. According to Cooper & Schindler (2008:329) a questionnaire is regarded as the famous data collection tool applied in business research. Questionnaires can be used for both quantitative and qualitative data but they are predominantly appropriate for the quantitative data attainment, additionally they allow one to establish questions and get back responses without necessarily talking to the respondents and are regarded as a flexible, cheap, easy, convenient for respondents, quick to manage for covering large geographical areas as a method of data collection (Walliman, 2011:97). According to Brace (2008:2) in a market research a questionnaire refers both to questionnaires that are intentionally for self-completion by survey partakers and to survey tools that are meant to be managed by the interviewer either in a face-to-face interview or in a telephonic interview. Questionnaires must constantly give the required written data as an introduction (Walliman, 2011:48).

4.9.1 Questionnaire Design

The questions on the questionnaire survey were created based on the research objectives and also from the information obtained from the literature review. The questionnaire consists of three sections A, B and C. Section A requested the information of the respondents such as the role occupied in the organization, level of education, structure of the company working for, project management experience, gender, racial groupings and place of birth. Section B requires respondents to rate the importance of the skills and competencies that project manager require for their work. This section is basically made up of five Point Likert-scaled types. Section C is the open section of the survey which requires the respondents to mainly provide information about how they conduct their work in terms of managing a construction project and how they would like construction projects to be managed.

Beri (2008:107) posit that disguised and non-disguised questionnaires are the only two types of structured questionnaires and that in a disguised structured the researcher doesn't reveal the study objective, while in the non-disguised struc-

tured questionnaire he/she does. A structured questionnaire was used to collect the required data in this study. According to Panneerselvam (2004:14) there are five steps that needs to be followed when designing a questionnaire and they are as follows:

- Identification of research matters and completion of the set of hypothesis;
- For each matter, construction of a set of questions and then decisive about the concept and format of every question;
- Decisive about wording of questions, subject to the types of questions;
- Proper sequential coordination of the questions in the questionnaire and also being conclusive on the format of the questionnaire;
- Examine questionnaire beforehand; and
- Rereading the questionnaire for improvements.

4.9.1.1 Open-ended questions

According to Foddy, (1993: 127) open-ended and close-ended questions are different in a number of features, particularly with respect to the role of respondents when replying to such questions. Fellows and Liu (2008) as cited by Simpeh (2012:38) states that an open-ended questionnaire is designed to provide flexibility to the responded to fully respond to the questions in any manner they wish. In actual fact the true reflection of how the responded feel about a particular topic comes to the fore once open type questions are asked. By the way open questions may require a difficult and time-consuming tabulation of responses (Struwig and Stead, 2001 as cited by Simpeh, 2012:38). Reja, Manfreda, Hlebec, and Vehovar (2003:161) states that the advantages of the open-ended questions involves the likelihood of determining the responses that individuals provide naturally and therefore dodging the bias that may outcome from advising responses to individuals, a bias which may happen in the case of close-ended questions.

4.9.1.2 Closed-ended questions

Foddy (1993: 127) asserts that close-ended questions box-up the respondent to the set of given alternatives, whereas open-ended questions enable the re-

spondent to express an opinion without disturbance. A closed-ended questionnaire enables one to cap a number of responses by providing exact options from which the respondent should choose from. According to Struwig *et al.,* 2001 as cited by Simpeh (2012:38) closed-ended questionnaire easy up the recording, tabulation and editing process significantly and additionally, closed-type questions are precise to the point thus making up responses clear, supporting similar responses to be grouped and quantified easily. Fellows *et al.,* (2008) as cited by Simpeh (2012:38) posit that closed-type questions force the respondent to make artificial choices since the questions may be strictly structured.

4.10 DATA ANALYSIS

If the researcher is concerned in making probability statements on the basis of sampled multiple measurements, then the best approach of data analysis is to utilize some appropriate multivariate statistical technique (Kothari, 1990:316). Quantitative analysis works with data in the form of numbers and utilizes mathematical acts to explore their properties (Walliman, 2011:113). MoonStats which is the software that provides statistical tools for data exploration and data description was used for analyzing the data due its accuracy and powerfulness when interpreting the statistical outcomes or results. The MoonStats must assist to analyse data; compile appropriate tables; study relationships among variables; and execute an examination of statistical significance with respect to research questions (Babbie *et al.,* 2001:583). The data was transformed into graphs and tables for easy reading and comparison where necessary. Data analysis investigates variables, as well as their effects, relationships and patterns of involvement with the world (Welman *et al.,* 2005:211). Anderson, Sweeney and Williams. (2001:97) states that data must be analysed in a way that guarantees that research questions and hypotheses are solved to make sure that the research objectives are accomplished.

4.11 VALIDITY AND RELIABILITY

According to Leedy *et al.,* (2010, 28) the validity and reliability of the researcher's measurement tools impact the degree to which one can learn something about

the phenomenon being studied, the likelihood that one will get statistical significance in one's data analysis, and the degree to which one can draw meaningful conclusions from researcher's data. The validity and reliability of the data must be cautiously scrutinized (Kothari 1990:20). Reliability is the degree to which an examination or process produces similar outcomes under steady conditions on all instances (Bell, 2005:117). However according Maylor and Blackmon (2005:159) reliability refers to different researchers getting the same outcomes when repeating a study. Quinton and Smallbone (2006:130) reliability concerns the consistency of the results, the robustness of the measure and whether it is free of random and unstable errors

Validity means the design of research to provide reliable deductions; whether the evidence which the research provides can bear the weight of the interpretation that is put on it' (Sapsford and Jupp (1996:1). However according to Cooper and Schindler (2008:289) validity is the skill of a research tool to measure what it is anticipated to measure. Bell (2005:117) concur that validity is an overall more difficult concept. The process of validation doesn't pursue to find out the validity of the test itself, but rather whether the interventions and decisions that are made on the bias of test scores are valid (Schultz and Whitney, 2005:87). According to Golafshani (2003:599) validity determines whether the research truly measures what it is planned to measure, or how reliable the research results are. Leedy *et al.,* (2010, 29) assert that validity and reliability proceeds in different procedures, due to the nature of the research problem, the general methodology the researcher implements to deal with the problem, and the nature of the data that are collected.

According to Cooper and Schindler (2006:318-320) validity has three forms that involve the following:

- **Content validity** –validity approach is directly on the ruling of experts on the field that is being examined (Shultz *et al.,* 2005:87).
- **Criterion-related validity** – Conte and Landy (2010:83) argue that the utmost direct way to support a hypothesis (to connect the predictor and criteria box) is to really gather data and compute a correlation coefficient, and this is

referred to as a criterion-related validity because one correlate test scores with performance measures.

- **Construct validity** – it is upon an integration of any evidence that bears on the interpretation or meaning of the test scores and all types of validity evidence are merged within the overall framework of construct validity (Angle, 2007:9).

4.12 SAMPLING BIAS

Johnson *et al.,* (2012:217) assert that bias sample is a sample that is systematically not the same from the population. Bias happens when some unintentional factor puzzles or changes the outcomes in a manner that can lead to inappropriate conclusions (Macnee, 2008:123). However according to Sullivan (2009:457) sampling bias happens when some members of the population are more likely to be involved in a sample than others.

Bryman and Bell (2003:91) define a sampling bias as the sample that is not representative of the study population and it does not allow generalization of the sample results to the entire study population. The researcher made use of the stratified random sampling method in order to avoid chances of having sampling bias, and Collis and Hussey (2009:209) assert that when using a random sampling method, every member of the population has a chance of being selected. Powers and Knapp (2006:10) argue that the use of random samples rather than convenience samples is one of the ways how investigators can control their conscious or unconscious biases.

4.13 ETHICAL CONSIDERATIONS

The word ethical means ‘in accordance with principles of conduct that are considered correct, especially those of a given profession or group’ (Collins Dictionary, 1979: 502). According to Ledwaba (2012:27) in the field of research ethical considerations are crucial not only for the protection of the researcher but for the integrity of the researcher as well. Flick (2011:215) posit that research ethics ad-

dress the question of which ethically relevant matters that are triggered by the intervention of researchers can be anticipated to impact on people they research. Dawson (2002:146) states that numerous people are keen to. reveal a lot of private information during research, therefore a researcher should make sure that both the participants and the information provided are treated with honesty and respect; this is referred to as research ethics.

According to Polit and Hungler (1995:139) when participants are guaranteed of confidentiality that means their confidential information will not be publicized. Sapsford *et al.,*(1996:1319) concurs that confidentiality is a assurance that one will not be acknowledged or put forward in recognizable form whereas anonymity is a assurance that even the researcher will not be able to articulate which answers came from which respondent. To adhere to the ethical consideration of the research the participants were ensured the safety of their private information and that the nature and quality of performance would be kept strictly confidential. The participants were given a choice to participate or not to, furthermore can withdraw any time they feel like because the participation is voluntary not forced. Participants were informed about the main purpose of this study and also that no costs were required for participating in the study.

4.14 LIMITATIONS OF THE STUDY

- The researcher was only able to carry out the study within the Western Cape Province although the researched phenomenon has an impact in the whole country due to financial constraints.
- The researcher was limited to 50 people of which their view and way of managing projects may not necessarily represent of the whole South Africa.

4.15 ASSUMPTIONS

- The participants will be eager and keen to participate to this study since it is the nature of their work and that more feedback would be received especially on the open-ended questions.

- The participants would not anytime feel pressurized, troubled and offended by the nature of the questions asked.

4.16 SUMMARY

This chapter serves as a synopsis of the research methodology adopted for this study. It dealt with the research design and methodology which was used to conduct the research. It included the research design; theoretical aspect of research methodology; research strategy; study population; sampling methods; methods of data collection; and ethical consideration.

CHAPTER 5
DATA RECORDING, ILLUSTRATIONS, ANALYSIS AND INTERPRETATION.

5.1 INTRODUCTION

This chapter undertakes the discussions of the research findings with respect to the research questions in consideration of the research objectives. The objectives were primarily meant to determine the project manager's competencies that ideally enable effective project execution. Secondarily determine type of competencies that are ideal for effective team motivation, the need for communication as a competency for effective project execution, use of conflict/problem solving as a competency that allows for effective project execution and finally the effect of responsiveness as a competency for effective project execution.

For simplicity purposes and for easing the understanding the findings are illustrated in the form frequency distribution barcharts. These charts were constructed out of the questionnaires and interviewees responses. It should be mentioned that the conducted interviewees were converted and coordinated to meet the format dictated by the questionnaires. Out of the 50 responses that were received from the participants, 5 responses were from the interviews.

The questionnaire used in this research was divided into three sections namely Section A, B and C. Section A was purely biographically with an aim of determining the relevance and involvement of respondents to the construction projects. This section does this by asking about the position of the respondent in an organization, education, work experience, meetings and structure of the organization worked for. Section B used the Likert Scale in order to measure variables such as the opinion / attitudes and or perceptions that the respondents have towards the competencies that are required by construction project managers. Section C which is the last section consisted of open-ended questions which were aiming to explore and determine the competencies that respondents would like project manager to have.

MoonStats which is the software that provides statistical tools for data exploration and data description was used for analyzing the data due its accuracy and powerfulness when interpreting the statistical outcomes or results. The collected data that is illustrated, analyzed, discussed and interpreted in the following section is done as per the order provided by the questionnaire. In cases where a literature is known to relate to the question, it is then acknowledge and referenced accordingly.

5.2 SECTION A: BIOGRAPHY

For simplicity and for easing the understanding each question that was asked in this section is given and its value of contribution to the study is explained. The questions that were asked in this section are following:

a) Indicate your position in the organization you work.
b) What is the level of your experience in project construction/ execution?
c) What is your level of education?
d) Are you involved in project progress meetings at your station?
e) Does your organization have a hierarchical structure, state what type of structure?

The generality of the respondents classified themselves as the following:

- **Administrator:** organizes the logistics of the project manager such meeting venues, calendar, sometimes telephone calls, flights etc.

- **Clerks of Works:** right hand man of a project manager that ensures that quality standards are adhered to on site. Normally Clerk of Works is referred to as the extended eyes of a project manager on site and constantly provides a feedback to the project manager about site conditions.

- **Programme Manager:** overlooks the project manager. Constantly a project manager is expected to provide feedback to the programme manager about the progress of the project/s concerning costs, budget, schedule and all the associated risks involved.

- **Project Engineers and Technicians:** are responsible for providing the project manager with a project design.

- **Project Controller:** processes the claims/payments of contractors as given by the project manager.

- **Quantity Surveyors:** are responsible for ensuring that project activities are loaded on SAP and that a contract between a project manager and a contractor is adhered to. They constantly provide a feedback on what activity has been or not been claimed to the project manager.

- **Project Schedulers**: are responsible for creating a project schedule for the project manager and also alert a project manager before it gets out of mandate.

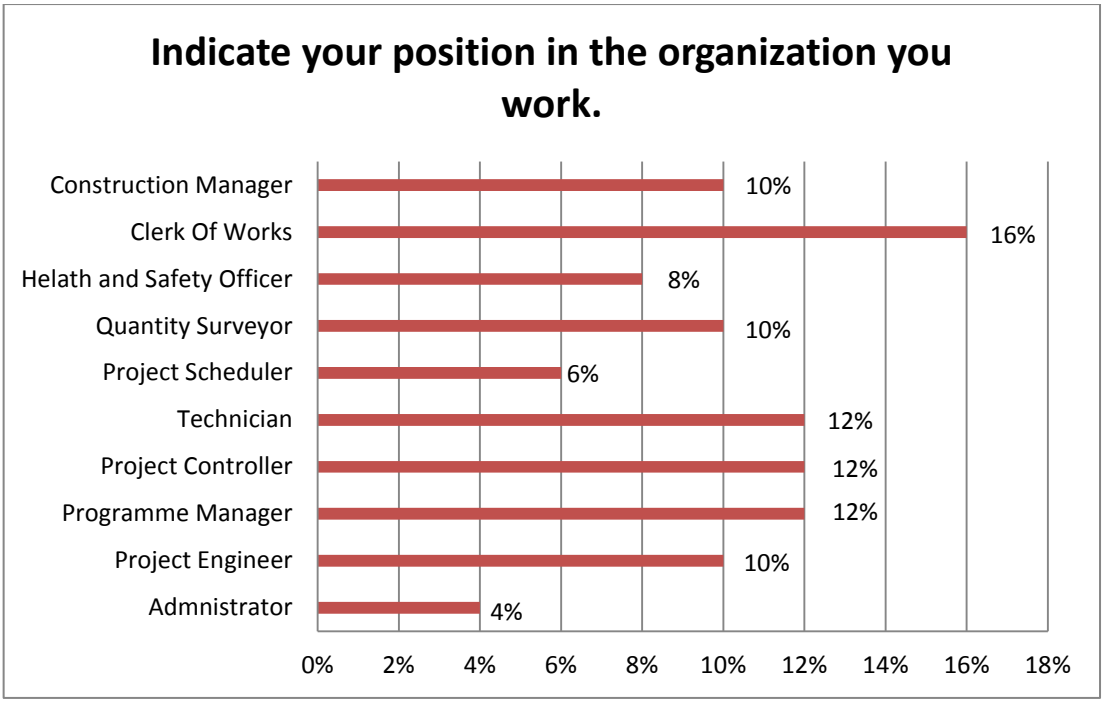
- **Construction Manager (and his team)**: is directly managed by the project manager during project construction.

- **Health and Safety Officers: are responsible for** creates a health and safety specification based on site conditions where a project manager will do a project. Health and Safety Officer seats with the project manager and create such a document.

Question 1: Indicate your position in the organization you work. The purpose of this question was to determine the suitability or relevance of the respondents in contributing to the survey. Other position may not be involved in construction projects or work hand in hand with a project manager.

RESPONSE; As alluded to in the preceding literature, it is expected that project managers will work in environments with diverse people. Their responses are illustrated in figure 5.1 below.

Figure 5.1 Respondents positions within the organization.



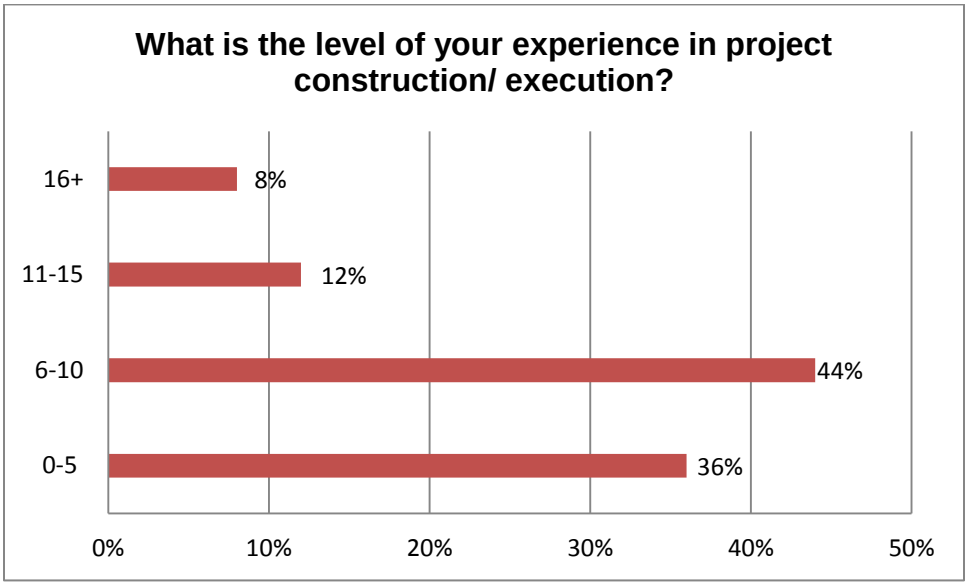
Source: Author's own construction

Figure 5.1 above indicates that 16% of the respondents function in the position designated as Clerk of Works, 12% of the respondents are project controllers, 12% of the respondents are programme managers, 12% of the respondents are technicians, 10% of the respondents are project engineers, 10% of the respondents are quantity surveyors, 10% of the respondents are construction managers, 8% of the respondents are health and safety officers, 6% of the respondents are project schedulers while 4% of the respondents are administrators. Therefore the above percentage provides a diversity of people who work with the project manager.

Question 2: What is the level of your experience in project construction/ execution? This question was meant to determine the experience that the respondents have in construction projects. Experience is important as it assists in advising and explaining how things should be done.

Response: Well experienced respondents would likely provide meaningful and informative information about project manager's competencies regarding construction projects. Figure 5.2 represents respondents' level of experience.

Figure 5.2 Respondents level of experience



Source: Author's own construction

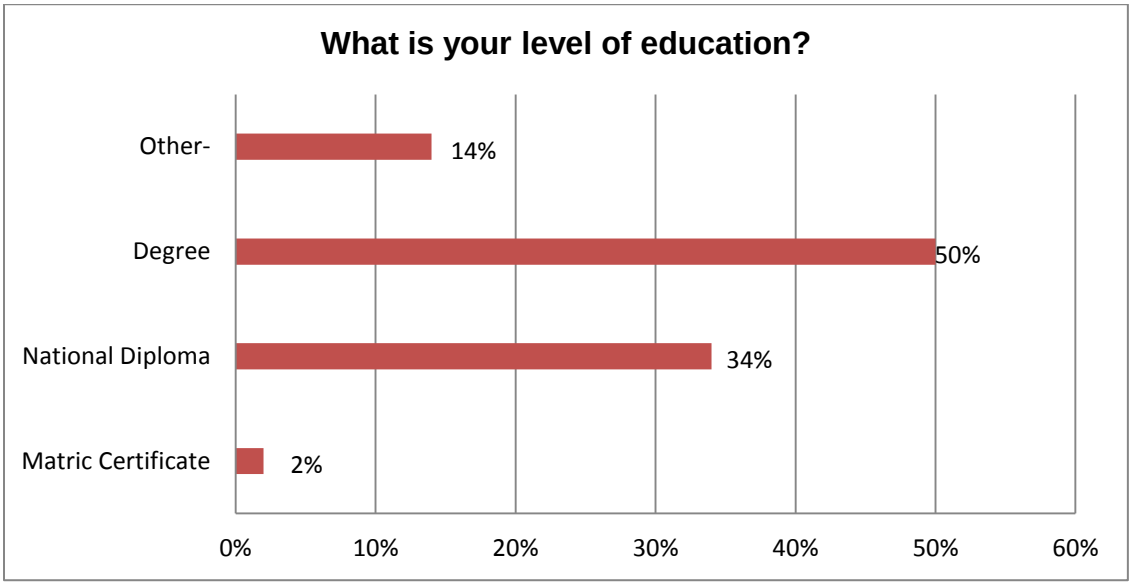
According to the response shown by Figure 5.2, 44% (majority) of the respondents has between 6-10 years' experience of construction/execution projects, 36% of the respondents has between 0-5 years, 12% of the respondents has between 11-15 years while 8% of the respondents has 16 plus of construction/execution project experience. As can be seen on these results the majority of the respondents have between 6-10 years of construction/execution projects. It is bit worrying compared to the 8% (minority) of employees who have 16 plus years of experience in terms of assisting in this study. However this organization might be in the drive of handing over the skills to the younger generation.

Question 3: What is your level of education? This question was meant to determine the qualifications of the respondents. By asking this question the researcher believed that education goes hand in hand with professionalism.

Response: Educated respondents are deemed to be professionals; therefore their responses are expected to be decent, meaningful, and professional and in

line with the in depth knowledge of factors affecting performance of a construction project manager. Figure 5.3 represents respondents' level of education.

Figure 5.3 Respondents level of education



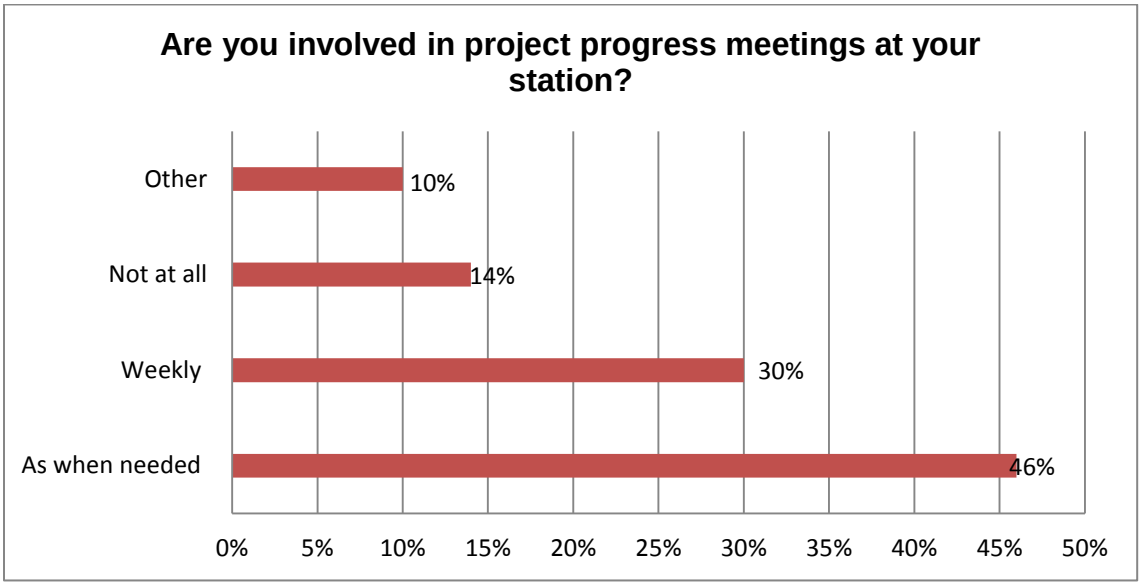
Source: Author's own construction

Figure 5.3 show that 50% (majority) of the respondents have degrees, 34% of the respondents have national diplomas, 14% of the respondents have other qualifications such as Administration certificate, Business Management Construction Certificate, N4 Certificate, N5 Certificate and N6 Certificate while 2% of the respondents have matric certificates. This is a very good reflection since the majority has degrees followed by respondents with national diplomas because this gives confidence that responses given by respondents are valid, professional and true.

Question 4: Are you involved in project progress meetings at your station?
With this question the purpose was to know how often are the respondents interact with the project manager through meetings. The project manager closely interacts with the project team in meetings.

Response: Respondents who attend project meetings are able to evaluate the commination skills of the project manager by interacting and observing on how a project manager conducts project meetings. Figure 5.4 represents respondents' meeting attendance.

Figure 5.4 Represents respondents' meeting attendance.



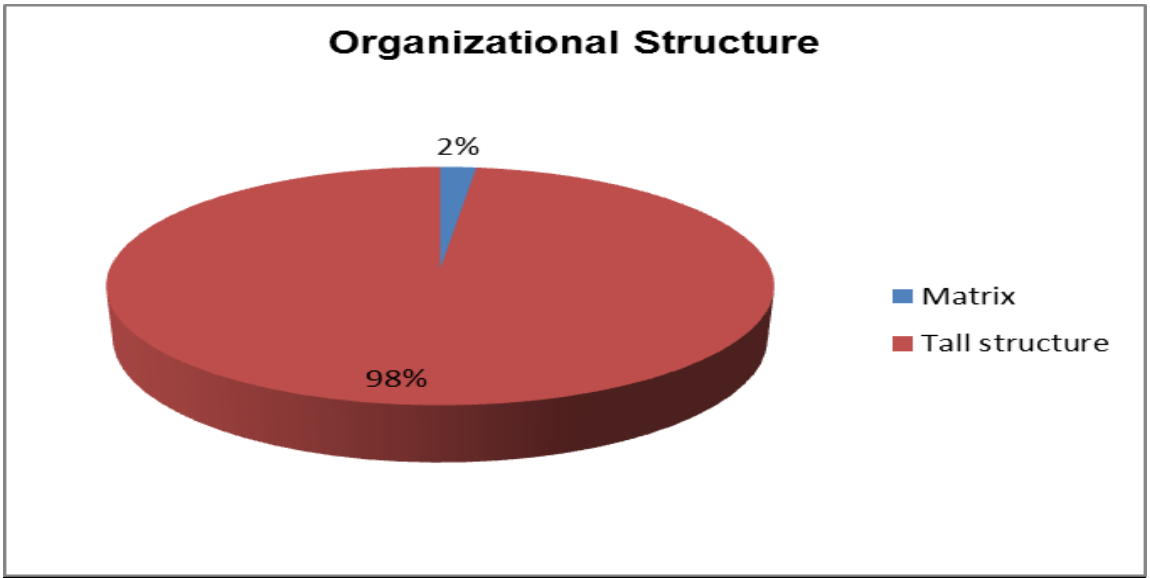
Source: Author's own construction

Figure 5.4 indicates that a 46% (majority) of the respondents attends progress meetings as when needed, 30% of the respondents attend meetings weekly, 14% of the respondents do not attend meetings at all while 10% of the respondents attend meetings other times. In this case other meeting times refers to the monthly meetings. This is a good reflection because this clearly indicates that a majority of the team members do engage with the project manager quite often compared to those who do not attend progress meetings at all. In project progress meetings communication takes place and information is shared. Project Stakeholders that attend these kind of meetings are capable enough to determine the competencies of an effective project manager.

Question 5: Does your organization have a hierarchical structure, state what type of structure? The structure of how the organization is set up provides the level of engagement between the project team and a project manager. In structures where there is too much levels of reporting or power is sharing between project and functional manager, engagement with team members may not be effective.

Response: As alluded by the preceding literature review the smaller are the teams below the project manager the better is the engagement between the project manager and his/her team members. Figure 5.5 provides the response on this question.

Figure 5.5 represents respondents' meeting attendance.



Organizational Structure	Number	Percentage
Matrix	1	2
Tall Structure	49	98
Total	50	100

Source: Author's own construction

Figure 5.5 illustrates that the 98% of the respondents which are the majority operate within the tall organizational structure while 2% operate within the matrix organizational structure. The fact that majority of the respondents function within a tall structure demonstrates that there is lot of engagement between the project team and the project manager due to the size of the teams under the project manager. This then indicates that these respondents have the necessary knowledge of project managers that would greatly contribute to this study.

In a tall structure organization there are many levels of hierarchy and the project managers work with small teams under them. While in a matrix structure a project manager and functional manager works together in sharing resources.

5.3 SECTION B: PROJECT MANAGER'S COMPETENCIES

This section makes reference to the factors of project manager's competencies as perceived by the respondents. The Likert scale used is disagree strongly – 1, disagree – 2, neutral – 3, agree - 4, agree strongly. The findings here are represented in the form of graphs and frequency tables generated from MoonStats Software. Each table tabulates the findings represented by each graph. The 'R'-column in the frequency table represents the responses (as per Likert scale) in this study while the 'FR'-column represents the frequency of responses in which they occurred. The % - column also represents the number of response but in the form of percentage.

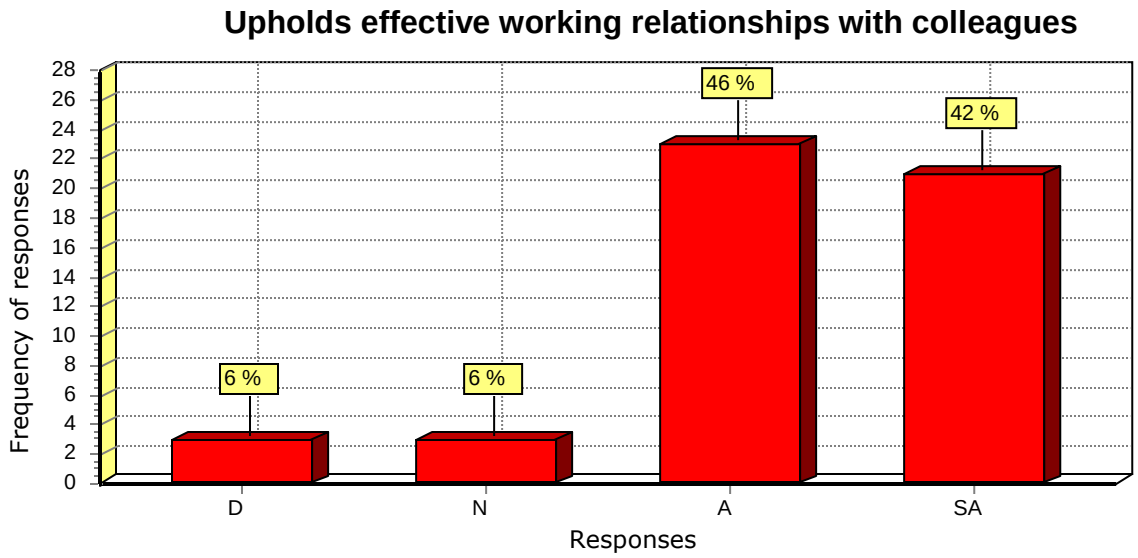
10. Leadership Competency - Provides leadership:

This part of the questionnaire seeks to determine the leadership competency of a project manager because it is expected that a leadership role be played in a construction project.

Statement 1: Upholds effective working relationships with colleagues. To maximize the effectiveness of project team members a project manager may be required to form a strong bond with them. However any relationship may go sour at some point in time.

Response: It can be stated that an effective project manager is expected to maintain an effective working relationships with colleagues. Effective working relations create a healthy working environment that encourages team members to perform their tasks. The response to statement 1 is shown by Figure 5.6 and Table 5.1. A project manager becomes effective once is able to manage relations with a project team members and lead them to do their duties.

Figure 5.6 Upholds effective working relationships with colleagues



Source: Author's own construction

Table 5.1: Upholds effective working relationships with colleagues

R	FR	%	Cum. %
D	3	6.00	6.00
N	3	6.00	12.00
A	23	46.00	58.00
SA	21	42.00	100.00
TOTAL	50	100.00	

Missing cases: 0

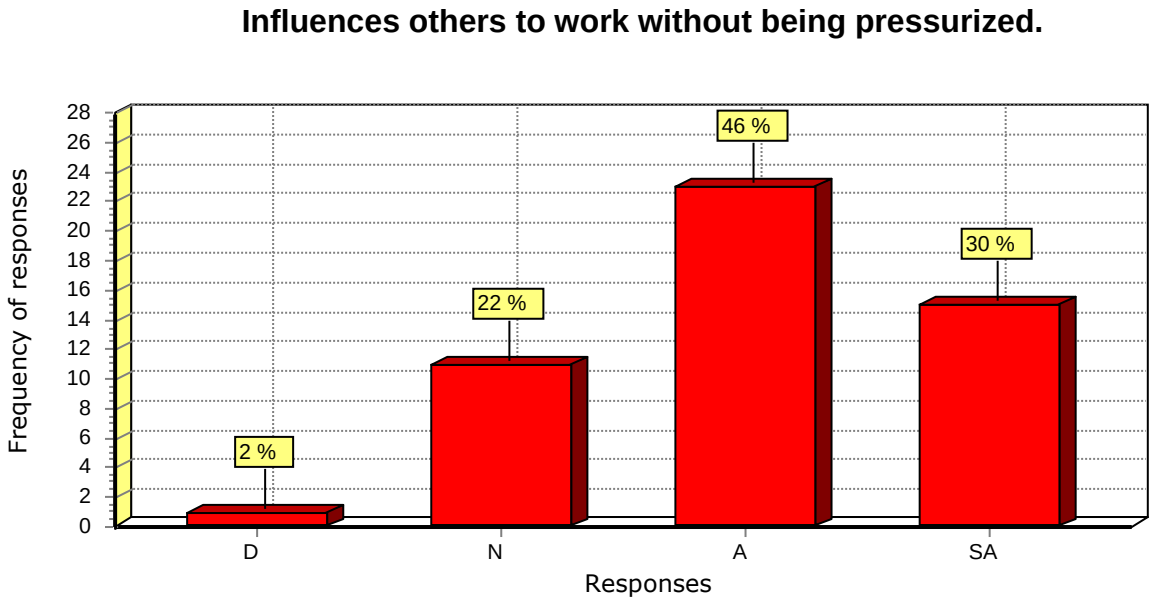
Source: Author's own construction

Figure 5.6 and Table 5.1 indicate that 88% of the respondents which is the majority agreed that an effective project manager should uphold effective working relationships with colleagues, whereas 6% were neutral and another 6% disagreed. Coincidentally the number of those who disagreed equals the number of those who stayed neutral, nevertheless majority agreed.

Statement 2: Influences others to work without being pressurized. A project manager that put a project team in pressure can either bring out the best out the team or the worse. Some members of a project team may feel a need to work under pressure. It is interesting in seeing what the respondents thinks about

Response: The more a project manager knows about persuading people to do something, the more likely he/she will be to attain desired outcomes. This study generalized then that an effective project manager is required to influence other stakeholders to work without being pressurized. The response to statement 2 is shown by Figure 5.7 and Table 5.2

Figure 5.7 Influences others to work without being pressurized



Source: Author's own construction

Table 5.2: Influences others to work without being pressurized

R	FR	%	Cum. %
D	1	2.00	2.00
N	11	22.00	24.00
A	23	46.00	70.00
SA	15	30.00	100.00
TOTAL	50	100.00	

Missing cases: 0

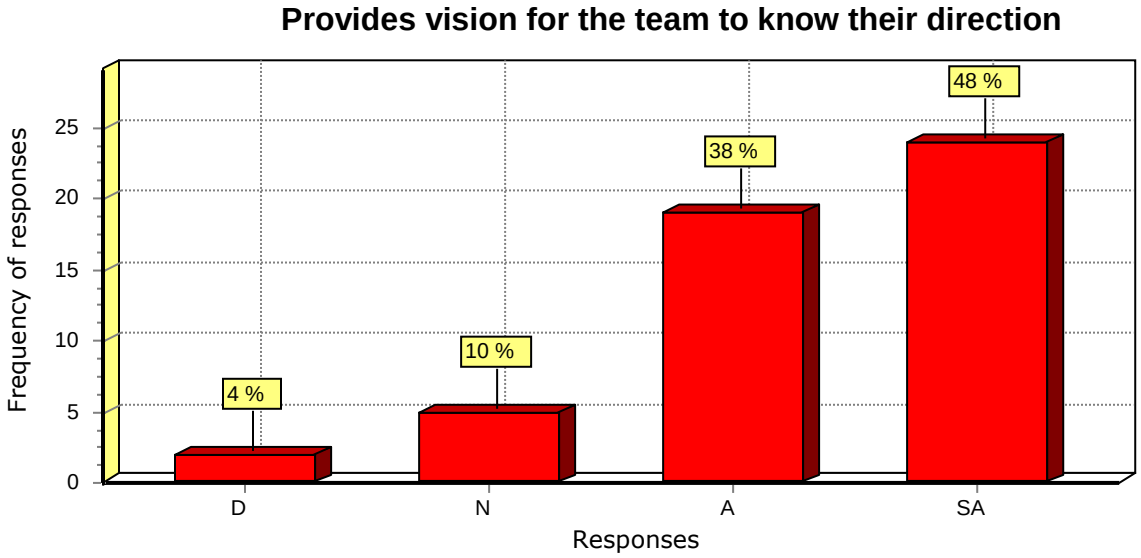
Source: Author's own construction

The majority of 76% respondents according Figure 5.7 and Table 5.2 agreed that an effective project manager should influence other stakeholders to work without being pressurized, whereas 22% stayed neutral and 2% disagreed. It is surprising though that a huge number of 22% respondents stayed neutral. This gives a researcher an impression that the question might have been not clear enough to be fully understood.

Statement 3: Provides vision for the team to know their direction. For a project team to know where they heading to make more sense therefore a project manager with no vision may lead a project team nowhere. A project manager operates within the organizational strategy.

Response: It is expected that a project manager has to articulate clear project vision and communicates to a project team in order to make a project strategy well related to a business strategy. The response to this statement is shown by Figure 5.8 and Table 5.3. It is always best for a project manager to pursue projects that align with the organizational strategy. The response to statement 3 is demonstrated by Figure 5.8 and Table 5.3. `

Figure 5.8: Provides vision for the team to know their direction



Source: Author's own construction

Table 5.3: Provides vision for the team to know their direction

R	FR	%	Cum. %
D	2	4.00	4.00
N	5	10.00	14.00
A	19	38.00	52.00
SA	24	48.00	100.00
TOTAL	50	100.00	

Missing cases: 0

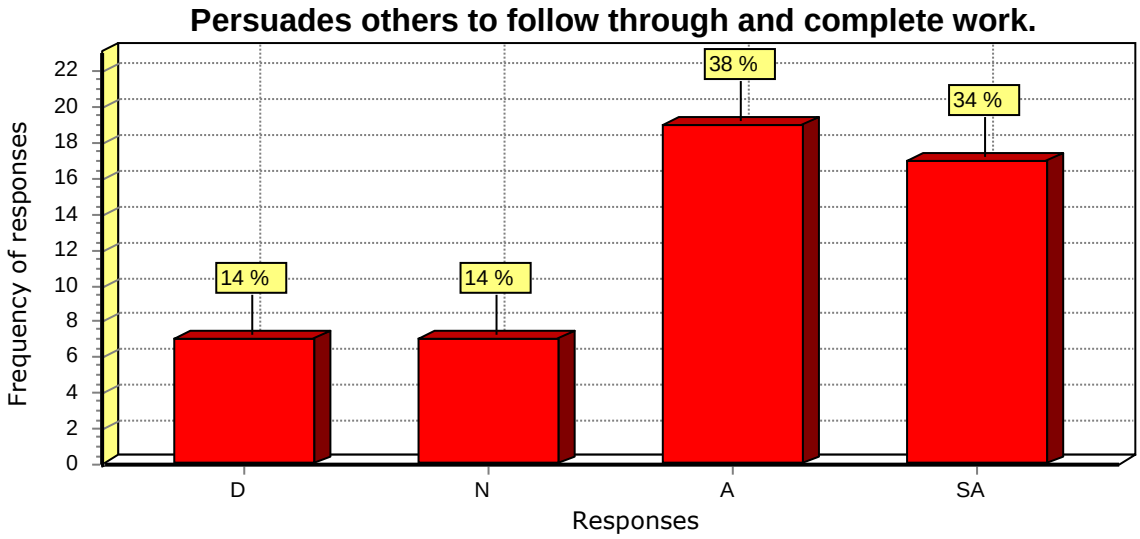
Source: Author's own construction

Figure 5.8 and Table 5.3 shows that 86% of the respondents which are at majority agreed that an effective project manager should provide a vision for the project team to know their direction, whereas 10% remain neutral and 4% disagreed. Due to the majority that agreed, this study can safely conclude that an effective project manager is required should provide a vision for the team to know their direction.

Statement 4: Persuades others to follow through and complete work. Such kind of a project manager that persuades a project team to do their work would be a favorite and loved by the team. Once in a while a project team may need a motivation to complete the work. A motivated project team performs work actively and efficiently

Response: This study concludes that it is important that an effective project manager know how to persuade other stakeholders to follow through and complete their work. The response to statement 4 is recorded by Figure 5.9 and Table 5.4.

Figure 5.9: Persuades others to follow through and complete work.



Source: Author's own construction

Table 5.4: Persuades others to follow through and complete work

R	FR	%	Cum. %
D	7	14.00	14.00
N	7	14.00	28.00
A	19	38.00	66.00
SA	17	34.00	100.00
TOTAL	50	100.00	

Missing cases: 0

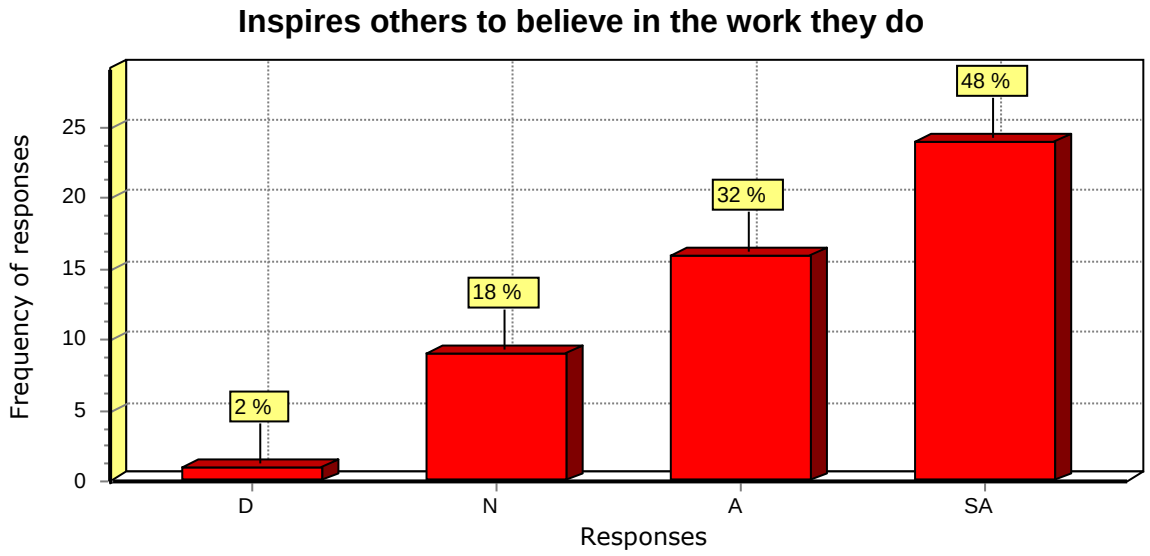
Source: Author's own construction

Figure 5.9 and Table 4 illustrates that 72% of the respondents which are at majority agreed that an effective project manager needs to know how to persuade other stakeholders to follow through and complete their work, whereas 14% stayed neutral and another 14% disagreed. Even in this case it is interesting to see that the number of those who stayed neutral and those who disagreed equals. However it is not surprising to see that 72% of the respondents which are a majority have agreed because a project manager that has a motivated project team stands a big chance to successfully executing a project.

Statement 5: Inspires others to believe in the work they do. Once a project team is stimulated by a project manager to see the value in the work they do they can fully participate towards attaining the project success. Inspired project team needs no one to monitor them once they are made to understand their duties in a project. Demoralizing project manager may drive a project team to burn-out.

Response: It is concluded that it an effective project manager should inspire others to believe in the work they do. Effective project managers are able to engage project team members at a personal level, inspire them and enable them to participate in the project. The response to statement 5 is displayed by Figure 5.10 and Table 5.5.

Figure 5.10: Inspires others to believe in the work they do



Source: Author's own construction

Table 5.5: Inspires others to believe in the work they do

R	FR	%	Cum. %
D	1	2.00	2.00
N	9	18.00	20.00
A	16	32.00	52.00
SA	24	48.00	100.00
TOTAL	50	100.00	

Missing cases: 0

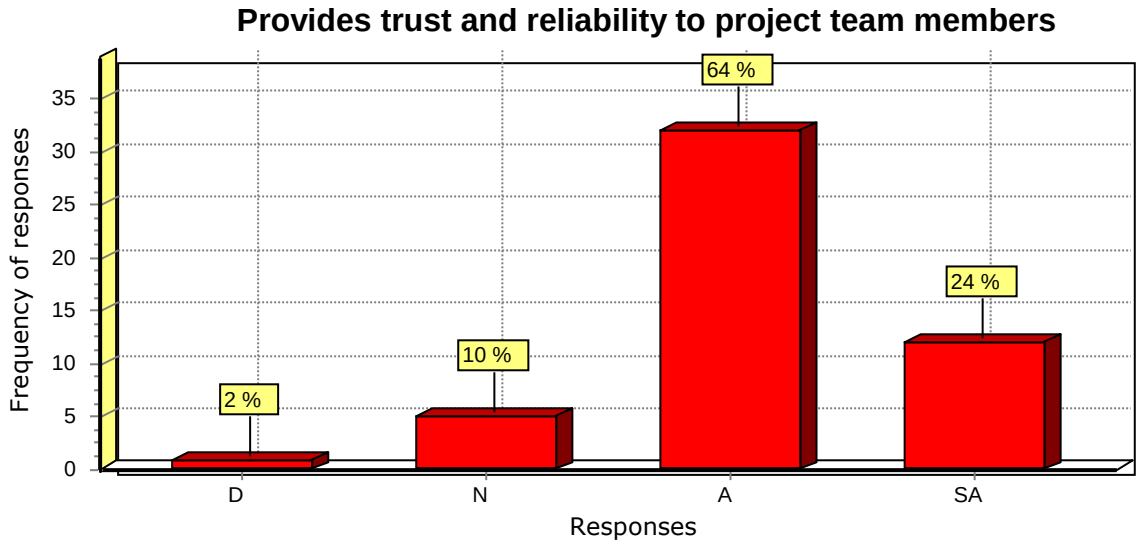
Source: Author's own construction

Figure 5.10 and Table 5.5 indicates that 80% of the respondents that are at majority agreed that it is an effective project manager should inspire project stakeholders to believe in the work they do, whereas 18% stayed neutral and 2% disagreed. It is still a concern even in this case to see that 18% of the respondents stayed neutral while the question seems to be straightforward and easy to understand. However conditions under which the respondents were answering this question are unknown.

Statement 6: Provides trust and reliability to project team members. Trust from a project manager is likely to make a project team feel valued and worth to be part of a project. A project manager that provides no trust may see a project team disengaging to the project.

Response: This study expects an effective project manager to provide trust and reliability to project team members. .The response to statement 6 is provided by Figure 5.11 and Table 5.6 below.

Figure 5.11: Provides trust and reliability to project team members



Source: Author's own construction

Table 5.6: Provides trust and reliability to project team members

R	FR	%	Cum. %
D	1	2.00	2.00
N	5	10.00	12.00
A	32	64.00	76.00
SA	12	24.00	100.00
TOTAL	50	100.00	

Missing cases: 0

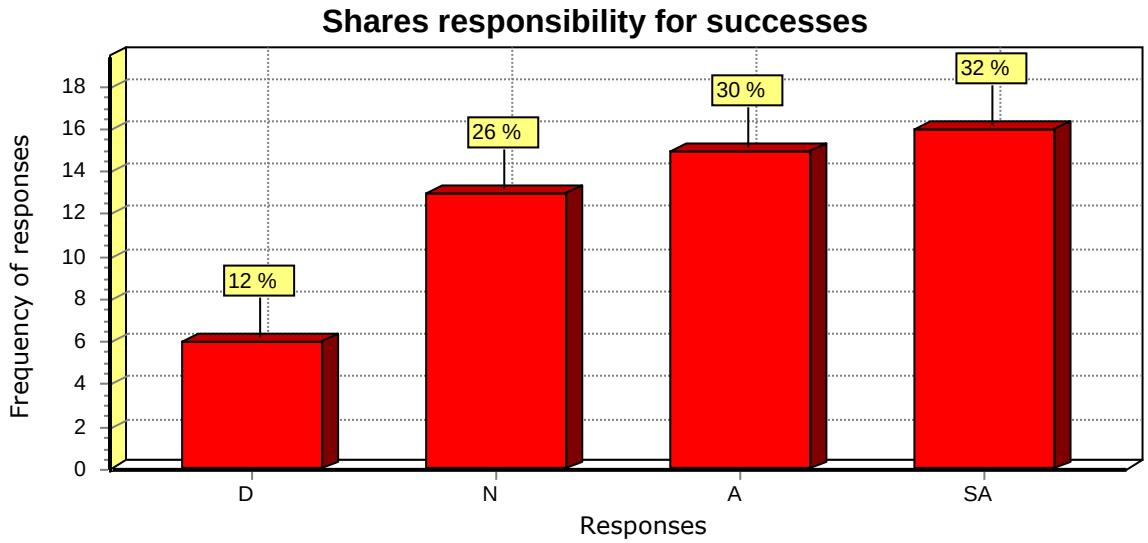
Source: Author's own construction

Figure 5.11 and Table 5.6 indicates that 88% of the respondents that are at majority agreed that an effective project manager should provide trust and reliability to project team members, whereas 10% stayed neutral and 2% disagreed. It is a concern though to find out that 10% of respondents stayed neutral, however it's not surprising to see that a majority of 88% agreed because a trust generally goes a long way to a human being.

Statement 7: Shares responsibility for successes. A project manager that delegates work to the project team members seem to stand a chance of completing a project on time than those who don't spread the work among team members**.** Bear in mind that a good leader must assist others apply their influence and share leadership in order to successfully execute a project.

Response: .It is concluded that an effective project manager should share the responsibility among the project team in order to attain project success. The response to statement 7 is recorded by Figure 5.12 and Table 5.7 below.

Figure 5.12: Shares responsibility for successes



Source: Author's own construction

Table 5.7: Shares responsibility for successes

R	FR	%	Cum. %
D	6	12.00	12.00
N	13	26.00	38.00
A	15	30.00	68.00
SA	16	32.00	100.00
TOTAL	50	100.00	

Missing cases: 0

Source: Author's own construction

Figure 5.12 and Table 5.7 illustrates that 62% of the respondents that are at majority agreed that an effective project manager should share the responsibility among the project team in order to attain project success, whereas 26% stayed neutral and 12% disagreed. A researcher believes that there might have been a misunderstanding of this question by the respondents or maybe it was not well structured, reason being that a researcher expected almost 100% of agreeing from the respondents, 0% of neutral responses and 0% disagreeing respondents. Researcher's expectations come from the fact that a project manager can't be expected to work alone in a project due to the nature of activities and tasks involved in a project.

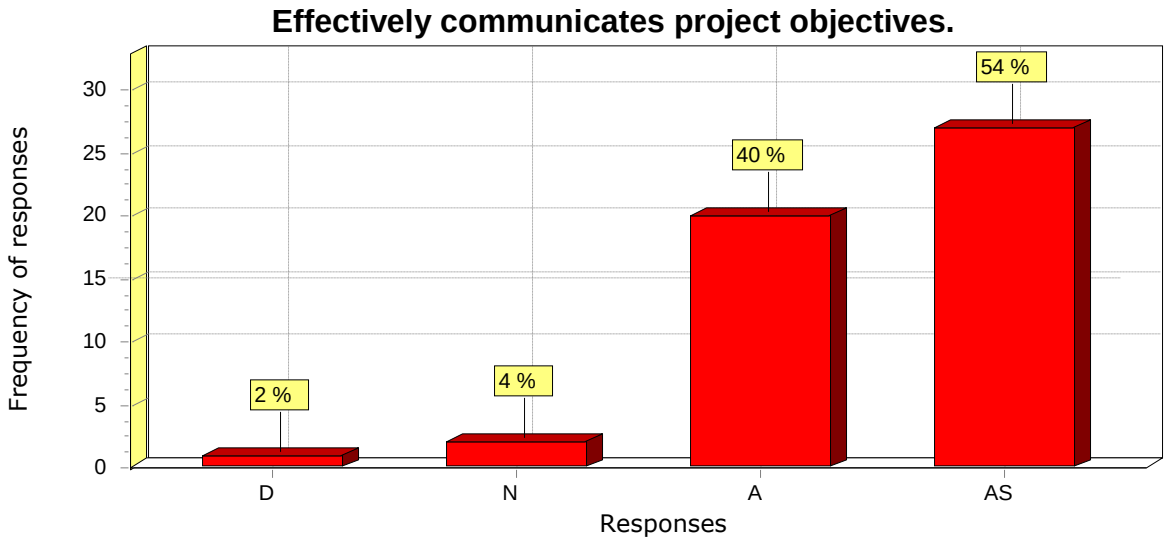
11. Communication Competency: Directs a way forward.

This part of the questionnaire seeks to determine the communication competency of a project manager because it is expected that communication be a part of a construction project for purpose of engagement with stakeholders.

Statement 8: Effectively communicates project objectives. A project manager that fails to communicate project objectives to a project team may find a team working blindly and demotivated since they don't know the bigger picture of a project.

Response: This study concludes that an effective project manager should effectively communicate project objectives due to the majority of 94% of respondents that agreed. 94% is quite a huge percentage that affirms the importance of communicating project objectives. The response to statement 8 is presented by Figure 5.13 and Table 5.8 below.

Figure 5.13: Effectively communicates project objectives



Source: Author's own construction

Table 5.8: Effectively communicates project objectives

R	FR	%	Cum. %
D	1	2.00	2.00
N	2	4.00	6.00
A	20	40.00	46.00
AS	27	54.00	100.00
TOTAL	50	100.00	

Missing cases: 0

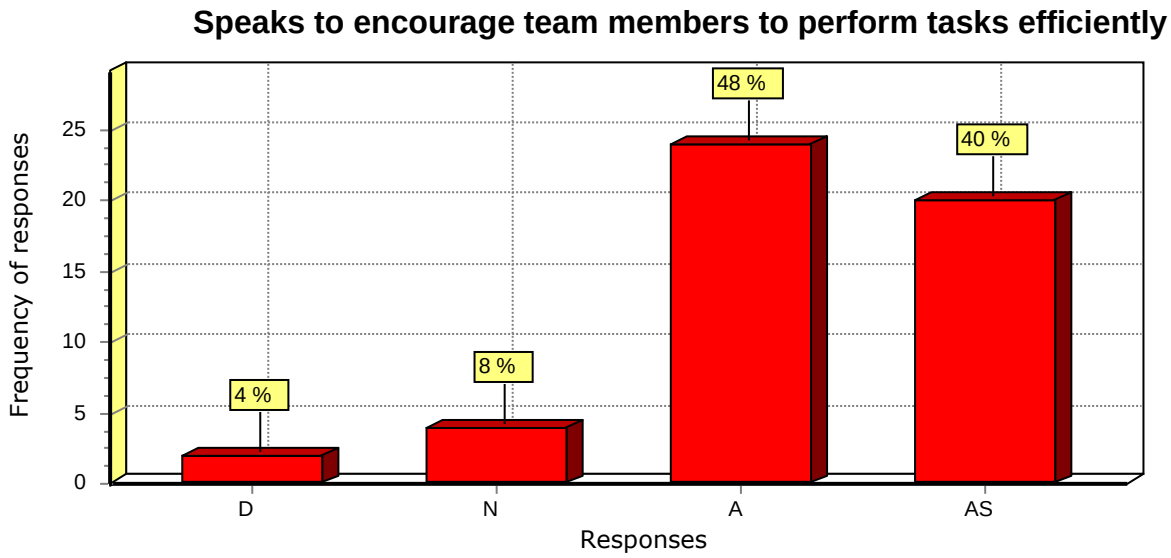
Source: Author's own construction

Figure 5.13 and Table 5.8 illustrates that 94% of respondents that are at majority agreed that an effective project manager should effectively communicate the objectives of a project, whereas 4% stayed neutral and 2% disagreed with the matter. When a project team member knows the bigger picture of the activity or task is doing he/she tends to value and understands the importance of the task towards the whole project.

Statement 9: Speaks to encourage team members to perform tasks efficiently. Positive communication from project manager may motivate a project team to work ethically, see a value on the duties they do and be eager to perform exceptionally and not disappoint a project manager. Destructive communication may destroy and lower the morale of project team members so is their performance

Response: It can be established on this study that an effective project manager is ought to speak to encourage team members to perform tasks efficiently due to the majority of 88% of respondents tat agreed. The response to statement 9 is demonstrated by Figure 5.14 and Table 5.9 below.

Figure 5.14: Speaks to encourage team members to perform tasks efficiently



Source: Author's own construction

Table 5.9: Speaks to encourage team members to perform tasks efficiently

R	FR	%	Cum. %
D	2	4.00	4.00
N	4	8.00	12.00
A	24	48.00	60.00
AS	20	40.00	100.00
TOTAL	50	100.00	

Missing cases: 0

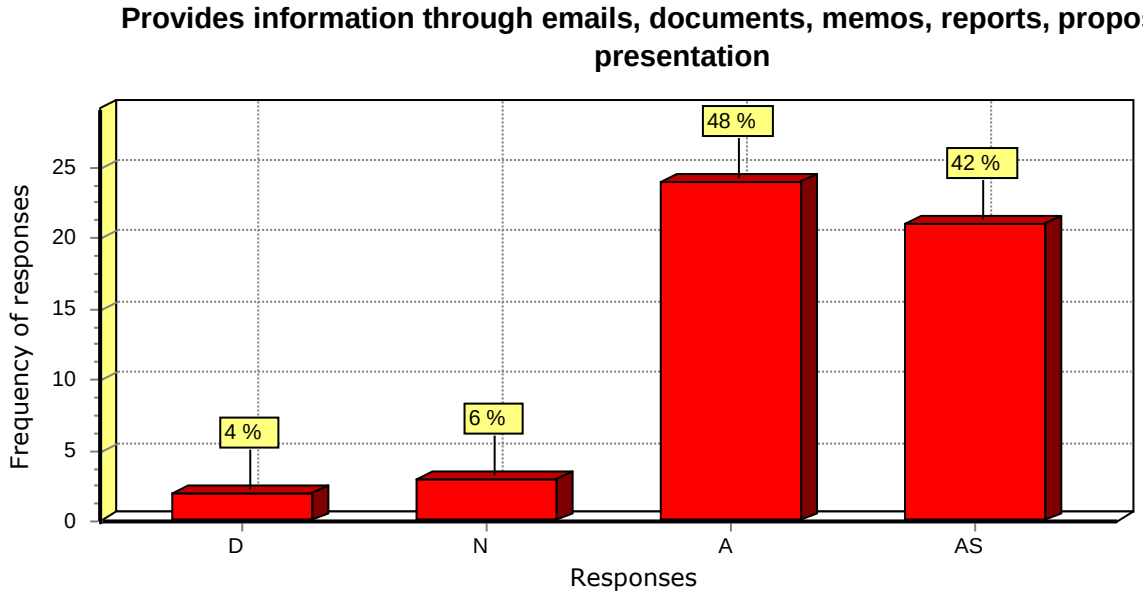
Source: Author's own construction

The results in Figure 5.14 and Table 5.9 illustrate that 88% of the respondents that are at majority agreed that an effective project manager should speak to encourage team members to perform tasks efficiently, whereas 8% stayed neutral and 4% disagreed.

Statement 10: Provides information through emails, documents, memos, reports, proposal and presentation. A project manager should provide information in a form that is understandable by the project team members in a form that is convenient and known to avoid confusion. Information that brings no understanding is an ineffective communication.

Response: .Verbal communication has a risk of losing its meaning or be misunderstood as is communicated to the project team by a project manager. The views with respect to the above statement (10) are reflected by Figure 5.15 and Table 10.

Figure 5.15: Provides information through emails, documents, memos, reports, proposal and presentation



Source: Author's own construction

Table 5.10: Provides information through emails, documents, memos, reports, proposal and presentation

R	FR	%	Cum. %
D	2	4.00	4.00
N	3	6.00	10.00
A	24	48.00	58.00
AS	21	42.00	100.00
TOTAL	50	100.00	

Missing cases: 0

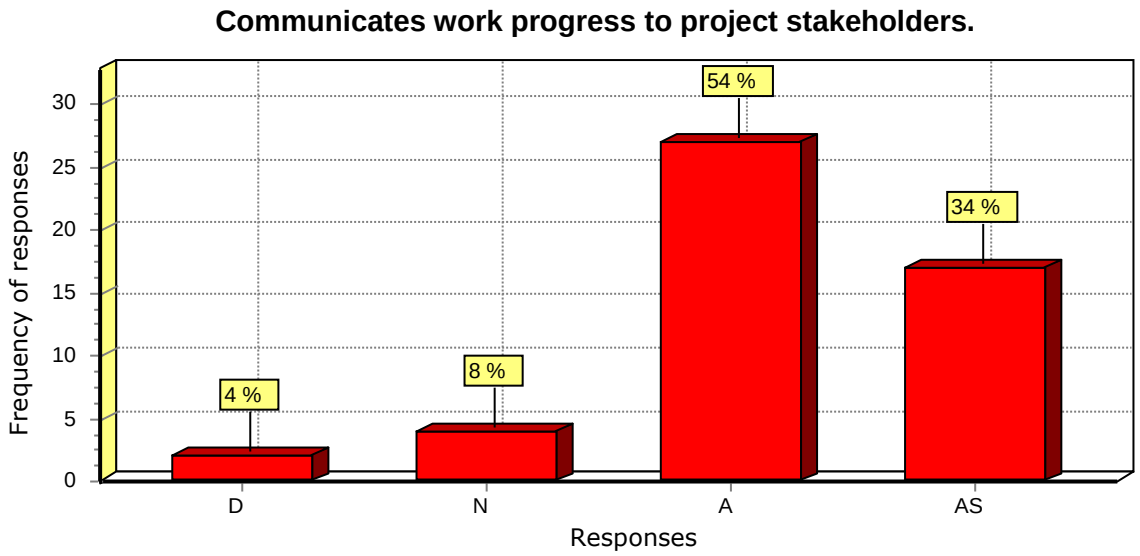
Source: Author's own construction

The results illustrated in Figure 5.15 and Table 5.10 shows that 90% of the respondents agreed that an effective project manager needs to provide information through emails, documents, memos, reports, proposal and presentation, whereas 6% stayed neutral and 4% disagreed. Writing or documented communication has always been regarded as one of the cores of communication. It assists project managers to remind them what was discussed or said previously and it remains as a legal communication. It can therefore be said that a project manager needs to provide information through provide information through emails, documents, memos, reports, proposal and presentation in order to be effective and understood due to the majority of 90% of respondents that agreed.

Statement 11: Communicate work progress to project stakeholders. A project manager that frequently hold up work progress meetings tend to understand project dynamics better and engage other stakeholders through communication than those who don't do project meetings.

Response: It can be said in this study that an effective project manager should communicate work progress to the project stakeholders due the majority of 88% of the respondents that agreed. The response to statement 11 is demonstrated by Figure 5.16 and Table 5.11.

Figure 5.16: Communicates work progress to project stakeholders



Source: Author's own construction

Table 5.11: Communicates work progress to project stakeholders

R	FR	%	Cum. %
D	2	4.00	4.00
N	4	8.00	12.00
A	27	54.00	66.00
AS	17	34.00	100.00
TOTAL	50	100.00	

Missing cases: 0

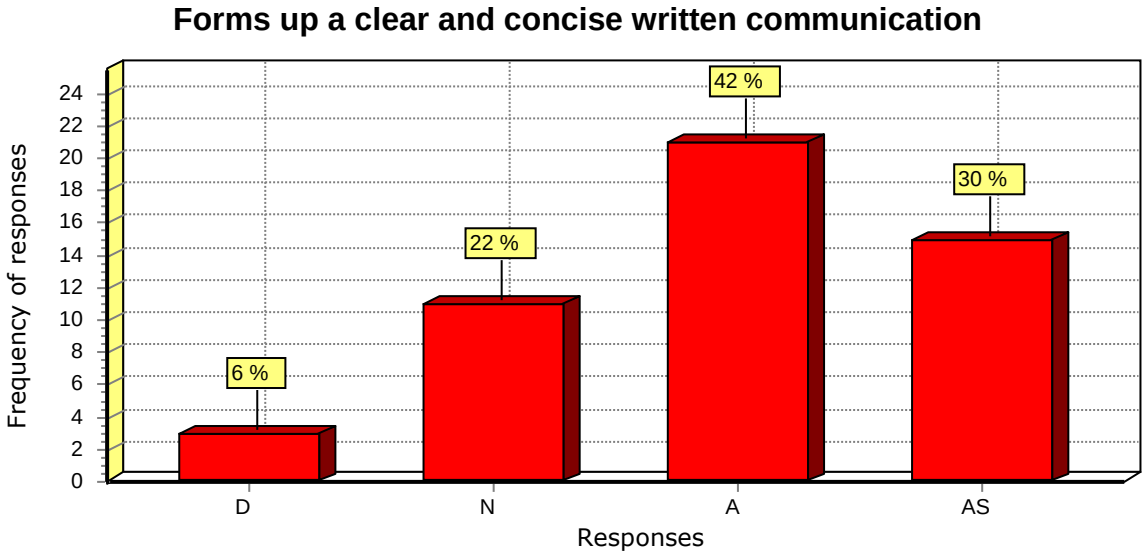
Source: Author's own construction

The results shown by Figure 5.16 and Table 5.11 illustrates that 88% of the respondents agreed that an effective project manager should communicate work progress to project stakeholders, whereas 8% stayed neutral and 4% disagreed. Communication of work progress helps in pointing out what could possibly hinder the success of a project so that concerned stakeholders can intervene where necessary. In a case whereby a project shows symptoms of delay a project manager propose more teams on site and also organize a budget in relation to more teams on site.

Statement 12: Forms up a clear and concise written communication. Project managers that communicate poorly without writing anything down can lead to confusion and misunderstand. Written communication avoids distortion of information and makes a project manager to provide effective communication.

Response: This study states that an effective project manager is required to form up a clear and concise written communication. The response to this statement is demonstrated by Figure 5.17 and Table 5.12.

Figure 5.17: Forms up a clear and concise written communication



Source: Author's own construction

Table 5.12: Forms up a clear and concise written communication

R	FR	%	Cum. %
D	3	6.00	6.00
N	11	22.00	28.00
A	21	42.00	70.00
AS	15	30.00	100.00
TOTAL	50	100.00	

Missing cases: 0

Source: Author's own construction

The results demonstrated by Figure 5.17 and Table 5.11 indicate that 72% respondents that are at majority agreed that an effective project manager should

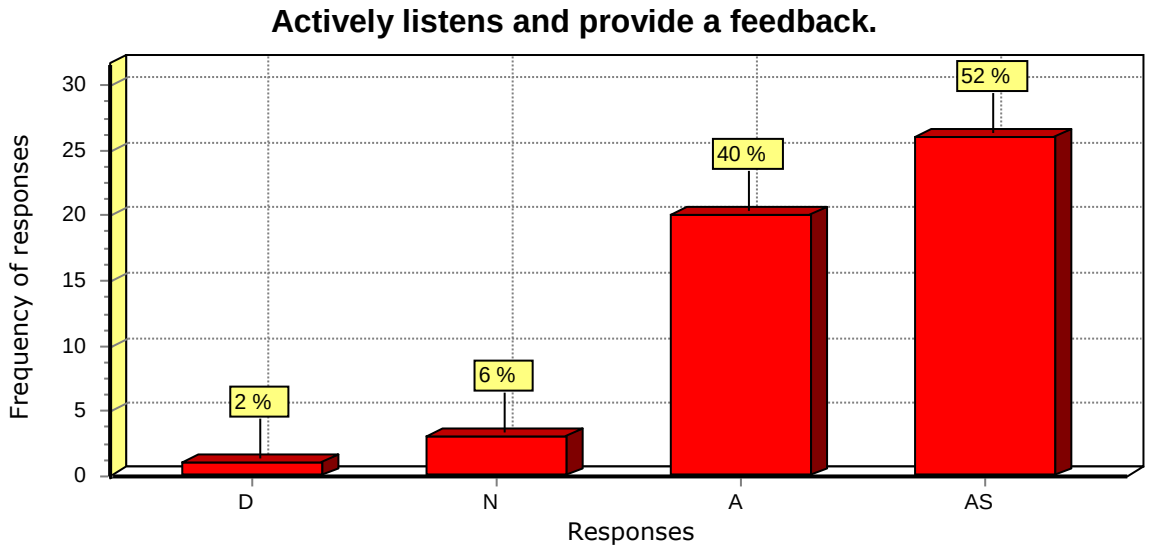
form up a clear and concise written communication, whereas 22% stayed neutral and 6% disagreed. It is interesting that 26% of the respondents chose to remain neutral in this question though communication is very important in a project environment.

Additionally once the communication is written down it cannot be erased. It is always better for a project manager to write information especially instructions and feedbacks so that project stakeholders cannot be confused of what to do. Due to the majority 72% of the respondents that agreed this study conclude that an effective project manager is required to form up a clear and concise written communication.

Statement 13: Actively listens and provide a feedback. Project managers that do not pay attention when listening fail to respond appropriately to issue of the matter at hand. Such kinds of project managers are likely to communicate wrong information or propaganda to the stakeholders. Listening is a skill.

Response: It is expected that an effective project manager need to actively listens and provide a feedback to project stakeholder. The response to this statement is illustrated by Figure 5.18 and Table 5.13

Figure 5.18: Actively listens and provide a feedback.



Source: Author's own construction

Table 5.13: Actively listens and provide a feedback

R	FR	%	Cum. %
D	1	2.00	2.00
N	3	6.00	8.00
A	20	40.00	48.00
AS	26	52.00	100.00
TOTAL	50	100.00	

Missing cases: 0

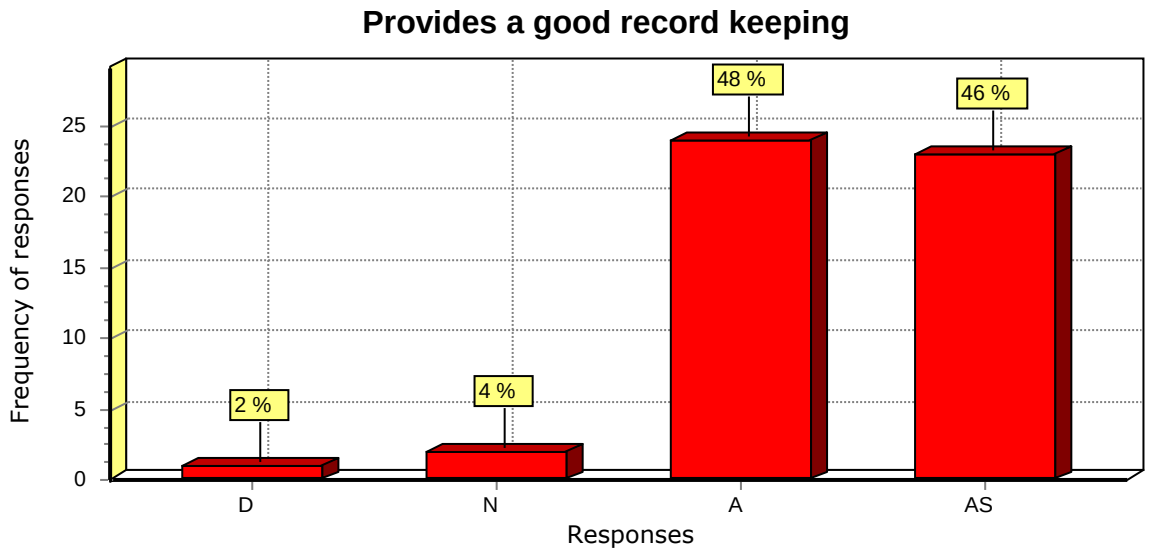
Source: Author's own construction

The results shown by Figure 5.18 and Table 5.13 specify that 92% of the respondents that are at majority agreed that an effective project manager should actively listens and provide a feedback in relation to the project; however 6% stayed neutral while 2% disagreed. When a project manager actively listens it means that he/she has an interest of what is being spoken. This kind of a skill could motivate project stakeholders to express themselves confidently when it comes to project issues and also personal issues in some instances. It can therefore be concluded that an effective project manager need to actively listens and provide a feedback to project stakeholder concerned due to the majority of 92% .of respondents that agreed.

Statement 14: Provides a good record keeping. Poor record keeping could indicate that a project manager doesn't document lessons learnt on previous projects, therefore can't deal with similar projects when they arrive in future. Project managers who only rely on memory may fail to remember or communicate crucial matters that are project related.

Response: It is expected that a project manager ensures a good record keeping. The response to this statement is illustrated by Figure 5.19 and Table 5.14.

Figure 5.19: Provides a good record keeping.



Source: Author's own construction

Table 5.14: Provides a good record keeping

R	FR	%	Cum. %
D	1	2.00	2.00
N	2	4.00	6.00
A	24	48.00	54.00
AS	23	46.00	100.00
TOTAL	50	100.00	

Missing cases: 0

Source: Author's own construction

Figure 5.19 and Table 5.14 shows that 94% of the respondents that are at the majority agreed that an effective project manager should provide a good record keeping, whereas 4% stayed neutral while 2% disagreed. Record keeping helps the project manager to learn from the similar projects that were done previously in order to perform better in the current or future projects Based on the 94% which is the majority of the respondents this study concludes that an effective project manager should provide a good record keeping.

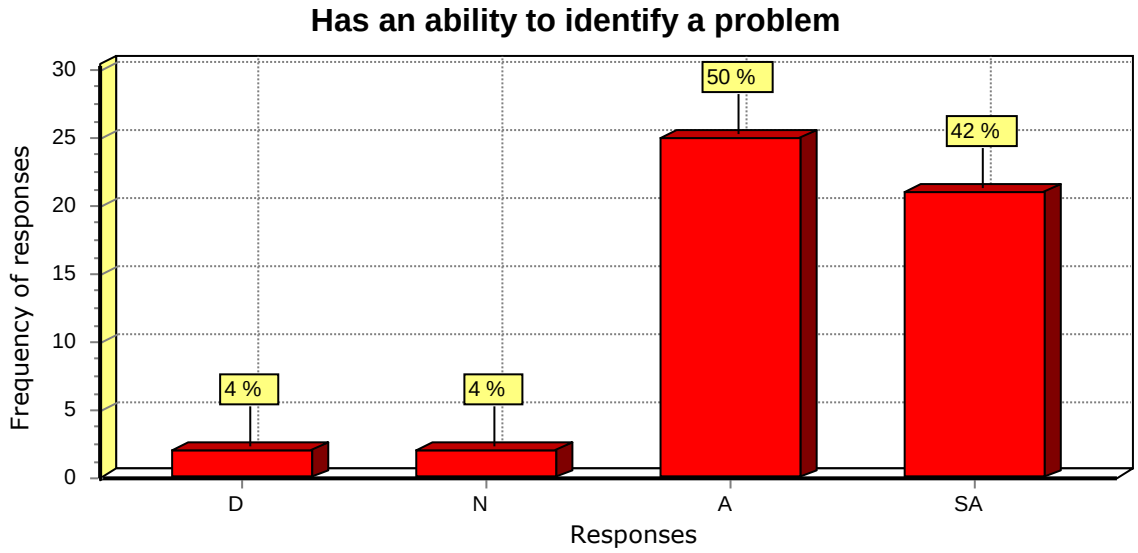
12. Problem Solving: Provides solutions.

This part of the questionnaire seeks to determine the problem solving competency of a project manager because problems are expected to occur in a construction project life. Therefore competency to deal with such is important.

Statement 15: Has an ability to identify a problem. A project manager that has no ability in identifying a problem that needs his/her intervention would definitely see a problem when it's fully blown and irreversible. It might then be even too late to deal with a problem in such a stage

Response: As the problem arises in the project a project manager should have mechanisms to deal with such. The response to statement 15 is resented by Figure 5.20 and Table 5.15.

Figure 5.20: Has an ability to identify a problem.



Source: Author's own construction

Table 5.15: Has an ability to identify a problem

R	FR	%	Cum. %
D	2	4.00	4.00
N	2	4.00	8.00
A	25	50.00	58.00
SA	21	42.00	100.00

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TOTAL          50    100.00
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Missing cases: 0
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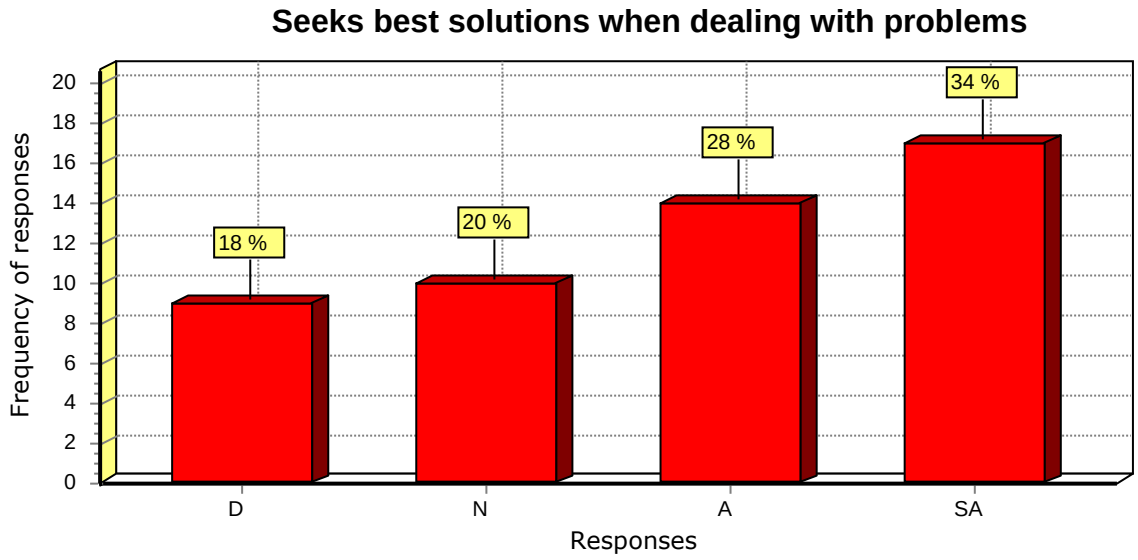
Source: Author's own construction

The results shown by Figure 5.20 and Table 5.15 indicate that 92% of the respondents that are at majority agreed that an effective project manager should have an ability to identify a problem, whereas 4% stayed neutral and another 4% disagreed. Once a problem manifesto itself without being noticed it may hinder the success of a project. The ability of a project manager in identifying the problem could help the project manager to build some contingencies and risk mitigation before the problem arises. The majority of 92% of the respondents agreed, therefore this study supports that an effective project manager should have an ability to identify a problem while managing execution projects.

Statement 16: Seeks best solutions when dealing with problems. A best solution by as perceived by a project manager may leave project team members descrambled and unsatisfied causing them to poorly perform their duties.

Response: A best solution can be good for a project manager but terribly bad for a project team especially when it infringes their rights. The response to statement 16 is provided by Figure 5.21 and Table 5.16.

Figure 5.21: Seeks best solutions when dealing with problems.



Source: Author's own construction

Table 5.16: Seeks best solutions when dealing with problems

R	FR	%	Cum. %
D	9	18.00	18.00
N	10	20.00	38.00
A	14	28.00	66.00
SA	17	34.00	100.00
TOTAL	50	100.00	

Missing cases: 0

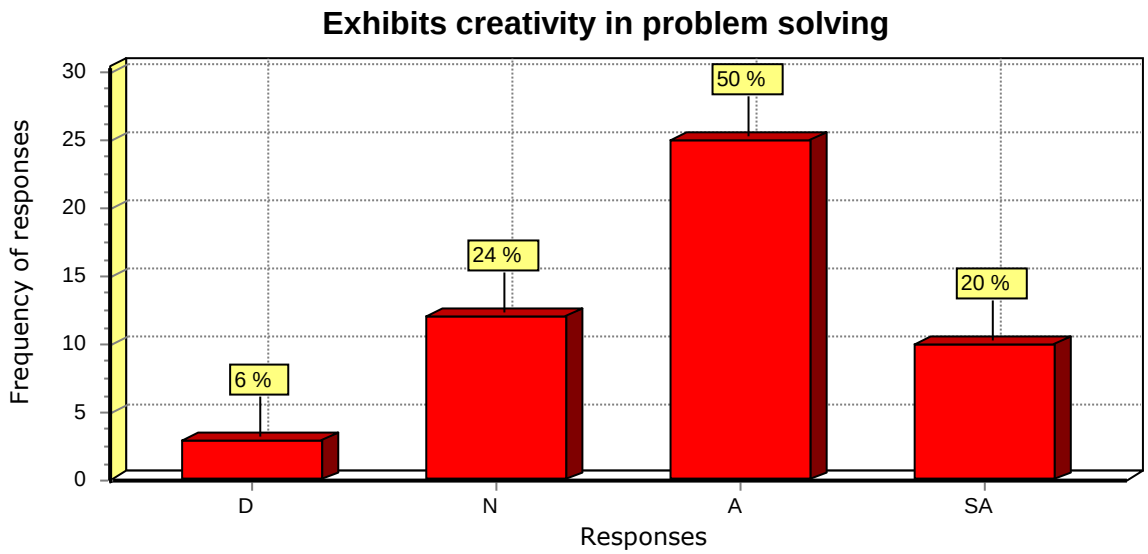
Source: Author's own construction

Figure 5.21 and Table 5.16 shows that 62% of respondents agreed that an effective project manager should seek best solutions when dealing with problems, whereas 20% stayed neutral 18% disagreed stating that a solution can't be best in a project environment but amicable. Based on the majority of 62% response received for this study an effective project manager needs to seek best solutions when dealing with problems.

Statement 17: Exhibits creativity in problem solving. Some project managers tend to use same traditional or old boring ways of solving problem within a construction project such as team outings, team building activities etc. These may not really lead to desired results but may escalate difference and misunderstandings.

Response: An effective project manager needs to resolve problems without halting or delaying progress of the construction project at hand. The response on statement 17 is given below by Figure 5.22 and Table 5.17

Figure 5.22: Exhibits creativity in problem solving.



Source: Author's own construction

Table 5.17: Exhibits creativity in problem solving

R	FR	%	Cum. %
D	3	6.00	6.00
N	12	24.00	30.00
A	25	50.00	80.00
SA	10	20.00	100.00
TOTAL	50	100.00	

Missing cases: 0

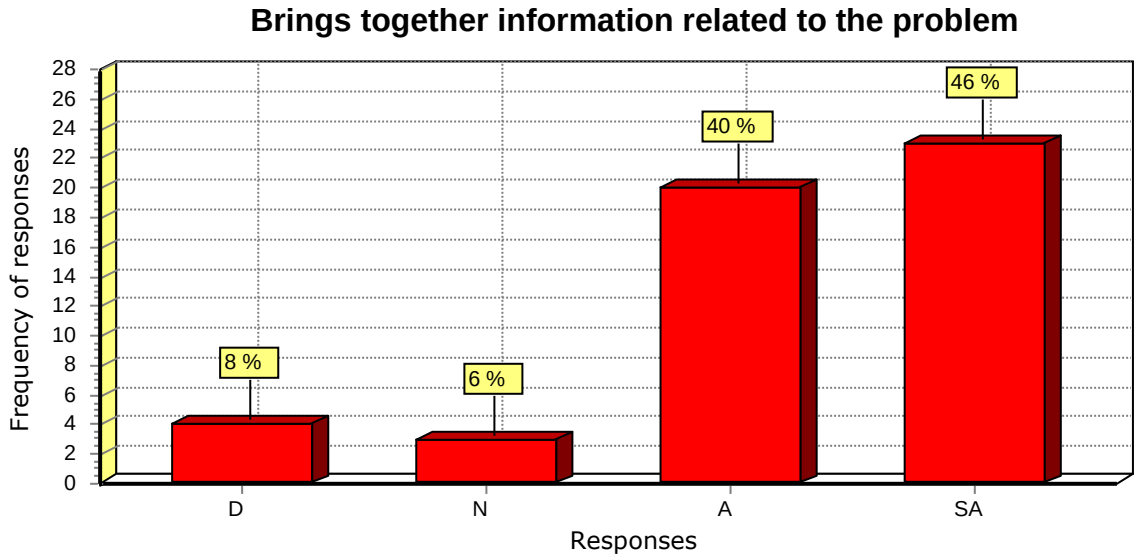
Source: Author's own construction

The results given by Figure 5.22 and Table 5.17 indicates that 70% of the respondents that are at majority agreed that an effective project manager should exhibits creativity in problem solving, whereas 24% stayed neutral while 6% disagreed. A project manager needs to find better interesting methods of solving problems within a project team. The 70% of respondents agreed therefore this study concludes that an effective project manager should exhibits creativity in solving problem of construction projects.

Statement 18: Brings together information related to the problem. It is possible to find ignorant project managers who do things on their own ways when dealing with problems without having necessary information. Such kind of project managers may possibly bring forth conflicts.

Response: It is expected that a project manager brings together the related information to the problem when trying to resolve it. A response on this statement is demonstrated by Figure 5.23 and Table 5.18.

Figure 5.23: Brings together information related to the problem.



Source: Author's own construction

Table 5.18: Brings together information related to the problem

R	FR	%	Cum. %
D	4	8.00	8.00
N	3	6.00	14.00
A	20	40.00	54.00
SA	23	46.00	100.00
TOTAL	50	100.00	

Missing cases: 0

Source: Author's own construction

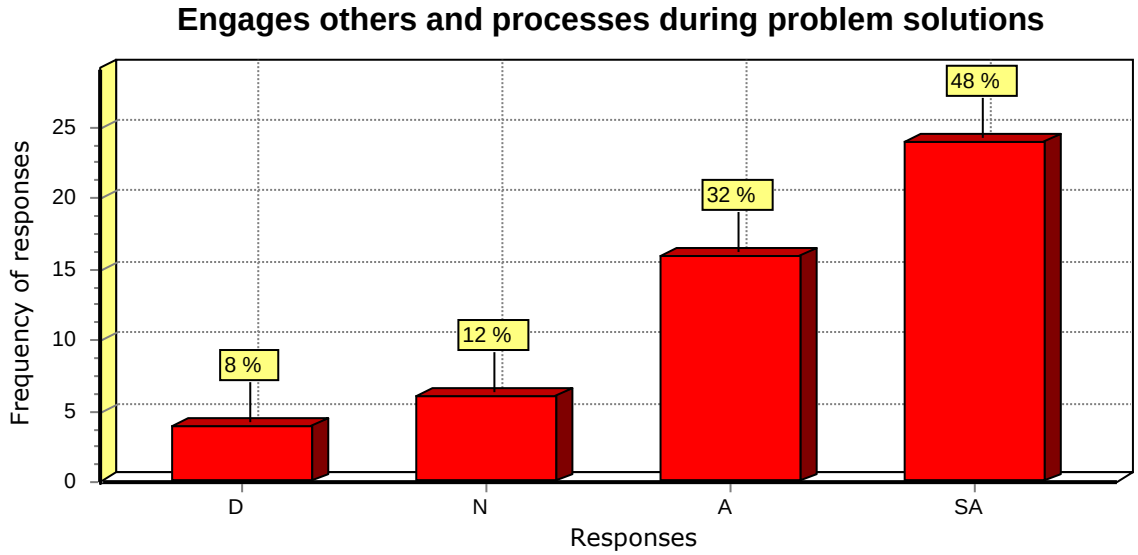
Figure 5.23 and Table 5.18 illustrates that 86% of the respondents agreed that an effective project manager should bring together information related to the

problem, whereas 6% stayed neutral while 8% disagreed. The relevant information during problem solving assists a project manager to determine the root cause and also the trend of such a problem. The majority of 80% of the respondents agreed with this matter, therefore this study concludes that an effective project manager should bring together information related to the problem.

Statement 19: Engages others and processes during problem solutions. Some project managers may see no need to engage others and processes in matters they deemed as obvious to them. Bluntly refer to this as a waste of time. Consulting processes and other stakeholders' views assist a project manager to come up with better methods of dealing with problems.

Response: It is expected that a project manager engages others and the processes during problem solutions. The response to this statement is illustrated by Figure 5.24 and Table 5.19.

Figure 5.24: Engages others and processes during problem solutions.



Source: Author's own construction

Table 5.19: Engages others and processes during problem solutions

R	FR	%	Cum. %
D	4	8.00	8.00
N	6	12.00	20.00
A	16	32.00	52.00
SA	24	48.00	100.00
TOTAL	50	100.00	

Missing cases: 0

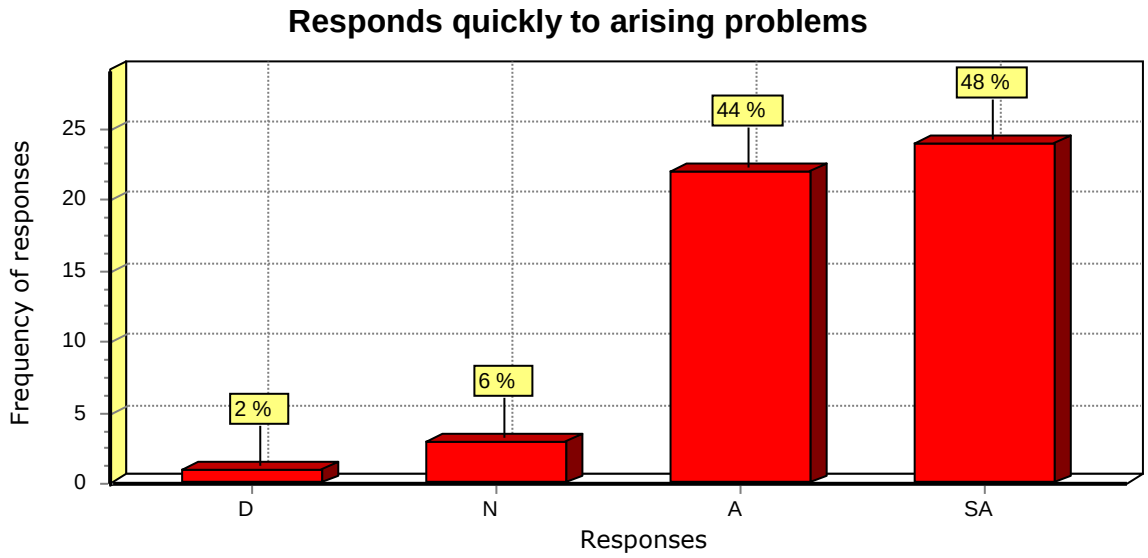
Source: Author's own construction

The results given by Figure 5.24 and Table 5.19 indicate that 80% of respondents that are at majority agreed that an effective project manager should engage others and processes during problem solutions whereas 12% stayed neutral while 8% disagreed. Even in this question it is not really clear why respondents would decide not to participate. A project manager has to work within the rules and regulation of the organization he/she is working for since every project in an organization is linked to the organizational strategy. Therefore this study concludes that an effective project manager should engage other stakeholders and processes during problem solutions due to the majority of 80% respondents who agreed with this matter.

Statement 20: Responds quickly to arising problems. Some project managers have a tendency of believing that a problem will work out itself or leave a problem to fully manifesto itself before taking action. It is always better for a project manager to deal with arising problems as soon as possible because procrastination in the project environment could possibly lead to cost or schedule overruns or both.

Response: It is expected that a project manager responds quickly to the arising problems. The response to this statement is given by Figure 5.25 and Table 5. 20.

Figure 5.25: Responds quickly to arising problems.



Source: Author's own construction

Table 5.20: Responds quickly to arising problems

R	FR	%	Cum. %
D	1	2.00	2.00
N	3	6.00	8.00
A	22	44.00	52.00
SA	24	48.00	100.00
TOTAL	50	100.00	

Missing cases: 0

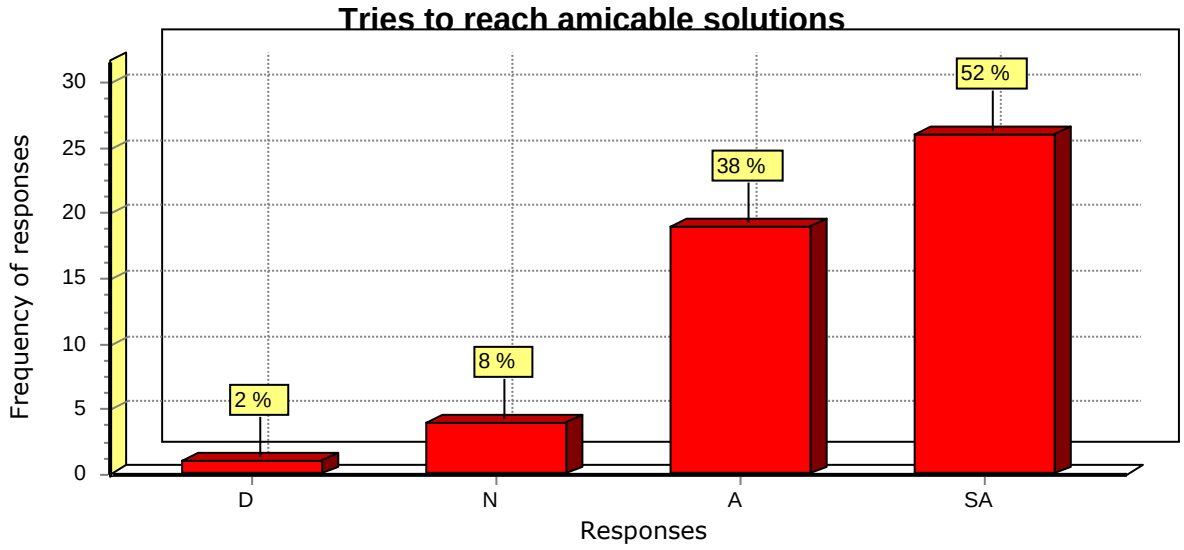
Source: Author's own construction

The results shown by Figure 5.25 and Table 5.20 indicate that 92% of the respondents agreed that an effective project manager should respond quickly to the arising problems, whereas 6% stayed neutral and 2% disagreed. It is overwhelming to see that a majority of 92% of respondents agreed. Therefore this study supports that an effective project manager should deal quickly with arising problems.

Statement 21: Tries to reach amicable solutions. Amicable solution doesn't necessary mean that a solution is the best one. Although it is somehow difficult for a project manager to always reach an amicable solution however amicable solution brings harmony within project environment. It makes every stakeholder feel as part of the project while biasness while making solutions could leave other stakeholders feeling neglected on the project.

Response: The solutions that a project manager makes should be amicable. The response to this statement is illustrated by Figure 5.26 and Table 5.21.

Figure 5.26: Tries to reach amicable solutions.



Source: Author's own construction

Table 5.21: Tries to reach amicable solutions

R	FR	%	Cum. %
D	1	2.00	2.00
N	4	8.00	10.00
A	19	38.00	48.00
SA	26	52.00	100.00
TOTAL	50	100.00	

Missing cases: 0

Source: Author's own construction

The response shown by Figure 5.26 and Table 5.21 indicates that 90% of respondents agreed that an effective project manager should try to reach amicable solution when resolving problems, whereas 8% stayed neutral and 2% disagreed. Therefore this study concludes that an effective project manager should always try to reach amicable solutions due to the 90% majority of respondents that agreed.

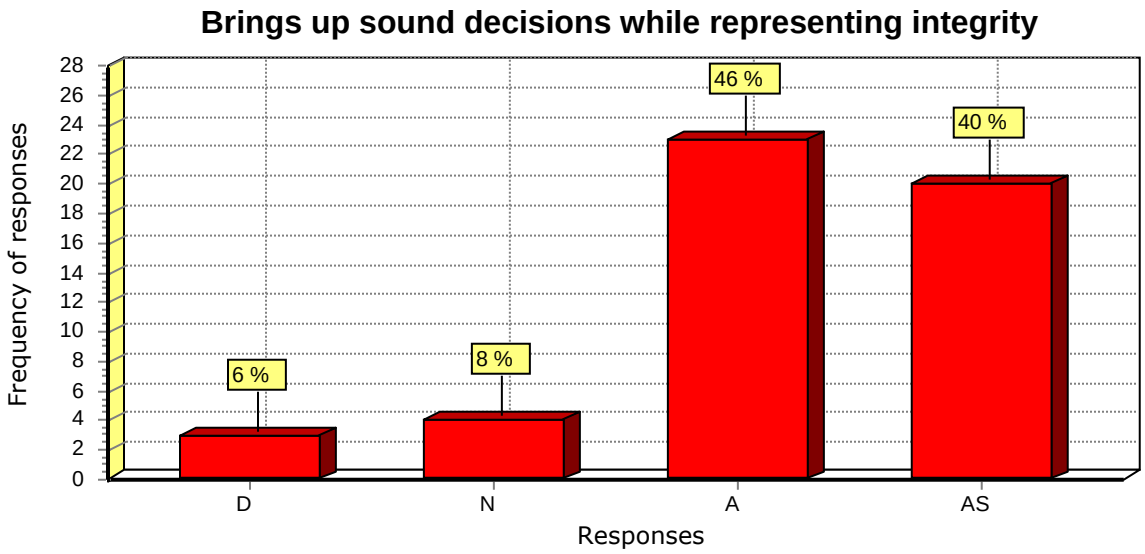
13. Decision Making Competency: Decisive on crucial matters.

This part of the questionnaire seeks to determine the decision making competency of a project manager because decisions are expected to be made in a construction project life cycle. Therefore competency that assists to be decisive on essential matters is important.

Statement 22: Brings up sound decisions while representing integrity. Project managers are always faced with possibilities of being bribed to make up bias decisions to suite interests of certain individuals. Prevailing integrity while making decisions could assist an effective project manage to avoid bribery and other mischievous acts meant to satisfy certain individuals.

Response: It is expected that a project manager should bring a sound decision while representing integrity during decision making. The response to this statement is shown by Figure 5.27 and Table 5.22.

Figure 5.27: Brings up sound decisions while representing integrity.



Source: Author's own construction

Table 5.22: Brings up sound decisions while representing integrity

R	FR	%	Cum. %
D	3	6.00	6.00
N	4	8.00	14.00
A	23	46.00	60.00
AS	20	40.00	100.00
TOTAL	50	100.00	

Missing cases: 0

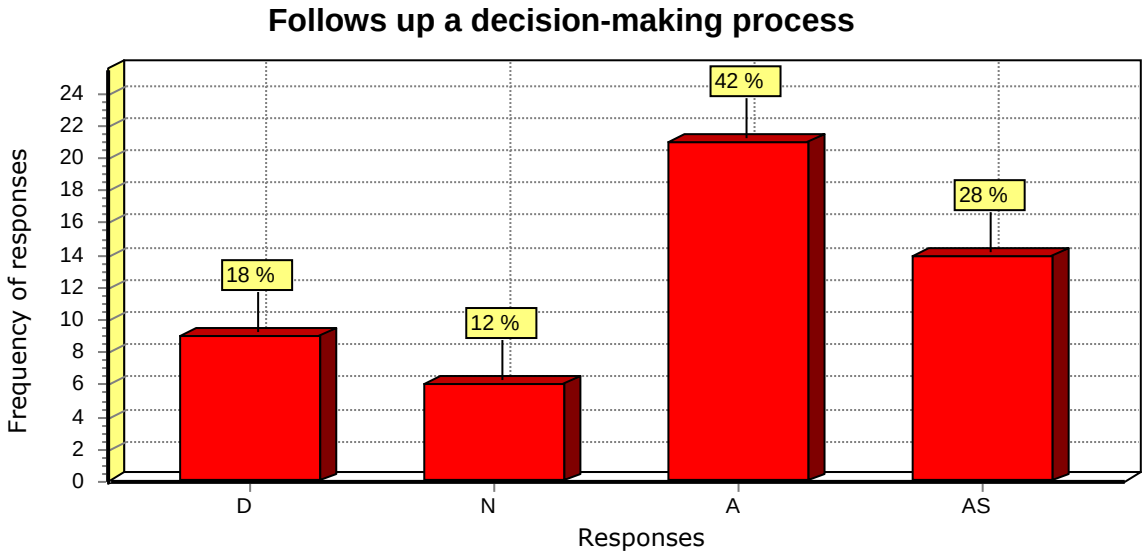
Source: Author's own construction

Figure 5.27 and Table 5.22 shows that 96% of the respondents that are at majority agree that an effective project manager should bring up sound decisions while representing integrity, whereas 8% stayed neutral while 6% disagreed. Since the majority of the respondents are 96% it can be concluded that an effective project manager should bring up sound decisions while representing integrity.

Statement 23: Follows up a decision-making process. . Sometimes following up processes in the construction project environment can possibly delay project completion.

Response: It can be said that an effective project manager should follow up a decision making process when making up some decisions in the project environment. The response to this statement is demonstrated by Figure 5.28 and Table 5.23.

Figure 5.28 Follows up a decision-making process



Source: Author's own construction

Table 5.23: Follows up a decision-making process

R	FR	%	Cum. %
D	9	18.00	18.00
N	6	12.00	30.00
A	21	42.00	72.00
AS	14	28.00	100.00
TOTAL	50	100.00	

Missing cases: 0

Source: Author's own construction

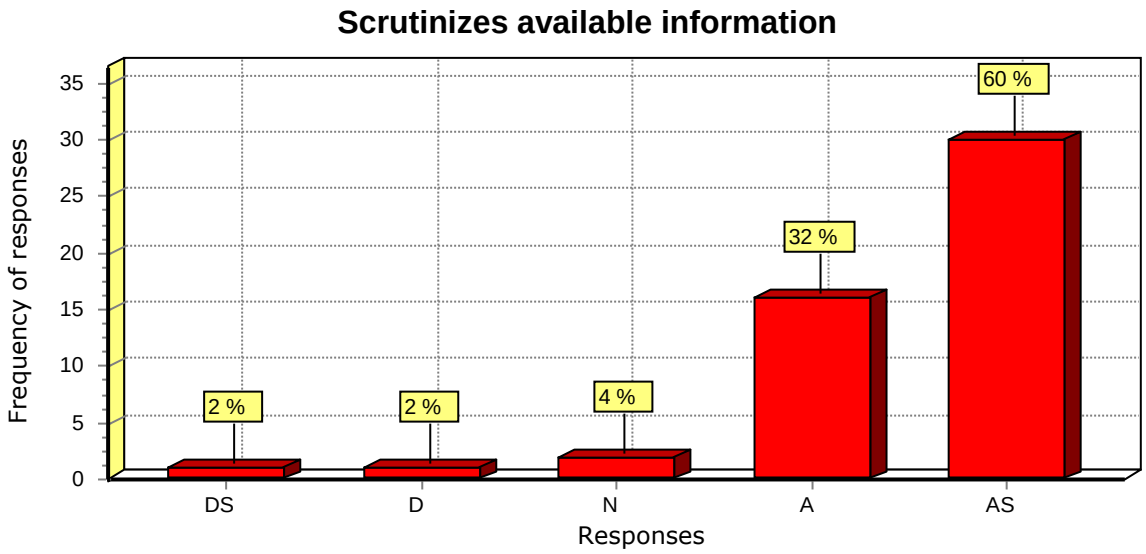
According to the results shown by Figure 5.28 and Table 5.23 70% of the respondents that are at majority agreed that an effective project manager should

follow up a decision making process, whereas 12% stayed neutral while the 18% argued that an effective project manager doesn't necessarily have to follow such a process but must be versatile to make up on-spot decisions without causing any delays in the project, disagreed. It is interesting to see that 12% stayed neutral. It makes a researcher wonder what makes respondents to choose such an option in this case. Nonetheless, a project manager functions within an organizational structure that has processes and procedures which governs the project. Therefore this study confirms that it should be accepted that an effective project manager follows the decision making process due to the majority of 70% respondents that agreed. However it is interesting to see that 18% disagreed

Statement 24: Scrutinizes available information. Matured project managers may tend to ignore scrutinizing information because they feel they know it all due to the experience they have on construction projects. A poor decision making can possibly delay the progress of a project and uninformed decisions are likely to lead to wrong decisions.

Response: It is expected that the project manager scrutinizes the information before making an informed decision. The response to this statement is demonstrated by Figure 5.29 and Figure 5.24.

Figure 5.29: Scrutinizes available information.



Source: Author's own construction

Table 5.24: Scrutinizes available information

R	FR	%	Cum. %
DS	1	2.00	2.00
D	1	2.00	4.00
N	2	4.00	8.00
A	16	32.00	40.00
AS	30	60.00	100.00
TOTAL	50	100.00	

Missing cases: 0

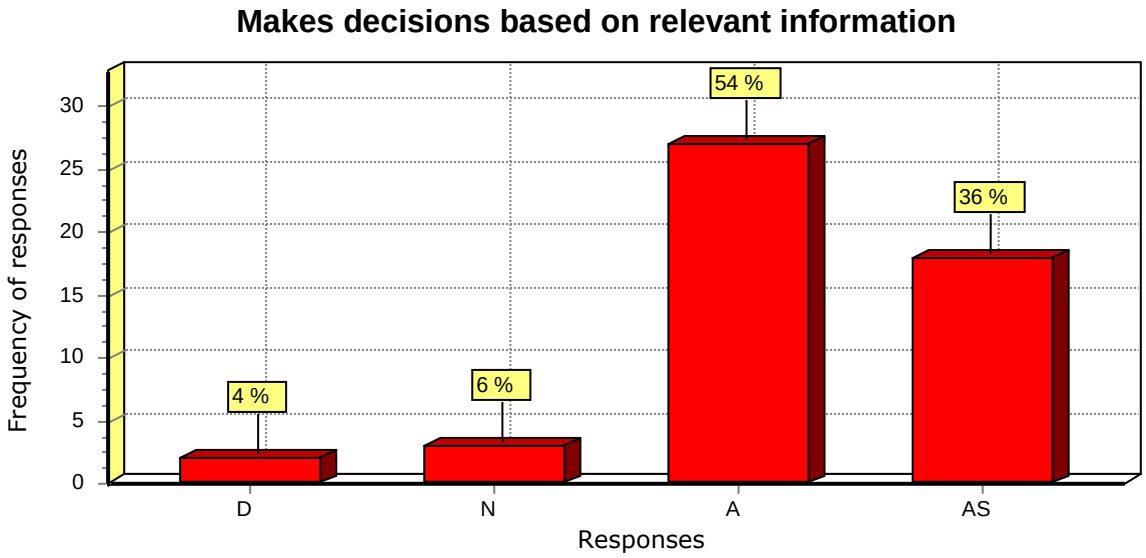
Source: Author's own construction

Figure 5.29 and Table 5.24 demonstrates that 92% of the respondents agreed that an effective project manager should scrutinize the available information before making any crucial decision, whereas 4% stayed neutral while another 4% disagreed. Scrutinizing the available information helps the project manager to determine whether the information is relevant or not. It is very impressing to see that a majority of 92% respondents agreed on scrutiny of the information by a project manager. This study concludes that an effective project manager should an effective project manager should scrutinize the available information before making any decision in a project environment.

Statement 25: Makes decisions based on relevant information. In the project environment project managers tend to make decisions haphazardly to avoid loss of time that may hinder project progress and project success. An informed decision should always be backed up by research and documentation.

Response: A project manager needs to have information to work with in order to look up at different alternatives and make up an informed decision. The response to this statement is given below by Figure 5.30 and Table 5.25.

Figure 5.30: Makes decisions based on relevant information



Source: Author's own construction

Table 5.25: Makes decisions based on relevant information

R	FR	%	Cum. %
D	2	4.00	4.00
N	3	6.00	10.00
A	27	54.00	64.00
AS	18	36.00	100.00
TOTAL	50	100.00	

Missing cases: 0

Source: Author's own construction

The results shown by Figure 5.30 and Table 2.25 illustrates that 90% of the respondents that are at majority agreed that an effective project manager should make up crucial decisions based on the relevant information, whereas 6% stayed neutral while 4% disagreed. It may sometimes take long to gather information but it is important that information be available. About 90% of respondents which are a majority agreed, this study can safely conclude that an effective project manager should make up a decision based on the relevant information at hand before making any crucial decision.

5.4 SECTION C – IDENTIFY CHARACTERISTICS OF AN EFFECTIVE PROJECT MANAGER.

5.4.1 List 5 things that project managers are doing well in order for you to work efficiently.

Things that a project manager do that enables project stakeholders to perform their duties could be the competencies that a project manager needs to have in order to get the best out the project team. Therefore it was important for the researcher to determine at least five things from the respondents that project managers are doing well in order for project stakeholders/team to work efficiently. The 98% of the respondents replied on this question while 2% of the respondents left this question blank. The various responses that couldn't lead to a certain pattern were received from the respondents. However there were few things they mentioned that were noticeable such as communicate effectively and clearly, actively listens, creates good working relations, has an ability to resolve conflicts, provide required solutions, encourages a team work, always try to reach the amicable solution, resolve the conflicts within projects stakeholders, follow the organizational ethics and governance, provide constant feedback, shows honesty and integrity, inspire project team members, shows respect, take necessary decisions when required to do so, share from the beginning project objectives and vision, show sensitivity, kindness and sympathy

5.4.2 Lists 5 things that you think project managers are failing to do.

Once one knows what a project manager is failing to do can surely advise what a project manager should do to correct which is wrong. Therefore the reason for asking this question was to find out at least five things that the respondents think project managers are failing to do. All the respondents replied on this question with various responses that couldn't lead to a certain pattern. However there were few things they mentioned that were noticeable such as time management, proper planning, manage the project budget, to understand technical drawings, fully engage stakeholders, managing multiple large complex construction projects, project managers don't visit site as they should, resource management, identify all the risk associated with the project, ensuring that contractors on site

fully adhere to the safety measures, fail to take decision on time, processing contractor claims on time, delegating duties, procrastinate in doing their project related work such as documentation, apply the technical (hard) skills, fail to identify good and poor quality, understand engineering contract, Successfully manage a construction project, Responding quickly to issues affecting construction team.

5.4.3 Lists 5 things that you would like to see project managers doing.

This question was meant to allow the respondents to fully express themselves in telling out what things they would like to see project managers doing. By doing so they would give out competencies they would like project managers to have. For this question 100% of respondents replied with various responses that couldn't lead to a certain pattern. However there were few things they mentioned that were noticeable such as doing too many site visits., make up a decision immediately on site without delays, properly manage the project budget, properly manage the project time, motivate a project team to perform, estimate the time it would take to finish up a project, avoiding project schedule overruns, effectively manage conflict., effectively manage stakeholders., establishing a proper project leadership, to fully identify all the risk associated with the project., quick in processing payments especially contractor payments., learn from previous mistake and don't repeat them to new projects., always wear a PPE when visiting a site., motivate a project team to perform., learn to manage different projects at the sometimes

5.5 SUMMARY

The feedback of the respondents regarding the survey that evaluate core competencies required by project managers to effectively execute a construction project around the Western Cape was illustrated in the form of graphs and tables, analyzed and discussed. The data received from the responses answered the research questions. Some of the findings that have emerged from the data are in agreement with the literature review covered by chapter 2 and chapter 3. The next chapter provides the summary of the research findings, conclusion and recommendations.

CHAPTER 6
SUMMARY OF RESEARCH FINDINGS, CONCLUSIONS AND RECOMMENDATIONS.

6.1 INTRODUCTION

The purpose of the research was to evaluate core competencies required by project managers to effectively execute a construction project. Construction projects are deemed to be complex due to the uncertainties involved in such projects. To achieve construction project success a project has to be completed within cost, time and quality standards or performance. To attain success has always been difficult due to the lack of skills and competencies required by construction project managers as a result construction projects are poorly managed. It is therefore important that project manager's competencies be determined. This chapter presents the summary of the previous chapters' objectives, the findings found in chapter five in relation with the survey are discussed and recommendations are made. The conclusion of the entire study which includes the required competencies of a project manager is provided and the further study recommendations are stated.

6.2 SUMMARY OF CHAPTERS OBJECTIVES

The concepts were defined in chapter 1 and the necessity for this research to be carried out has been specified under the research objectives. With the assistance of the literature review provided in chapter 1, a research gap was identified thereafter a problem statement was structured. After the problem statement was structured research objectives, research questions, research methodology and ethical consideration followed sequentially. The research questions were structured such that they direct the study and form the main part the survey questionnaires. The empirical study which consists of research design, target population, sampling frames, sampling and sample size and data analysis were identified and discussed.

Chapter two provided a background and holistic view of construction projects by discussing the construction projects in detail both globally and in South Africa.

The discussion highlights projects and its life cycle at large, construction projects, construction project management, construction project failure causes, project challenges faced by South African construction industry. The chapter starts by pointing out the role of construction industry generally and its contribution to the livelihood of South African community in terms of employment. A distinction between types of constructions is tabulated. The causes of schedule and cost overruns in construction projects globally are highlighted. This chapter concludes by highlighting a number of construction projects that have experienced cost and time overruns including the 2010 World Cup in South Africa due to poor management of construction projects.

Chapter three presented the literature review that has clearly displayed the importance of skills that a project manager is ought to have in order to successfully execute a construction project in fact any project. This chapter has discussed both the hard (technical) and soft (interpersonal) skills required by a project manager. Project Manger's hard skills discussed in this chapter include project risk management (RM), project scope management and project cost management. On the soft skills the leadership, communication, conflict management, emotional intelligence, problem solving and decision making, negotiation, team building and influence were discussed. However literature in this chapter has also revealed that it is crucial that a project manager possess both of these skills. The researcher has found it important to distinguish between project management success and project success. Therefore this chapter concludes by detailing a clear distinction between the two concepts.

Chapter four served as a synopsis of the research methodology adopted for this study. It dealt with the research design and methodology which was used to conduct the research. It included the research design; theoretical aspect of research methodology; research strategy; target population; population validity, sampling methods; sample size, methods of data collection; and ethical consideration. This chapter concludes by stating all the assumptions related to this study.

Chapter five concentrated on the feedback of the respondents regarding the survey that evaluate core competencies required by project managers to effectively execute a construction project around the Western Cape. The responses are illustrated in the form of graphs and tables, analyzed and discussed. The data received from the responses answered the research questions. Some of the findings that have emerged from the data are in agreement with the literature review covered by chapter 2 and chapter 3. This chapter concludes by point out things that respondents would like to see project managers do in order to effectively manage construction projects.

6.3. RESEARCH FINDINGS DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

6.3.1 Leadership Competency

The findings discussed in chapter five suggested that it is vital for a project manager to possess leadership competencies for the benefit of a project and those involved into it. Project Manager's leadership styles, conduct and attitudes are very important due to their everyday activities that impact the performance of project team members and project success. For a project manager to deal with difficult problems during the project life cycle he/she has to apply the leadership skills. It can be concluded that a project manager should ensure effective working relationships with colleagues inspire the project team to believe in the importance of the work they do, influences the project team to work without any pressure, be able to share the responsibility for the project successes, show trust and reliability to the project members.

Recommendations

It is important that a project manager as a leader understands what good characteristics a project team should have and how a project team works. Once a project manager has that understanding he/she would be able to utilize the project team to its best. However the leadership style chosen by a project manager to lead a project has an influence in the performance of the project team and project success as well. During the project life cycle it is not uncommon to find project

team deviating from the main objective of the project. Therefore it is recommended that in order for a project manager to be an effective leader that can lead construction project successfully should be able to provide a clear vision and direction of the project. This is because the main focus of the leadership role is to provide a clear vision and direction to project stakeholders or project. Additionally project managers need to have qualities of leadership such as emotional resilience and self-awareness.

When a project manager leads effectively the project teams identifies it and learns from it. Once a project manager lacks the leadership skills he/she may fail to overcome challenges that arise in a project.

6.3.2 Communication Competency

A project manager is required to communicate throughout the project life cycle coordinating all the activities involved. Therefore a degree at which a project manager performs effectively the role of communication is crucial for the success of a project and for a project manager as well. This has been confirmed by the majority of responses in the findings of chapter five. However poor project manager's communication skill can bring problems to a small project team that works well together therefore lead a construction project to failure. It can be concluded that for a project manager to be effective in communication he/she should be able to communicate project objectives to the project team from the onset and speaks such that a project team gets encouraged to efficiently perform the project tasks, to provide information via communication channels such as emails, documents, memos, proposals and presentations. The project manager should be able to listen actively, provide a feedback, and ensure a good record keeping and forms up a clear and concise written communication.

Recommendations

In the construction industry poor communication can lead to conflicts, time overruns and cost overruns and probably to project failure as well. Poor communication is a main problem that is faced by construction industries and projects

throughout the world and attaining successful communication is still a challenge. Communication can only be successful once the sender and the receiver comprehend the same information. Therefore in order for a project manager to be effective in communication it is recommended that he/she establish management of project communication which includes planning of information, collection of information, distribution of information, storage of the information, control of information and the disposition of information. Project managers should pursue to exercise good leadership that would identify an opening for building a team. Additionally a project manager should be open and transparent in terms of communication so to build up trust and lasting relationships with project team members/stakeholders.

6.3.3 Problem Solving Competency

There is no easy way of solving problems in construction projects. However it is essential that a project manager solve problems during the project life cycle for the sake of project success. The findings in chapter five suggests that in order for a project manager to be effective in solving a problem he/she should have an ability to identify a problem, seeks best solutions when dealing with problems, exhibits creativity in problem solving, brings together information related to the problem, engages others and processes during problem solutions, responds quickly to arising problems, responds quickly to arising problems and always try to reach amicable solutions.

Recommendations

During project life cycle especially on execution phase problems, challenges and difficulties are bound to happen. The more complex a project is, the more is the likelihood of problems occurring. In some instances when a project manager manages multiple construction projects problems have high possibility of taking place. The types of problems that are likely to occur include community conflicts, political differences, lack of finance, lack of resources, delays etc. All of these may hinder the progress of a project. Therefore it is recommended that a project manager have problem solving skills techniques and strategies that would assist

a project manager to breakdown problems into smaller chunks that can be easily solved. Furthermore a construction project manager must be able to foresee problems that are likely to occur in a project and instantly determine possible solutions before problems can occur.

6.3.4 Decision Making Competency

In the project environment a project manager is required to make up critical decisions more frequently. Right decisions made at wrong time can lead to project failure and also wrong decisions made in a right time can lead to project failure. It is therefore very important that a project manager be highly skilled on decision making. Findings in chapter five suggest that in order for a project manager to be effective he/she should be able to bring up sound decisions while representing integrity, follows up a decision-making process, scrutinizes available information and makes up decisions based on relevant information.

Recommendations

It is recommended that a project manager follows the decision making process when making up a decision. However a project manager needs to be spontaneous and think very quickly when it comes to decision making in the project environment because time is very important for project success. Success of a project is measured through cost, time and quality. Therefore a delay in decision making could lead to schedule overruns and cost overruns. Other qualities that an effective project manager towards decision making involve influencing of the project team.

6.4 CONCLUSION

The literature review conducted in this study clearly revealed that poor management of construction projects is not only in South Africa but it’s a global challenge. Furthermore, construction projects are complex with associated risks and normally lead to cost and schedule overruns when poorly managed. Therefore the purpose of this study was to determine competencies that a project manager requires in order to effectively execute a construction project. The study points out that for an effective project manager to successfully manage construction

projects requires to have high strength on leadership competency to provide leadership, communication competency to direct a way forward, problem solving competency to provide feasible solutions and decision making competency so to be decisive on crucial matters.

6.4.1 Further Study Recommendations

- Construction projects are divided into different sectors such as electrical, civil, building etc, therefore a further study is vital for determining competencies of a project manager for a particular sector.
- A further study that seeks to determine in each phase of a construction project (initial, planning, execution and closing) early signs that indicate a possibility of a project manager failing to effectively execute the entire project.

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APPENDECIS

QUESTIONNAIRE

Evaluation of core competencies required by project managers to effectively execute a construction project.
This is an academic exercise and participation is voluntary, no one is compelled to participate in this survey. Please do not put your name anywhere on the document, you are free to discontinue in the middle of the survey if you are not happy / satisfied. No information will be passed on to any authority and your identity is protected and the information is confidential. Thank you for participating in this voluntary exercise.

SECTION A **BIOGRAPHY**

Please cross the applicable boxes

1. **Indicate your position in the organisation you work.**

Administrators	**Technicians**	**Support staff**	**Other**

2. **If other specify explain your circumstances**

……

3. **What is the level of your experience in project construction/ execution?**

0-5 years	**6-10 years**	**11-15 years**	**16+ years**

4. **What is your level of education?**

Matric Certificate	National Diploma	Degree	Other-

5. **If other please specify below**

……

6. **Are you involved in project progress meetings at your station?**

Not at all	Weekly	As when needed	Other

7. **If other please specify below**

……

8. **Does your organisation have a hierarchical structure, state what type of structure?**

Tall structure	**Flat structure**	**Matrix**	**No reporting system**
Tall structure - organization with many levels of hierarchy and mangers with small teams.			
Flat structure - organization with few or no levels of middle management between operation level and executive level			
Matrix structure – Project manager and functional manager works together.			

9. **If no reporting system, specify**

……

……

SECTION B

This section measures [ranks] the opinion / attitudes and or perceptions that the respondents. The ranking is rated from 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree.

	WHAT MAKES UP AN EFFECTIVE PROJECT MANAGER?	Disagree strongly	Disagree	Neutral/not sure	Agree	Agree Strongly
10.Leadership Competency: Provides leadership.						
1	Upholds effective working relationships with colleagues	**1**	**2**	**3**	**4**	**5**
2	Influences others.	**1**	**2**	**3**	**4**	**5**
3	Provides vision.	**1**	**2**	**3**	**4**	**5**
4	Persuades others.	**1**	**2**	**3**	**4**	**5**
5	Inspires others.	**1**	**2**	**3**	**4**	**5**
6	Provides trust and reliability.	**1**	**2**	**3**	**4**	**5**
7	Shares responsibility for successes.	**1**	**2**	**3**	**4**	**5**
11. Communication Competency: Directs a way forward.						
8	Effectively communicates project objectives.	**1**	**2**	**3**	**4**	**5**
9	Speaks to encourage team members to perform tasks efficiently.	**1**	**2**	**3**	**4**	**5**
10	Provides information through emails, documents, memos, reports, proposal and presentation.	**1**	**2**	**3**	**4**	**5**
11	Communicates work progress.	**1**	**2**	**3**	**4**	**5**
12	Forms up a clear and concise written communication.	**1**	**2**	**3**	**4**	**5**
13	Actively listens and provide a feedback.	**1**	**2**	**3**	**4**	**5**
14	Provides a good record keeping.	**1**	**2**	**3**	**4**	**5**
12.Problem Solving: Provides solutions.						
15	Has an ability to identify a problem .	**1**	**2**	**3**	**4**	**5**
16	Seeks for best solutions.	**1**	**2**	**3**	**4**	**5**
17	Exhibits creativity in problem solving.	**1**	**2**	**3**	**4**	**5**
18	Brings together information related to the problem.	**1**	**2**	**3**	**4**	**5**
19	Engages others and processes during problem solutions.	**1**	**2**	**3**	**4**	**5**
20	Responds quickly to arising problems.	**1**	**2**	**3**	**4**	**5**
21	Tries to reach amicable solutions.	**1**	**2**	**3**	**4**	**5**
13.Decision Making Competency: Decisive on crucial matters.						
22	Brings up sound decisions while representing integrity.	**1**	**2**	**3**	**4**	**5**
23	Follows up a decision-making process	**1**	**2**	**3**	**4**	**5**
24	Scrutinizes available information,	**1**	**2**	**3**	**4**	**5**
25	Makes decisions based on relevant information	**1**	**2**	**3**	**4**	**5**

SECTION C

14. List 5 things that project managers are doing well in order for you to work efficiently.

1
2
3
4
5

15. Lists 5 things that you think project managers are failing to do.

1
2
3
4
5

16. Lists 5 things that you would like to see project managers doing?

1
2
3
4
5

THANK YOU FOR PARTICIPATING