Cape Peninsula
University of Technology

THE IMPACT OF SOFT SKILLS AS A PANACEA FOR PROJECT FAILURE IN ICT PROJECTS AT SELECTED TELECOM COMPANIES.

by

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DECLARATION

I, Masande Dlulisa, declare that the contents of this dissertation/thesis represent my own unaided work, and that the dissertation/thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

Signed	**Date**

ABSTRACT

The purpose of the research was to empirically explore the explanations for project failure in ICT projects that are implemented by qualified Engineers at selected Telecom companies. The study was designed to identify the role played by hard (technical) skills in project management as well as the benefits of focusing on soft skills on the execution of projects. Some of the literature presented that through the management and application of the projects soft skills by project managers may actually be a recipe for the project success. Hence, an important underpinning of this study was that the project manager can enhance project success (or reduce the impact of failure) by identifying and prioritising stakeholders, develop and implement strategies for engaging and communicating with them. The participants were drawn from program managers, project managers, project administrators, Engineers and technicians that are working in ICT projects from different Telecommunication companies. The questionnaire was emailed individually by the researcher to directly to the selected potential respondents. Two key factors emerged from the survey questionnaire, Firstly, the need for soft skills to be incorporated in project management curriculum and education programs, and secondly, that successful projects are delivered through the management and application of the projects soft skills.

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PRELUDE TO THE STUDY WITH LITERATURE REVIEW LEADING TO STUDY GAP AND RESEARCH ELEMENTS

1. INTRODUCTION

The project execution failure rate in highly technical projects is a universal phenomenon common amongst different engineering field (Ofori 2013:14). Of particular interest is the conditions of employment into project management positions in the engineering fields. Almost without exception all the senior project managers (Burke 2007:106), site managers, and senior personnel in these projects are people known to be highly qualified and highly experienced. The mystery remains as to why there would be such a high failure rate in a discipline managed by the best? This study seeks to explore the myth that getting an engineering or technical qualification is a pre-requisite for the successful management of a project. Statistics today indicate that between 47% - 69% of engineering projects are not successfully managed to completion (Anantatmula, 2010:14), even though the execution process is planned and managed by appropriately qualified people. May be it may be necessary to define the project. A project, as defined by Wysocki, Beck and Crane (2011:45) is a sequence of unique, complex, and connected activities having one goal or purpose that must be completed by a specific time, within budget and according to specification. A project as a temporary undertaking produces a new unique product or service where the beginning and the ending of the endeavour is determined by time, quality, budget and scope (Dinsmore, 2005:35).

1.2 BACKGROUND

Project management success should be differentiated from project success as these two terms, though too often interchangeably used, do not refer to the same thing. Project success is defined as the ability of the completed project (Rao, 2010:4) to meet the objectives for which the project was undertaken. Phillips (2003:354) concurs and defines the success of a project as being that of fulfilling the purpose for which the project was undertaken. A traditional example would be the construction of a house for the purposes of housing university students, and although the project will be completed within specifications, the students may refuse to use the building for other reasons. This should be contrasted with the construction of the same structure and failing to complete the

structure within the iron triangle expectations. By definition therefore the successful execution (Laphi 2013:2) relates to the ability of the project manager and the team to deliver the building within budget, quality (technical specifications) and time. It is also accepted that there are different measures or evaluations of what constitutes successful project management (PMI (2010:27-35). The different definitions of project failure are stated in table 2.1 below.

Table 1.1 Definitions of project execution failure

DEFINITION
The inability of a project execution process to meet the expectations in terms of the stipulated time, cost, technical specifications and the totality of the deliverables.
Underperformance of a project team to live up to expectations of the deliverables agreed upon with the customer within the iron triangle or performance square root.
When the project practitioners do not meet the agreed on project deliverables within schedule and agreed on expectations.

Source: own construction

The varying stakeholder interests may bring the variation on the definition of what successful project execution is, but essentially they all belong to the same. The critical aspect of this study is essentially why project management fails in the high technical undertakings, and a variety of reasons have been identified in literature.

1.2.1 What is project management failure

Through extensive research numerous writings have come up with measurements and evaluation methods used to determine the success or failure of a project execution process. Though different the measures may be, this helps define, at least to a degree what project management failure is. There can be no proper definition to be made without properly defining what a project is, and thus what project management should be. A project is defined as a temporary undertaking (Adnan, Hashim, Marhani & Johari 2013:401) with clearly defined objectives and in a fit for purpose life changing product. A

project has clearly defined deliverables which are measurable and can thus be quantifiable within the agreed on project specifics. The Project Management Institute, (2012:2) defines a project as a unique undertaking that is not repeatable and is limited by time, budget and quality (the iron triangle) as agreed on deliverables. From this definition it can then be understandable that project execution / management is a collection of activities performed to accomplish set objectives (Lipovetsky *at el*., 1997:97-106). Numerous other definitions of project management are listed in table 2.2 below.

Table 1.2 Definitions of project management

SOURCE	DEFINITION
Chatfield (2007:9)	Is the discipline involving the planning, preparation, organising, and controlling use of materials necessary for the completion of an identified project.
Nokes, (2007:25)	Is the discipline which includes the initiating, planning, executing, monitoring, controlling, and finalising the processes in undertaking to achieve objectives of a project.
Dinsmore, (2005:35)	Overseeing the process from the beginning to the end which results in the production of a new project set with its own objectives.
Cattani, et al (2011:4)	The temporary nature of projects stands in contrast with business as usual (or operations),[3] which are repetitive, permanent, or semi-permanent functional activities to produce products or services.

Source: own construction

The activities or the process involves project planning, monitoring, and controlling. Successful project management means the ability to complete a project in time, within budget and within specifications. The critical path method (CPM) is a quantitative technique used in the effective management of a project process (Babu & Suresh, 1994:320-327). The ten knowledge management areas are generally accepted as

standard pillars on the effective project management process, these are listed and explained in table 1.3 below.

Table 1.3 Project processes explained

Scope management	The scope of a project is the sum total of the deliverables, generally put in a checklist identifying all things / tasks to be performed to complete the project. This is an element of the project square root which involves the scope [deliverables, the time it will take, specifications as required by the customer, and the cost of putting the project together.
Quality management	Quality would be meeting the technical specifications, some of which a set by “laws” of the land, whereas some are merely preferences by the sponsor. These have to be met / done according to expectations as per the agreement with the scope of work.
Time management	One distinguishing factor about a project is that it has to indicate or have a given start date and end (delivery) date. Failure to meet this may result is cost overruns, inconveniencing of the customer, and this constitutes project failure.
Cost management	Feasibility studies and proforma expenses are made on the basis on which funding is made. There is the serious risk of under-budgeting or over-budgeting, let alone the likelihood of budgeting correctly but b=not calculating correctly other possible risks. Cost overruns are considered as part of project failure.
Risk management	Any unforeseen or likely “happening” that may “derail” the planned process resulting in undesirable impact is a risk. There is need therefore to identify all likely risks and make provisional plans to either reduce the impact or remove them altogether. Chief amongst these [excluding the iron triangle or square root] may be labour unrest, natural disruptions or purely human failure to plan well.

Human resources management	The single element of all operations that doesn't remain constant is the human element. Projects are planned by people, implemented by people, and implemented for people. Management of the human resource element during the project execution process is of primary importance as this may constitute a risk if not well managed.
Procurement management	Because projects are specific by their nature, procurement becomes a critical element of project execution. The correct material is needed, at the budgeted prices, delivered in time to avoid time delays, and provided in proper amounts to avoid over supply (waste of money) or under supply resulting in shortage which may impact on the quality expectations or task implementation delays whilst the next supply is awaited for – this is a critical risk factor.
Communication management	The project is divided into different tasks headed by different people – work break down structures (WBSs), and the stakeholders – those with interests in the project, all these should be kept together through communication. Communication needs to be planned and reviewed regularly, failure to may cause preventable risks, namely; other stakeholders not pulling their weight, last minute disagreements, delayed supplies, etc.
Stakeholder management	Stakeholders are those who have interest in the project, and these may be internal or external. These need to be managed adequately according to their importance, needs, and possible impact they may have on the project processes. Failure to manage the stakeholders may result in dysfunctional conflict in the project processes causing unnecessary negative impact on the processes.

Source: Own construction

From the definitions preceding, project management (Packendorff, 1995:319-333) has generic project management knowledge which can be used by all types of project processes. The success of project execution is based on internal measures of the

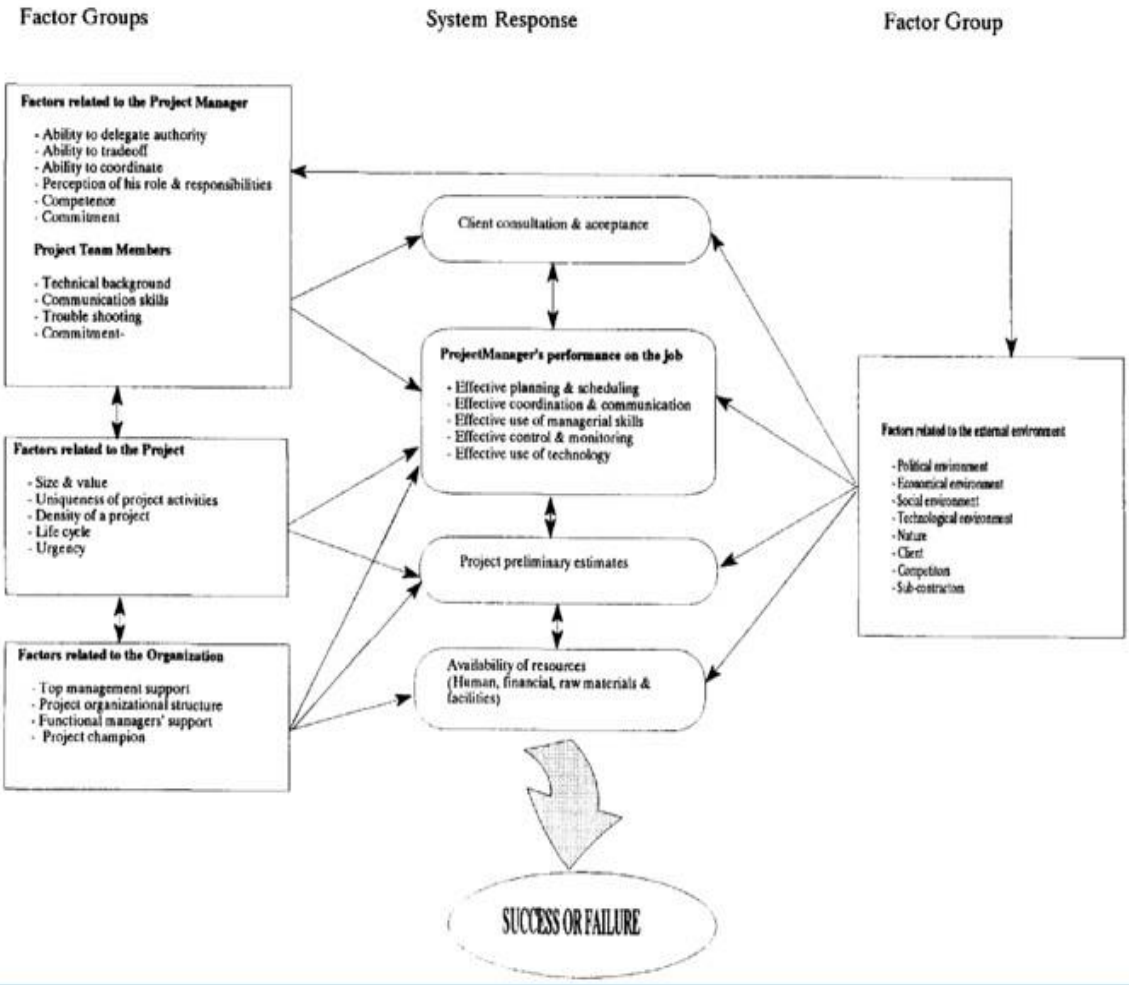
technical and operational goals if they are met within the budget (Sewchurran, 2008:53). The failure of the project execution process (Hodgson, 2002:57) will be primarily thought to be because of the improperly trained project managers presiding over inadequately defined tasks to be performed. Meaning that successful project management requires proper planning with the square root in mind (time, quality, budget and scope), in order for the management to be successful. Failure to meet these expectations means therefore that project management has not been successful (Munns & Bjeirmi,1996:81-87). By definition therefore, project failure is when the product has not been delivered in time, within the specified technical details, within budget and with the full scope complied with.

1.2.3 Critical success factors of a project

Effective project management should clearly define objectives and goals, as well as agreement between the clients and project manager as to what the deliverables should be (Sewchurran, 2008:78). The next critical aspect of the study therefore should focus on the critical success factors of a project management exercise.

Figure 1.1 Critical success / failure factors in projects

Critical success/failure factors in projects: W Belassi and O I Tukel



Source; Belassi and Tukel 1996:141-151

The critical success factors model above ironically speaks little about technical skills, only mentioning them as a requirement for the team, not the project leader. There is a focus on the importance of planning, scheduling and communication which are the generic functions of a manager. With the increase in management by projects in the industry, the success factors become critical especially with the high failure rate of engineering projects (Kalinova, 2008:29). The development and running of the construction projects is always very challenging from the vantage point of a system that requires different parties to engage. Unfortunately the onus to deliver rests with the project manager who should

deliver within a given time known as time performance (Le-Hoai, Lee & Nguyen, 2013:1-8). There is an increasing call for the construction industry to be an agent of change to develop and advance the world. Mouch, Rotimi & Ramachandra 2011:89) noted that, construction projects are reflected with broader perceptions as well as task aims demanding more widespread efforts.

1.2.4 The quality of engineering graduates

A lot of preparation goes into the preparation of an engineering graduate, specifically because of the impact products may have on marketability and the safety of citizens. The construction industry (one of the oldest project programmes) has advanced in knowledge providing with the buildings inhabited by millions. Merriam Webster (2016) defines construction as the process followed when putting up buildings (projects), this differs from manufacturing because manufacturing is a continuous mass production of the same product without a defined buyer. This is a critical industry on its own and comprises of an average of 12% of the GDP (Gross Domestic Product) of most of the developed countries (Halpin and Senior, 2010:9). The buildings cannot be moved nor can they be easily changed after the construction process. The process is lengthy and involves among other things the process of planning, designing, and financing, project execution until project closeout phase.

1.2.5 Syllabus for construction engineering

The quality of engineering graduates can only be understood in terms of their elaborate syllabi which qualifies them to manage the engineering projects. This should explain why engineering (e.g construction projects) are managed by qualified engineers in the disciplines relating to the projects because they have the technical knowhow. Generic syllabi taken from one of the local faculties of a university of technology in the Western Cape are illustrated below in table 2.4 below.

Table 1.4 Generic syllabi for engineering courses at an UOT in the Western Cape

CIVIL ENGINEERING SYLLABUS

Hydraulic Structures Civil Eng Syllabus	Civil Eng. Reference Final Year Projects Topic
Project Presentations	Civil Eng. Jobs
Civil Eng. Magazines	Online Civil Contents
Cross Drainage Works	Civil Engineering Articles
Soil Mechanics I	Engineering Economics
Technical Report Skill Technical Report Writing Skills	Surveying & Leveling II
Differential Equations	Strength of materials
Engineering Geology Engineering Geology	Building Construction
Steel Structures Steel Structures	Hydraulics
Reinforced Concrete Reinforced Concrete	Transportation Eng. Hydrology Lecture Notes
Past Papers	Project Planning Rules
Steel Structure Lectures	Civil Engineering Ebooks

ENGINEERING MECHANICS

▪Concept of measurement of mass,	Concept of measurement of force,
Fundamental & Derived units,	Conversion of units with accuracy of results
▪ General Principles of static's,	Vector addition, subtraction and products,
Linear & non linear force systems,	Laws of triangle, parallelogram and polygon of forces,
Types of Beams, supports and loads,	Axial forces, shear forces and bending diagrams,
Friction on flat surfaces	Geometrical properties of plane areas

▪Work, energy, power and, impulse	Conservation of momentum and energy
▪Rectilinear and curvilinear motions,	Tangential and normal components of Acceleration,
Simple harmonic motion	

ENGINEERING DRAWING ENGINEERING MATERIALS

Drawing Instrument & their use.	Types of lines & letters.
Scales	Dimensions & their Types.
Planning of a Sheet.	Types of Engineering Drawings.

PROJECTIONS:

Concept of Projection.	Types of Projections,
Orthographic Projection.	1st Angle & 3rd Angle Projection
Orthographic Projection of Points,	Simple lines, simple planes & simple solids.
Three Views of an object.	Sectional Views.
Isometric Views from orthographic Views.	Free Sketches of building drawings.
Building Drawings.	▪Building symbols.
Types of building drawings,	Working drawing & completion drawing.
INTRODUCTION TO BRIDGE DRAWINGS.	Engineering Drawing
Drawing Exercises:	Planning of sheet & practicing lines.
▪Orthographic Projections of given model,	Sectional Views.
Steel Structure Connections	Plan Preparation
Elevation & Section of Single story buildings.	Isometric & other three dimensional View
Free Hand Sketches.	

COMPUTER APPLICATIONS IN CIVIL ENGG. & COMMUNICATIONS

PART – A: COMPUTER APPLICATIONS

1.Introduction to Computer Hardware	2.Introduction to Operating Systems
3.Introduction to Word Processors	4.Introduction to Spread Sheets
5.Introduction to Presentation Software	

PART – B: COMMUNICATION SKILLS

Brain Storming Process	2.Analysis of Topic
3.Audience Analysis	4.Sequencing the Presentation Material
5.Detailing of Material	6.Preparing Conclusion
7.Question & Answer Sessions	8.Preparation of Presentation in Software
9.Presentation to Audience	10.Participating in seminars and interviews
11.Presenting Conference Papers	

APPLIED LINEAR ALGEBRA

Vector Algebra:	Matrix Algebra:	Determinants:
Linear system of equations:	Linear Transformations:	Eigenvalues and Eigenvectors:

ELECTRICAL TECHNOLOGY

	▪ Power Systems layout,
▪ Electrical Elements and circuits	▪ Electrical current, voltage and power
Ohm’s law, inductance and capacitance,	Kirchoffs laws - voltage and current methods.
▪ Principle of House wiring	Diode Transistor circuit.
▪ Electrical experimental design	

MECHANICS OF SOLIDS

Moment area and conjugate beam methods	Simple stress and strain
Types of stresses and strains	Load extension diagram for different materials
Hooke's law, Modulus of elasticity	Lateral and volumetric strain. Poisson's ratio
Temperature stresses and compound bars	Theory of torsion of solid and hollow circular shafts
Advanced shear force and bending	Relationship between Load, Shear and Moment.
Theory of simple bending,	Neutral Axis and Resisting moments
Shear stresses in mono-symmetric beams	Deflection of beams by double integration,

MECHANICS OF SOLIDS LAB

	Hook's law on force and stretching,
Determination of torsion and deflection,	Measurement of forces on supports of beam,
Determination of shear forces in beams,	Determination of bending moments in beams,
Measurement of deflections in statical beams,	Measurement of strain in a bar
Bend test steel bar;	Yield/tensile strength of steel bar;

COMPUTER PROGRAMMING FOR CIVIL ENGINEERS

▪ Programming & Visual Basic	▪ Visual Basic Code Components
▪ Data Types	▪ Variables
▪ Control Structures	▪ Procedures
▪ Arrays	▪ File I/O operations

LAB

	▪ Visual Basic Code Components
▪ Data Types (program examples)	▪ Variables (program examples)
▪ Control Structures (program examples)	▪ Procedures (program examples)
▪ Arrays (program examples)	▪ File I/O operations (program examples)
▪ Programming for Civil Engineering	

ENGINEERING MATERIALS

Quarrying and dressing of stone.	Cements, Ceramics, and Refractories:
Manufacture and application of lime,	Mortars and concrete,
Pozzolanic material,	Testing and Protecting of building stone.
Timbers variaties and preservation	laminated materials.

LAB 1.GRADATION OF COARSE AGGREGATE

2.Gradation of fine aggregate	3.Fineness of cement
4.Setting time	▪ Normal Consistency
▪ Initial Setting time	▪ Final Setting time
5.Tensile Strength of Briquette	6.Compressive strength of mortar cube
7.Soundness test of Cement	8.Density of Cement
9.Slump Test	

CALCULUS SOIL MECHANICS

2.Differential Calculus	1.Single Variable Calculus:
4.Multivariate Calculus:	3.Integral Calculus:

ENGINEERING GEOLOGY

1.Introduction to Geology	2.Geology for Civil Engineering Projects

3.Rocks formation and classification	4.Weather and erosion:
5.Discontinuity classification:	6.Description of Rock masses
7.Geological classification	8.Classification of Durability of Rocks
9.Brief Introduction to structural Geology:	10.Role of geology in selection of sites for dams,

MECHANICS OF SOLIDS 2

	1.Analysis of stresses and strains
2.Mohr's circle for stresses and strains	3.Relationship between elastic constants
4.Theories of Failure	5.Unsymmetrical Bending
6.Shear Stresses in mono-symmetric beams	7.Shear stress distribution in beams
8.Shear flow, shear center, and stresses	9.Thick and thin walled cylinders
10.Analysis of curved beams	11.Short eccentrically loaded columns
12.Core of a section	13.Rankine Gordon formula
14.Eccentrically Loaded Columns	15.Inelastic behavior of beams in flexure
16.Shape factor of a section.	

CONSTRUCTION ENGINEERING & GRAPHICS

1.Building Construction	2.Layout Techniques:
3.Masonry construction	4.Form work
5.Damp proofing in building,	6.Expansion joints and construction joints
7.Wood work in building construction	8.Other Engineering Projects.
9.Construction specification	10.Common defects in building construction

STRUCTURAL ANALYSIS

	1.introduction to structural analysis:
2.analysis of rigid jointed plane frames:	3.analysis of determinate plane trusses:
4.rotations and deflections:	5.arches:
6.influence lines for beams and girders.	7.travelling loads
8.cables and suspension bridges:	9.three moment equation

LABS

LABORATORY demonstrations	1.Demonstration of types of structures
2.Demonstrate the stability of structures	3.Determination of the horizontal thrust
4.Determination of deflections and rotations	5.Demonstration of influence line
6.Investigation of the buckling struts	7.Determination of shear cente

TOWN PLANNING & ARCHITECTURE

1.Architecture	2.Influences
3.Principles	4.Qualities ▪ Strength,
5.Factors	6.Use of Materials
7.Town Planning Definitions	8.Preliminary Studies ▪Study of natural resources
9.Land Use Patterns	10.Street Patterns
11.City Extensions	12.Urban Planning
Laboratory studies - practicals	1.Practical - study components of petrol engine.
2. Practical – study cooling system of engine.	3.Practical - study lubrication system of engine.
4.Practical - study ignition system of engine.	5.Practical - study the fuel system of engine.
6.Practical - study air-intake system of engine.	7.Practical - study 2-Stroke Reciprocating Engine.
8.Practical - study vapor compression system.	9.Practical - study components of refrigeration

10.Practical - study layout of boiler room.	11.Practical - study the boiler steam engine
12.Practical - study the steam Engine.	13.Practical - study the turbine steam.
14.Practical - study the condenser.	

DIFFERENTIAL EQUATIONS

	Ordinary Differential Equations:
Partial Differential Equations:	Fourier Series:
Periodic waveforms	Calculating a fourier series,

FLUID MECHANICS

	1. Introduction to fluid Mechanics
2.Physical Properties of Fluids:	3.Fluid Statics: ▪ Static pressure,
4.Fluid Kinematics:	5.Basic Equations: ▪ Continuity Equation,
6.Fluid Measurement:	7.Flow through Pipes: ▪ Laminar Flow
8.Flow through Open Channel	

SURVEYING & LEVELLING I

.Calculation of Areas and Volumes	2.Chain Surveying	3.Compass Surveying
Prismatic Compass& Surveyor compass	4.Plane Table Surveying	5.Leveling
6.Tacheometrical surveying	7.Traversing	8.Omitted Measurements

STRUCTURAL ANALYSIS II

1.Method of Consistent Deformation:	2.Moment Distribution Method
3.Plastic Analysis	4.Analysis of Arches

5.Influence Lines for Indeterminate Beams	

NUMERICAL ANALYSIS

1.Interpolation and extrapolation;	2.Numerical integration;
4.Direct solution of the system of linear equations;	5.Numerical solution of initial value problems;
6.Numerical solution of linear	

SOIL MECHANICS

1.Soil Formation	2.Physical Properties
3.Soil Classification Grain size classification,	4.Permeability and Seepage
5.Compaction ▪ Definition,	6. Compaction fundamentals,
7. Moisture density relationships,	8.Vertical stresses in soils
9.Soil Exploration	10.Introduction of related Software

LABS

1.Identification of Soil (Visual Manual Procedure)	2.Determination of Moisture content of soil
3.Determination of specific gravity of soil	4.Determination of liquid limit of soil
5.Grain-size analysis of soil	6.Determination of Plasticity Index of soil
7.Determination of shrinkage limit of soil	8.Classification of soil [AASHTO and USCS
9.Modified/Proctor Compaction Test	10.Constant Head Permeability test (Granular Soil)
11.Falling Head Permeability (Granular	12. Falling Head Permeability (Fine grained soils)

Above is the syllabus (not exhaustive) that is covered by a construction engineer and this is what they bring with to the project. Technically qualified in all respects with a good understanding of the construction industry in its entirety, the expectations of the employer are satisfied. Yet with these qualifications available, the project failure rate in construction engineering remains disturbingly high at 47% upwards (O'Farrell, 2010: 13). **This begs the question;**

Why would a project run by qualified and too often very experienced engineers fail?

1.2.6 Project management techniques and tools

Project management as a discipline has developed many other tools that are used to facilitate the execution of projects. Tools and techniques are the systems and methods used to facilitate the execution of projects (Jowah, 2015:1762-1774) besides, the methods or techniques that will be used by the gardener, will determine the effectiveness of the spade. Some of the tools used are, namely; Gantt chart, Logic network, PERT chart, PBS (Product Breakdown Structure) and WBS WORK Breakdown Structure), MS Project, CPM (Critical Path Method) to mention but a few. These are tabulated (table 2.5) below.

Table 1.5 Project Management Tools and Techniques

Gantt chart,	Used to show the scheduling of tasks according to days and weeks and how they are related to the other activities. The tool uses graphic representations indicating when a project starts and when it ends within the project. An important planning tool ideal for control of both costs, tasks, time and scope. The tool shows the actual days compared to the planned days and can be used for all activities in the project during execution.
Logic network,	
PERT chart,	PERT is a planning, controlling and monitoring tool used to identify the tasks needed to complete aspects of the project. PERT charts is used interchangeably with the Critical Path Method (CPM) charts, the

	computing of the task times is the only variation. The tool shows the sequence followed in the execution of the project showing clearly those that follow each other and those that can be down concurrently. A graphic representation called a "Project Network" or "CPM Diagram" is used to show the relationships between the tasks, time and milestones.
WBS WORK Breakdown Structure),	A work breakdown structure (WBS) is a tool used to indicate the deliverables in a project by dividing it into smaller related / specialised tasks. The WBS is a hierarchical splitting up of the scope of work to be done into manageable deliverables that will be assigned to the teams. It helps in both the breaking down of costs, time and tasks including the specialization of the deliverables.
CPM (Critical Path Method.	A process of sequencing tasks showing the most favourable outcome or path followed during the execution of the project. It involves the advanced and careful planning of complex projects showing what must occur with the estimated time to be taken for the execution.

Source: adopted from different literature by the author

Tools are equipment that is used to perform certain functions in the execution of some undertaking. There are numerous project tools that have come to be used commonly in business, but even though, the combination of high technology tools and qualified engineers has not solved the problem of project failures.

1.2.7 The one missing element in the education of an engineer

What seems to be critical in the whole structure is the human element, all technical knowledge (as indicated in the syllabi), seems to be in order. Therefore, during training the engineer is taught everything about materials, techniques, tools and systems, giving the engineer full understanding of the technical expectations. Evidently an engineer is well educated around these issues and no matter what we may say, they can workout solutions to the technical problems and issues. But one element is missing – projects are

done by people, through people and for people – the people element is not in the engineer's syllabus.

1.3 PROBLEM STATEMENT

Research studies indicate that there is a high failure rate amongst engineering projects, specifically the construction industry. An estimated 47% - 67% failure rate, and the same figures (if not slightly more) are recorded in IT projects with many of them recording untimely cancellation. Alternatively, there is a repeated unexplained delay in the completion of these construction projects, too often recording excessive cost overruns. Of particular interest is the fact that the project managers and the generality of the senior management involved in these construction companies are qualified and experienced engineers. Together with this, there is such technological development that most of the work which would take many days and weeks, can be done in hours using computer technology. With all these in favour of the chances of high project execution success rates, the project execution failure rate has remained high. This research seeks to identify the importance of the human element in all this, considering that all the other factors appear to be in place. Is it possible that the problem of the failure rates resides more in the relationship between technical qualification (hard skills) and people performance (soft skills)?

1.4 RESEARCH OBJECTIVES

Research objectives are the expectations of the researcher, what the researcher seeks to achieve when they set out to start the research. These are sometimes aligned to hypotheses as a statement of purpose in a research undertaking and they assist in determining what should be researched. The research objectives of this study are classified into two parts, namely; primary and secondary objectives

1.4.1 **Primary objectives;** the primary objectives would be the main or direct reason and expectation for the research.

- To identify why project execution by highly qualified and experienced engineers generally ends as a failed endeavour.

1.4.2 **Secondary objectives** – the secondary objectives are derived from the primary objective and seek to refine the primary objective.

- To identify the role played by hard skills (technical training) in project management success if any.
- To identify the benefit of focusing on soft skills and not hard skills on the execution of projects.
- To identify what may be necessary to be included in the training of an engineer to cut the project execution failure rate.
- To identify the impact of the human element in the execution of engineering projects to reduce the failure rate of engineering undertakings.\

1.5 RESEARCH QUESTION

The purpose of a research question is to help answer the problem statement, which is the gap to be studied. Jowah (2015:77) posits that research questions assist in giving direction to the study by pointing out what is supposed to be known. In this study, research question is classified into two types, namely; the main research question and the sub-questions. The sub-questions are merely an elaboration of the main question – main question broken down to finer questions to remove the likely misunderstanding of what the research question is trying to get to.

1.1.1 Main question

- Why does project execution have such a high failure rate when 92% of these engineering projects are run by qualified and experienced engineers?

1.1.2 Sub-questions

- What is the function of hard skills – technical skil;ls in the execution of an engineering project?
- Why should soft skills – relationship be necessary amongst people who know what they are employed to do?
- What, if any, is missing in the training of engineers which causes high project execution failure when these people have the technical skills?

- What is the role of human relations in a hard skills project that needs to be executed according the specifications?

1.6 RESEARCH METHODOLOGY

Research is scientific information gathering process with intentions to get answers to specified questions, concerns or sometimes of curiosity. For it to be scientific, it has to be objective, and objective means therefore that the processes used should be clear, well organised, systematic and the research can be repeated by other researchers. For that reason therefore, there should be a clearly defined process. This research entails the planning and establishing of a road map to be used or followed in the research process, this is the research design. The design essentially states what will be done during the research process. In this research the subject of interest will be identified, theoretical information gathered (literature review), study gap identified, the population identified, the research methods decided on, type and size of sample will be established, the methods to collect the data and the analysing of the data gathered. All this should be conducted in the context of the research methodology – how will this be done.

1.6.1 Target population

The population for the research will be the operatives, the people who are managed by the technical expertise. These will be required to identify what makes them work (get motivated) that would enable the projects to be done well, especially because it is known that the managers are qualified in construction management and related disciplines.

1.6.2 Sample and sampling

Five construction sites have been identified for the research (convenience sampling of the firms) because of their availability and closeness to the researcher. People will be randomly picked (every second employer) in the plant will be requested to fill in the questionnaire (research instrument).

1.6.3 DATA COLLECTION INSTRUMENT

A semi-structured questionnaire is constructed and will be used to collect data for the research. The questionnaire is divided into three (3) parts as follows;

SECTION A – Biography necessary to confirm the suitability of the respondents to participate in the research and indicating what they do.

SECTION B – Likert scale with rankings of up to 5 enabling the respondents to rank according to predetermined statements / hypotheses.

SECTION C – Open ended questions with provision for the respondents to say whatever they feel would be important or needs to be known about the performance of the project execution.

The instrument was constructed, pre-tested using six of members in the construction sites and amendments were made to the questionnaire. After reworking the questionnaire, the tool was sent to the university statistician who assisted and put the final touch on the instrument.

1.6.4 DATA COLLECTION METHOD

The researcher will personally distribute the questionnaires to the respondents and the respondents are expected to have a large response rate. All sections that may not be clear will be explained to all the respondents. This method is believed to be the most ideal as it reduces low response rates (up to 100% response has been recorded in other studies) given the size of the population under the survey.

1.6.5 DATA ANALYSIS

The questionnaires will be subjected to cleaning and editing before coding them for data capturing purposes. These (data) will be captured on to the Excel Spread sheet and frequency polygons, histograms, bar charts, pie charts, tables and graphs will be constructed to test for relationships of the variables under study. The illustrations will be interpreted and a report written from that.

1.7 ETHICS CONSIDERATION

To avoid allowing unscrupulous researchers, the ethics rules will be considered and implemented. All participants will have full explanation of what is going to be done, why there is this research, they will be informed of the importance of their participation in the

project. It will be stated unequivocally that no information will be given anyone concerning the individual contributions to the research. The staff will have to voluntarily contribute to the research as see fit to contribute to the survey.

SIGNIFICANCE OF THE RESEARCH

Time vs. quality and the end product that is produced at all levels has been a major field of research in the past decades and will probably continue to be a popular field in the future. It has become an integral part project management (TQM). This research will seek to assist with the determination of what is lacking in the management process of these high calibre engineering graduates.

Evidence suggests that a project management approach to tertiary institutions has over the last decade gained momentum. The adoption of a project management methodologies tools and techniques approach as an alternative to the management of the institution that is of a non-traditional single type project nature indicates a leaning towards innovative and progressive management practices. However, academic research reveals that evidence of the potential convergence and integration of such methodologies applicable to the running of the institution does not correspond to the high failure rate of the management of these projects – why?

However institutions continue to follow traditional linear business process models. This status quo presents a potential opportunity for institutions in the Southern African and emerging economies to consider the adoption of innovative business level strategies directed at generating significantly higher value outputs capable of running projects successfully.

1.8 CHAPTER CLASSIFICATION

The dissertation is divided into a total of 6 chapters, with each chapter focusing on specific issues that relate to the overall study. Below is a guide on what each chapter covers / discusses in the build up to the final findings of the research that has been undertaken here. Chapters 1, 2 and 3 major mostly on the theoretical / literature review, before discussing the methods for the research, the reporting on the findings and the summary.

CHAPTER ONE - Provides an introduction to the study, gives literature review and theoretical background to the study, establishes a study gap emanating in the problem statement, research objectives, research question, research design and methodology, population, the instrument, data collection, data analysis and ethical consideration.

CHAPTER TWO – discusses the tools and techniques as well as development of the project management subject and profession to date. Examples of large failed projects are discussed also.

CHAPTER THREE – discuss international models of effective management and what makes people perform. Hard and soft skills are contrasted and the effect of each is discussed extensively

CHAPTER FOUR – details the research design and research methodology used with description of the methods, population, sample frame and sampling technique, the instrument, data collection, data analysis and the reporting pattern for the findings.

CHAPTER FIVE – Results – data and interpretation therefore provided in question and answer format as structured in the questionnaire. Detailed information provided in explanation of the diagrams and relationships explained.

CHAPTER SIX– Summary of the findings, putting final interpretation to the findings and making conclusions, recommendations and limitations of the study. Tips for future studies end the thesis.

1.9 CHAPTER SUMMARY

The recipe to complex and complicated projects has yet to be found and there will probably be no single best solution as success depend on many factors that may shift project to project and from organisation to organisation. This does not mean researchers should stop about the success factors of complex and complicated projects. The research outlined that technical skills only are not enough to guarantee success in complex and complicated projects as project managers need to bring a couple of skills into account. The research study shows that dependent on the project management approach selected there are different success factors to be focused on by the project organization. He

believes that the probability of project success can be increased by consciously selecting a project management approach at the launch of a new project. The researcher's distinction between the prescriptive and adaptive approach represents extremes on a scale where any combination may be feasible in practice. The research recommend that the project management approach is discussed and decided at project start up and that relevant success factors are defined in accordance with the approach selected.

CHAPTER TWO

THE DEVELOPMENT OF PROJECT MANAGEMENT AS A PROFESSION AND THE CURRENT TOOLS AND TECHNIQUES IN USE.

2.1 INTRODUCTION

There is an unprecedented increase in management by projects in the industry, now commonly referred to in other literature as the *projectification* of operations (PMI, 2010:27-35). The general understanding is that there is something unique about the methods or styles used to manager project execution (Phillips, (2003:354) which the industry in general is keen to capitalise on. Admittedly this discipline has been there for thousands of years, only that it was never recognised as a discipline on its own. Even when it was recognised, it was exclusive, first to the construction industry, but eventually

to engineering undertakings. The field of study has increased and broadened exponentially to include any temporary undertaking with a clear start and end date with set objectives (Nokes, 2007:4). As a discipline, project management is about initiating, planning, executing, controlling, and closing (ending) the undertaking that was set out to be completed at a given time, at a given cost, at a given specification and within a specific scope. Project management is not business as usual because of these constraints under which the project execution is implemented, thus there are unique management systems required (Dinsmore, 2005:35). The process is unique in that similar projects may never be identical and therefore resulting on the differences between any two or more similar projects. Consequently different tools and techniques are required for the effective execution of a project compared to traditional management. The constraints common in project management are, namely; the deliverables as per the customer's expectations (scope), the quality of the end product (technical specifications, the period after which the product must be delivered and the budget (cost of executing the product). To facilitate this process, numerous tools and techniques have been developed by the practitioners.

2.2 DEFINING TOOLS AND TECHNIQUES

A tool is generally a physical gadget that can be used to facilitate the achievement of intended objectives and goals. The gadget should not be consumed or used as part of the material for the end product of the activity used to achieve the goal (Whiten, *et al* 1999: 682-685). The use of tools is as old as the human race since creation and the use of tools is not the preserve of human beings only, other animals use tools too. Panger, Brooks, Richmond and Wood (2002: 235-245) opine that the construction of the first habitation for man used tools, primitive though the tools could have been compared to what we have today. Different terms though are used in place of the word tool, these are, namely; equipment, implements, machines, or apparatus. The set of tools needed to achieve a goal is "equipment". The ability to develop and use these gadgets to improve on the performance of human beings is referred to generally as technology. On the other hand there are techniques that are used in the management of projects, and these are expected to aid in reducing the project failure rate. A technique is a procedure that is applied in the process of working on a given task to be completed within the specified times (Jowah, 2013:97-118). A collection of these techniques constitute technology which

needs to be used by a skilled person, all these to date are in order, namely; highly educated and experienced engineers who can interpret the plans without much problem.

2.3 THE SEVEN CHARACTERISTICS OF PROJECTS

Projects are generally proposed because there is a need to bring about some change to certain aspects of existing structures or circumstances established to carry out these changes and someone is always responsible for each project's successful completion (Crawford, Kent, and Pennypacker, 2002:73-78). Because a project is a planned undertaking of related activities systematically arranged to bring about the intended result, the iron triangle constraints become the measure of the success of the execution. The seven characteristics of a project become important in the determination of the tools and techniques to be applied in the project management process. These are, namely;

2.3.1 Objective: Each project has a specific goal that has been set for it to achieve, the process of execution therefore focuses or must focus on the objective for which the project was selected.

2.3.2 Schedule: the project is executed with the understanding that it will or should be delivered as a complete product by a certain time, failure which there may be cost overruns, legal implications, etc.

2.3.3 Complexity: The larger the projects are the likelihood is high that they will be complex and demand more expertise, resources, specialized tools and techniques to facilitate the implementation.

2.3.4 Size and Nature of Task: the sizes of the tasks to be performed are equally critical as they determine what resources are to be used in terms of the sophistication of both the tools and the techniques ideal for the effective implementation.

2.3.5 Resources: the accuracy in the planning of the Statement of Resources (labor, personnel, equipment, materials, facilities) will assist in the procedures and processes needed for the execution of the project.

2.3.6 Organizational Structure: the structure of the organisation and where in the organisation the project is located has its own constraints that may cause unnecessary problems during project implementation phase.

2.3.7 Information and Control Systems: the type of communication plan and the processes used to move information within the organisation may impact on the processes of project implementation.

An appropriate mixture of a collection of tools and techniques that should be used to direct the proper allocation of the resources (human, financial, material, equipment, etc) is necessary. Some tools may be necessary to properly distribute the resources for the efficient execution of the project. Each task needs an appropriate mix of the resources together with the tools and techniques meant to facilitate the execution. It is generally accepted that if appropriate project management technologies are applied, they help reduce the levels of disruption of the routine business activities in many cases. The skills required are largely depended on the specifics of the project in question. The project management process is comprised of four (4) key phases; initiating the project, planning the project, executing the project, and closing the project.

2.4. PROJECT LIFE CYCLE

PMBOK asserts that to study comprehensively the processes (the activities) during project execution, it is imperative that the life cycle of the project be clearly outlined and understood (Burke, 2008:25). The generic project life cycle model is illustrated in figure 2.1 below.

Figure 2.1 Project life cycle

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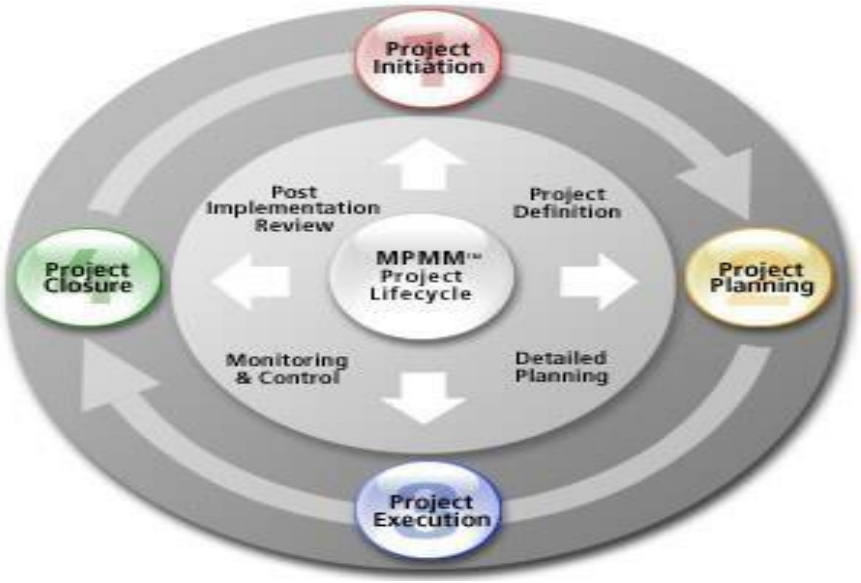


Source: www.mpmm.com/piwik

The first step in the life of a project is the initiation state, this is essentially the start of the process. This is followed by the planning process during which the other information is put together to give shape to the proposed undertaking. The longest and most difficult part of this is the execution phase when plans are put into action, and the same time there is monitoring and controlling that needs to be done as the operations move a closure. Throughout the life cycle of the project (all activities from conceptualisation to the ultimate handing over) there are degrees (varying levels) of need for use of relevant techniques and tools. Each tool and technique used finds relevant application for the tasks that are expected to be achieved to towards reaching the deliverable product. Of particular concern is the fact that with so much of technology (scientifically advanced tools and techniques) and highly educated engineers, project failure rate remains high.

Project Initiation is the first phase in the Project Life Cycle and essentially involves starting up the project. The details of what takes place at each stage are in the table 2.1 below.

Table 2.1 Product life cycle activities

Conception and initiation phase	This involves the development of the concept of starting a project, identifying the objectives, drawing up of the project charter, doing the feasibility study, deciding on the business case for the project.
Project definition and planning process	A clear outline indicating the resources, statement of requirements [including the budget], and project charter, project scope and all the activities and milestones to be followed are laid down. The time to be taken, the quality to be attained, and the budget are finalized at this phase [the WBSs are developed].
Execution process	Essentially the conversion of the plan into deliverables and includes amongst other things – coordination and integration of resources, management of the teams, dealing with progress reports, problem areas, allocation of duties and tasks to teams, harmonizing the operations towards meeting the objectives.
Controlling process	Constant evaluation of project performance by comparing the budgeted and the actual at different phases and milestones of the execution. Adjustment of schedules where necessary, and taking corrective action where needed – identification of lessons learnt.
Closing process	Starts with the checklist to confirm if all deliverables agreed on with the customer are met, to the satisfaction of the customer. The phase determines whether or not the expectations of the customer have been met, failure to, there may be some problem

Source: own construction

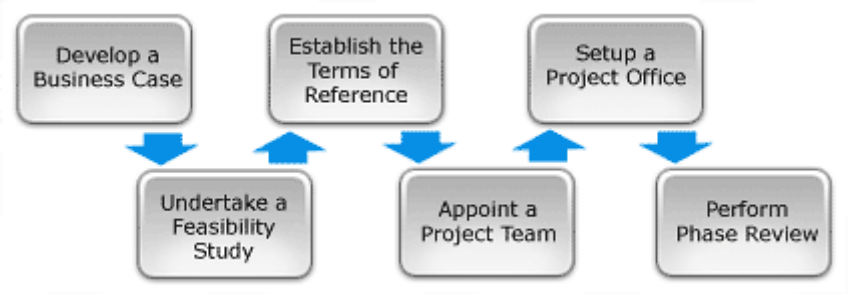
As stated above, the process of managing a project starts from initiation and ends with the close-up phase when the product is handed over to the owner. Because of the differences in the activities at different life cycle stages, there is a need for different tools

to perform the different functions. Functions of which, put together, build up to the complete project (achieves the objectives), there are tools and techniques to be used .

2.4.1 Initiation phase

When the conceptualisation takes place, it may state as an idea which needs to be tested or thought through by the initiators before it goes to other people. There is a need to define or identifying the purpose for the project with clear indication on how much work needs to be done, the scope (SOURCE). Figure 2.2 below illustrates the steps that need to be taken at the initiation phase.

Figure 2.2 Activities at the Initiation



Source: www.mpmm.com/piwik

Gray and Larson (2008:469) suggest that there is a need to develop a business case for the project, this seeks to justify why this should be done or how this would benefit society. A feasibility study is conducted to ascertain if this is viable and worth getting into and is followed by establishing the terms of reference. After appointing a team and setting up an office (in the case of a new organisation) there should be a Phase Review process to finally put the last touch ups before the project planning begins. Some of the project management techniques used during project initiation phase are, namely;

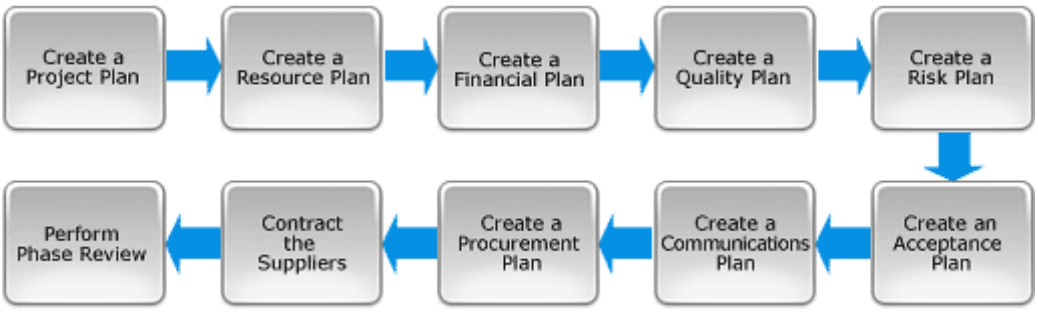
1. Establishing the project initiation team – a group of people (team) with specialisations complementary to each other are brought in to form a team that will assist with initiation.

2. . Establishing a relationship with the customer – there is a need to understand the customer and develop a relationship, as this will assist in the initial stages to get to work well together.
3. Establishing the project initiation plan – put in place processes that will assist in putting together a team that should know and understand the operations pending and the requirements in terms of goals and objectives.
4. Establishing management procedures – developing team procedures, communication processes, assigning of tasks, roles, project change procedure, and the funding procedure and billing for the project.
5. Establishing the project management workbook – this involves identifying, organizing and procuring a collection of tools relevant for the effective implementation of the project to meet the set objectives.

2.4.2 Project planning phase

Armstrong, (1986:183-185) defined a plan as a least of steps punctuated with resources required and the time for which they are needed work towards the accomplishment of an objective. A plan may be structured (formal) or unstructured (informal), but project plans have to be formal to enable participants to have the same understanding of what is to be achieved. This involves the creation of many documents that should assist in the construction as well as maintenance of the plan, the steps involved in the project planning phase illustrated in figure 2.3 below.

Figure 2.3 Steps in the project planning phase



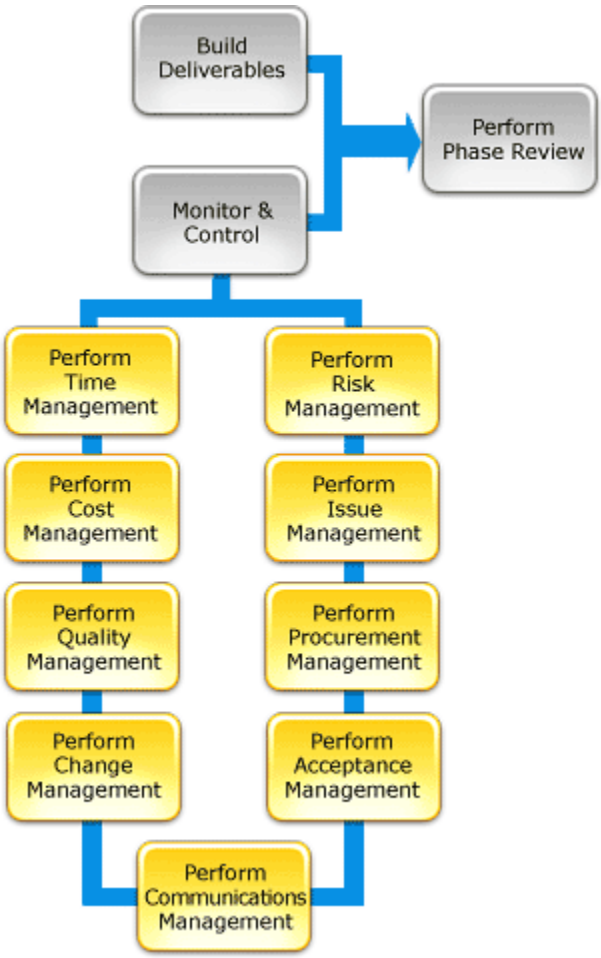
Source: www.mpmm.com/piwik

A project plan has to be created based on identification of what resources will be needed including the finances and all other materials and equipment to be used (if that equipment does not exist already). All the 10 steps above are essential until the project plan is completed, a plan review before implementation will be of tremendous assistance. The documents prepared here will serve critical purposes as indispensable tools for the effective and efficient implementation of the project.

2.4.3 Project execution

A well conceptualised project will have used SWOT Analysis to identify the strengths, weaknesses, opportunities and threats. If this tool (and technique) is properly used, this will have identified risky areas for which a risk management plan (another tool) would be used. And if the team agrees on moving forward to the planning phase, it would be ideal therefore to make use of all the risks identified and build them into the plan. Once the planning is complete with all the documents and other storage facilities for the data and information required, the project execution process then begins in earnest. Project execution is critical because it is at this stage that all concepts, theories, beliefs, plans and programmes now have to be converted to reality. Figure 2.4 below illustrates the steps and stages of project execution.

Figure 2.4 Steps in the execution process



The execution process is controlled by the iron triangle of at best the square root of the project (time, quality, budget and scope).

WBSs start to work towards delivering the set objectives for the project – critical in this is the need for integrating the teams into productive and cooperative units.

Regular meetings (say weekly) are a common practice to keep the project team members in touch with problems, progress or any other needs.

Communication therefore is an indispensable tool for the purposes of keeping the practitioners connected to each other and working towards the objectives.

Monitoring and controlling is an integral part of project execution and may be carried out in the form of unit audits and constant comparison with the project plan to check on any deviations to effect corrections is there is a need.

Source: www.mpmm.com/piwik

It is at execution that things go right or go wrong, thus the effectiveness of a project leader is measured on the basis of how she / he will handle the process of converting from plan to deliverables. At this stage some project management techniques that are applied include among others, the execution of the baseline project plan, keep resource supply upto date, regular training of personnel, make and revise schedules where necessary, and to apply total quality management (TQM) on the processes. Monitoring the progress is an important technique used to check on any likely deviations from the plan. All these should be done supported by strong communication.

Some techniques associated with the planning phase are, namely;

1. Dividing the project into smaller tasks called Work Breakdown Structures (WBS) to be headed by an experienced, specialised or an individual skilled in that type of operation (to allow for easy progression).
2. The construction of a resource plan by estimating what will be required in terms of quantities as well as the financial expectations on the basis on which the Statement Of Requirements is constructed.
3. Development of a preliminary schedule by assigning time estimates to each activity to enable the planning to accurately (at least closely accurate) to enable the estimation of both the time and budget required for the project.
4. Construct a communication plan for efficient movement of information between the different stakeholders both internal and external (outline information conveyancing procedures between – customer, sponsor, project team and project leader.
5. Establish standards for the procedures used in the implementation of the project plan and how the different stakeholders are related to each other in the or during the project execution process.
6. Establish methods of identifying and assessing risks and potential sources of those risks and quantify the risks and their impact on project execution processes and devising a risk management plan to avert serious project problems.
7. Constructing a preliminary or provisionary budget which quantifies the SOR for the plan in monetary terms indicating clearly the envisaged planned expenses and revenues pertaining to the project.
8. Constructing a statement of work (SOW) – detailing all the work (tasks) to be accomplished and linking the different work units to the others to integrate the work into one focus towards project completion.
9. Defining a baseline project plan – summarization of the project tasks in their completeness into one unit indicating all the work to be done and the resource requirements.

2.4.4 Project Closure

When the project is conceptualized, it is essentially a mind map the originator has in their mind, this thought is developed through the different phase of the life cycle of a project. Execution therefore puts the “dream” to reality and the one time concept is now a reality that is tangible (except where it is a service). Finally the product construction is to be delivered, possibly in the same form as it was envisaged from the beginning. The Project Closure phase, the last part in the life cycle, is reached, the steps are represented diagrammatically in figure 2.5 below.

Figure 2.5 Project closure phase

Project Closure starts with the agreement at a project team meeting that all expectations [deliverables] have been met. The team then prepares a checklist and run through all the deliverables agreed on with the customer – owner of the project.

Source: www.mpmm.com/piwik

If they satisfy themselves that all expectations are met, they may call for a meeting with the customer. Meeting at which a proposal is made that the project-product is ready for delivery. The project manager or team member will go through the checklist with the customer, once that is done, then the project operations are officially closed – closing up phase ending the project life cycle. Closure is about winding up the operations and the staff has to leave specifically if it is a construction project. All project documentation is handed over to the business and the contracts with suppliers are terminated and all stakeholders are informed about the completion and closure of the project. A Post Implementation Review is conducted to identify the extent to which the project execution process has been successful and noting all lessons learnt from the process.There are techniques related to the closedown phase include;

1. Closing down the project – everyone of the stakeholders both internal and external is informed about the end of the operations and all documents should be completed / updated to enable the final review at the conclusion of the project.

2. Conducting post project reviews – a review of the project deliverables as agreed on from the beginning is conducted to assess the weaknesses or strengths of the processes used to create the deliverables and the project management process.
3. Closing the customer contract – a review to establish that all the contractual obligations reached with the customer at the beginning (or in between) have been fulfilled and met satisfactorily.

2.5 PROJECT MANAGEMENT TOOLS

As alluded to above, a tool is any tangible instrument, equipment, name it that can be used to facilitate a process but itself remains unaffected, in other words it is not consumed or added on to the new product. Project management by its nature is complicated and poses many challenges to the implementers, but there are many tools that have been developed over the years. The most common project management tools are listed in the table (2.2) below.

Table 2.2 Project Management tools

2.5.1 Gantt chart	2.5.5 MS Project
2.5.2 PERT	2.5.6 Kronos
2.5.3 CPM	2.5.7 WBS
2.5.4 Milestones	2.5.8 MS Project

Source: own construction

The different tools developed over time are a result of extensive experience and the willingness of project practitioners to reduce project failure and work smart. Whilst these tools and techniques have made an impact on the project execution processes, they have not be altogether able to eradicate nor reduce significantly the project failure rate. These tools and techniques are discussed in fair detail below to assist in understanding how they have positively impacted on the project execution process. It is unfortunate that with all the knowledge, technology, techniques and tools, the project execution failure rate has remained high, suggesting that there is a missing element of this puzzle.

2.5.1 Gantt chart

Flouris and Lock (2009:207) refer to the Gantt chart as a bar chart illustrating the project schedule showing the starting and finishing of specified tasks in a project during execution. The introduction of the Gantt was referred to as revolutionary as the tool propelled project management to new heights. The charts have ever since been developed further (Wilson, 2003:17) and they show dependency of the tasks one with each other. The chart is now used universally, initially drawn by hand by now can be drawn using MS Project software, and indication of its critical function since its invention in 1910. Gantt charts have become common with web-based applications which amongst them includes collaborative groupware. Though they are technical in nature, the Gantt charts can be used effectively by those who have received some training in their use. It is easier today because of technological advances to use computers to draw these charts. These bar charts are used in many applications today, some of the operations where these are used are indicated in table 2.3 below.

Table 2.3 Uses of the Gantt chart today

Scheduling production processes	Tracking dependency tasks
Scheduling employee duties	Communication plan schedules
Time bars for estimating schedules	Stock procurement schedules
Tracking employee shifts	Determining critical path

Source: own construction

The tool has found much use in many other life situations other than for project management as it was designed by Henry Gantt. The ability to use computers and modern technology (software) to construct these charts has added on to the efficiency of timeline outlining and establishing tasks dependencies. The Gantt chart is illustrated in table 2.4 below, the table shows 7 tasks that have been labeled as *A* up to *G*.

Table 2.4 Gantt chart in use

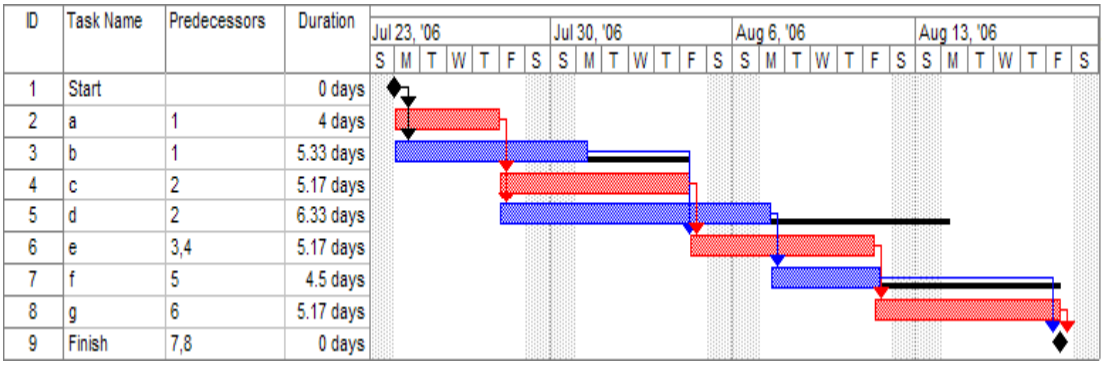
		Time estimates			
Activity	Predecessor	Opt. (*O*)	Normal (*M*)	Pess. (*P*)	Expected time

A	—	2	4	6	4.00
B	—	3	5	9	5.33
C	A	4	5	7	5.17
D	A	4	6	10	6.33
E	*B*, *C*	4	5	7	5.17
F	D	3	4	8	4.50
G	E	3	5	8	5.17

Source: own construction

The table above shows that some tasks can be done simultaneously (*A* and *B*), and yet other tasks follow a sequence until an earlier task is completed (*C* and *D* can only be done after task A has been completed. Each task has estimates (3 of each) showing the optimistic time estimate at O, the highly probable estimate at M, and the least probable at P. The beta probability distribution is used to calculate the expected time estimate (T). A formula is used for this = (O + 4M + P) ÷ 6. If this step has been concluded, a Gantt network diagram can be constructed, this is illustrated in figure 2.6 below.

Figure 2.6 Gantt chart as an effective project management tool



Source: created on the MS Project

The Gantt chart was initially thought of as a process that would assist to manage time and resource allocation, since completing a job in time was / is considered to be an indication of effective project management. The Gantt chart has remained the most popular tool for the management of project timelines. This visual representation used extensively in project management displays the overview of timeline for project activities and their inter-dependence. There are several advantages derived from using this tool as illustrated in table 2.5 below.

Table 2.5 Advantages of using the Gantt chart

•Message board	•Post-It boards
•To Do lists/Task lists	•It shows breakdown structure
•It shows dependencies	•It shows expected timeline
•It shows current progress	•It shows schedule baseline
•It shows resources assigned	•It shows task priority
•It shows critical path	•It shows both smallest and longest task
•It is easy to understand	•It gives clarity of dates
•It enables time management	•It brings efficiency
•It ensures timeline accountability	Promotes coordination of stakeholders

Source: own construction from literature

The length of each bar corresponds to the amount of time to be taken doing a particular task, essentially it shows when a task can be done. The WBS can be derived or be shown from the chart. Like any other tool, the Gantt chart has its own weaknesses too, In as much as it is an important tool in the management of projects. The least of disadvantages of this tool are listed below;

- Disadvantage of Gantt Chart

1. **Tedious if one need to keep it updating regularly ;** with changes coming in during execution, there is a need to constantly compare the estimates and the actuals, as such the tool has to be updated regularly.

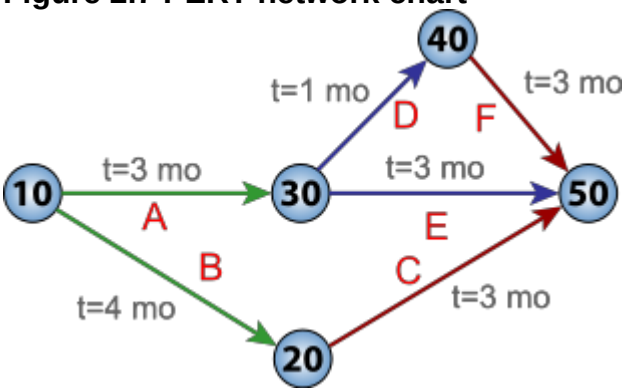
2. **Can become cumbersome for detailed project plan;** a detailed project plan may have too many small related, unrelated and dependent tasks that have to be entered in the tool.
3. **Unclear amount of work expected;** where the plan does not give clear guidance or clarity on what exactly is to be done and for how long, the Gantt chart becomes defunct.
4. **Not easy to view everything on a single paper;** if there is more detail there will be too much of crowding of the information making it difficult to reads easily and interpret for operational purposes.

Despite the negatives about the Gantt chart, the positives are more than the negatives, and if for any reason, the Gantt chart should be used because it gives better visibility and clarity to the user. Generally not a difficult document for anyone to understand and allows for clear time management and stakeholder coordination.

2.5.2 PERT

Program evaluation and review technique (PERT) commonly used in projects today was designed primarily to simplify the planning and scheduling of complex projects (Winters, 2017:2342-2344) without adequate information about the project. PERT incorporates uncertainty and most ideal for projects where time and not cost are the major concerns. It works well in large-scale, once-off complex infrastructure projects (Malcom, Roseboom, Clark and Fazar, 1959: 646–669) like Research and Development undertakings. This statistical tool designed to represent tasks in the management of project execution processes is commonly used together with the Critical Path Method (CPM) which is another tool. The PERT diagram is illustrated in figure below.

Figure 2.7 PERT network chart



Source: author's construction using MS Project

The PERT network diagram above is a network chart for a seven (7) month project that has five (5) milestones (10 through 50) and a total of six activities (A through F). The PERT like any other tool is as good as the user and its relevance to the task at hand, besides it has its merits and demerits.

- Advantages of PERT

A list of the advantages (or merits) and the disadvantages (demerits) of using the system are clearly stated and defined in the table below.

Table 2. 6 Advantages of using the PERT

Chart explicitly defines	Clearly identifies, defines and clearly shows dependencies and interdependencies of the different units of the WBSs in the project execution process.
Facilitates identification	Assists in properly identifying and outlining the Critical Path Method (CPM) to be followed by the project manager in the execution of the project.
Facilitates identification	Assists in identifying all the probabilities and the end results of certain start dates, end dates with alternatives of early start and late start dates.

Reduced project duration	Helps in understanding of dependencies and interdependencies and the activities overlaps that may assist in cutting short the time it takes to complete the project.
Organized and presented	It takes in large amounts of project data that may be organised and constructed into illustrations (diagrams, charts or tables) to assist in decision making.
Provide a probability	Allows the team to plan to increase the probability of finishing the project in time by tempering with the task relationships and how they can be maneuvered.

Source: own construction from literature

It can be argued that the PERT tool is a handy useful tool to the project manager available to deal with complex projects full of uncertainties. No real life project follows or lives up to the set plan, the plan will always have deviations because of many unpredictable events. Some of the causes for the deviation may be the result of subjective estimates or unexpected events or risks. A planning tool may fail to provide accurate data because of all these uncertainties, as such, the PERT tool has disadvantages.

Disadvantages of PERT

1. **Too many** (practically 100s or 1000s) **of activities** that may be interdependent or dependent relationships which makes it difficult both to construct manually or to follow if done by software.
2. **Too complex** for small projects and as such it may not be used or be common in most construction projects under construction in most of the sites where project management is to be studied.
3. **The complexity of the network** charts produces large quantities of data to be printed on specialised size paper, and they are cumbersome to go through needing constant referencing by the project team.
4. **There is no timeframe** on most PERT/CPM network charts thereby making it difficult for the user even though colour is used to differentiate the different applications and elements from the diagram.

2.5.3 Critical Path Method (Analysis) CPM

The Critical Path Method (CPM) is too often interchangeably used with PERT. The critical path method (CPM), or critical path analysis (CPA) is a mathematical algorithm (Newell and Grashina, 2003:98) used in the scheduling of activities and or tasks during the project execution process. CPM is simple but powerful as a quantitative tool for decision making as it helps analyse, plan, and schedule small and complex projects. The tool assists in identifying and prioritizing the critical jobs, activities or tasks minimise costs. Projects that can be analysed easily by the CPM tool are listed in the table 2.7 below.

Table 2.7 Applications for the Critical Path Method tool

Planning and launching a new product.	Installing and debugging a computer system.
Research and engineering design projects.	Scheduling ship construction and repairs.
The manufacture and assembly of a large generator	Missile countdown procedures.
Each of these projects has several characteristics that are essential for analysis by CPM:	The construction of a building (or a highway).

Source: own construction

CPM is appropriate for project management for a number of reasons, some of the reasons making the project relevant are, namely;

(1) A project consists of well identified and defined collection of activities (jobs or tasks) which should be completed for the job to be complete and the project deliverable to the customer.

(2) Tasks may be started and ended independently of the other tasks which are part of the same project.

(3) The jobs are ordered – they are performed in a logical sequence meaning the other tasks may only be performed when other tasks have been performed already.

- PERT and CPM

Both CPM and PERT have undergone intensive reconstruction over the years because of their perceived usefulness to the extent they have become mandatory with other governments. New tools have been developed based on the received intensive development in the past few years. Some of the developments are the Scheduling Program for Allocating Resources (SPAR) used for scheduling scarce resources. Other programs emanating from these are Resource Allocation and Multi-Project Scheduling (RAMPS). There is a more recent version of PERT called PERT/COST which has been developed by the armed forces for use on weapon-systems development projects. The differences between the two (PERT and CPM) are detailed in table 2.8 below.

Table 2.8 Comparison of PERT and CPM.

Basis for Comparison	PERT	CPM
Meaning	PERT is a project management technique, used to manage uncertain activities of a project.	CPM is a statistical technique of project management that manages well defined activities of a project.
What is it?	A technique of planning and control of time.	A method to control cost and time.
Orientation	Event-oriented	Activity-oriented
Evolution	Evolved as Research & Development project	Evolved as Construction project
Model	Probabilistic Model	Deterministic Model
Focuses on	Time	Time-cost trade-off
Estimates	Three time estimates	One time estimate
Appropriate for	High precision time estimate	Reasonable time estimate
Management of	Unpredictable Activities	Predictable activities
Nature of jobs	Non-repetitive nature	Repetitive nature

Critical and Non-critical activities	No differentiation	Differentiated
Suitable for	Research and Development Project	Non-research projects like civil construction, ship building etc.
Crashing concept	Not Applicable	Applicable

Source: own construction

PERT is a planning, organising, scheduling, controlling and coordinating of operations that are uncertain by trying to identify the least time required. PERT focuses directly on the time taken, even though this has an impact on the costs incurred. On the other hand, CPM focuses on controlling the costs of the project, which of cause would involve controlling time to put down the costs.

2.5 CHAPTER SUMMARY

In spite of all the technical expertise and the availability of technology and upto date tools and techniques, the failure rate of construction projects remain high. This therefore creates new thinking that the problem of these projects resides outside of the equipment, technologies, techniques and the materials necessary for the effective execution of these projects. The answer must reside in other factors, and the only factor that has remained constant in the construction of projects is the human factor. Technology, though developed by man, has proven its scientific worth and cannot be responsible for the failure. Inevitably the focus must go to investigating the human beings who implement these projects. Therein should lie our critical success factors.

CHAPTER 3

REASONS WHY PROJECT MANAGEMENT FAILS

3.1 INTRODUCTION

As alluded to in preceding chapters project management has been around as long as humanity lived and build houses for themselves. There are numerous theories about the origin of man, but the creation story has a history that can be followed. To date the earth has been in existence for approximately 6000 years, and much of the habitation of the ancient man has been documented. Project management therefore can start (in our records) with the building of the Tower of Babel (in Iraq) by Nimrod The Greater Hunter Before the Lord. Nimrod was a Cushite, a black man who built the first seven (7) cities ever to be known in the world. Genesis (11:3-5) recounts the building of the city and the tower, that was project management. King Solomon built the temple of Jerusalem, Nebuchadnezzar built Babylon and the Hanging Gardens and all this was project management. We have structures that still stand today such as the Pyramids in Egypt, the Golden Temple in Amritsar and the Taj Mahal (both in India), the Buddhist temple in Orissa, the Great Zimbabwe, Mapungubwe, and the list goes on. The great difference between now and then is because we have more constructions coming up, and we also have records of successful and unsuccessful project management. Besides, they did not have the technology and the tools we have today which are a result of many years of accumulated knowledge. One common element in between all this is the human being, and needless to say that projects are conceptualised by human beings, to benefit human beings and are implemented by human beings.

3.2 PROJECT MANAGEMENT VS ENGINEERING

According to the Project Management Institute (2008), Project management is becoming the standard way of doing business because of:

- The shortening of the Product Life Cycle due to the increased importance of getting new products into the market faster.
- The Explosion of Knowledge because of the global technological advancements in all areas of knowledge.

- The threat of global warming and people's social consciousness with regard to the environment.
- The restructuring of corporate organisations by downsizing of departments in order to survive in a more competitive environment.

Project Management is accomplished through the application and integration of logically grouped processes (PMBOK,2012) accomplished through initiating, planning, executing, monitoring and controlling up to the closing phase of the project. The role of a project manager is to lead and satisfy the task, team and individual needs using sound project management complemented by a positive attitude and appropriate leadership competencies to guide a project team. Assisted by the use of powerful set of tools, project management gives people the ability to plan, implement and manage activities to achieve specific organisational objectives (Gray and Larson, 2013:66). The profession of engineering is concerned with the creation of new and improved systems, processes and products to serve humanity As shown in the first chapter, the education offered to the engineering students focuses on design, properties of materials, logics of mathematics, resource constraints, physical resources and economics. The engineer is trained to deal with technical job specific aspects which speak mainly to the accuracy of the product to be produced. As noted by Kwak and Anbari (2009:270), in the discipline of construction engineering and management, people will learn how to plan, manage and control engineering construction projects to achieve the time and budget objectives laid out by management. The focus is on achieving productivity through production planning, and scheduling.

3.2.1 Engineering Graduates at the Workplace

The traditional engineer focuses on the technical aspects of the construction project because that is what they are trained to do. Technical skills are therefore the focus and all in all for an engineer, managing of people in the project is a coincident as they develop their careers. As a result engineers lack important skills, such as communication, decision-making, problem solving and leadership. The rate at which industry is growing has somewhat created a shortage of engineers in the market and thereby accelerating

the young engineers into management positions for which they have not been trained. Jowah and Beretu, (2019: 251-266.) asserts that there is an apparent mismatch between graduates' skills development at university and what is needed at the workplace. This is confirmed by Cramm, Nieboer, Finkenflügel and Lorenzo, (2013:19-24 who identified a high degree of inadequacy amongst the new engineering graduates ascending to management positions. There is noticeable missing link between the university curriculum and the skills required by these engineers to manage diverse teams.

3.2.2 Project manager or project leader

Management by its definition is about organising, planning, controlling and monitoring (Gray and Larson, 2008:255) and is largely based on authority. Managers are well organised and use largely rules and regulations, too often times work is structured for the employees and clear instructions on what and how much an individual should do (David, 2009:174). This is appropriate for the project environment compressed with time with the use of sophisticated tools and techniques that help draw time lines for the start and finish schedules. Engineers themselves come from well structured engineering education based on strict and provable formulae where logic is the order of the day, and that is common sense to them. Managers love quantification of items (Carson, 2018:450-460) and this works well with engineers who come from quantitative research methodologies using proven laws on the basis of which they calculate and decide on strengths and weaknesses of structures. A typical manager is an X theorist (Worth, 2019:248) who believes that people do not think, they do not love their jobs and need slave driving to achieve objectives. Task focus is the theme and that is what is to be done, the human social element is not considered of any value. Subordinates must produce or else they are fired from the system, family issues have no place at the workplace.

On the other hand is the project leader, and a leader by definition is an individual with the ability to influence people to get work done (Hattangadi, 2015:20-21). The leader uses power, and power is the ability to influence, thus people voluntarily move to get objectives achieved. Project leadership is considered a unique way of getting people to work even where there is no authority used. Jowah (2014:130-144) subscribes to the fact that good project managers shill get results done even where there is an authority gap because of

the unique leadership style used. A typical leader is a Y theorist who believes that people have a sense of duty and are not lazy, they can work on their own (Fischer, 2009:356). Consequently, the followers (not subordinates) love their work and are innovative at their work stations working with minimum supervision. As such they need empowering because they can think for themselves and improvise to accelerate the performing of these tasks. There is therefore a difference between management and leadership, some of the differences are listed in table 3.1 below.

Table 3.1 Differences between leadership and management

Manager	Leader
1. push people to work	1. influence people to work
2. are results orientated	2. are relationship orientated
3. do not worry about people's problems	3. show empathy to people's problems
4. interested on controls	4. allow mistakes and free thinking
5. do not do anything outside the ordinary	5. always looking for ways of doing things

Source: Jowah, (2015, 208 –225)

The attitude of a manager or leader towards the people he/she is in charge with is seen in the style that is adopted by the leader. Jowah (2014:130-144) makes reference to the implicit theory of leadership and asserts that the leader's perception of the people will inform how he/she interacts with them. As evidenced by McGregor's (Zink, 2014:126-132), X and Y theories, authorities develop an attitude (positive or negative) based on what they believe and have experienced or learnt. Sad to say that the training of engineers leaves out the important function of other skills and competencies necessary to deal with the human being. Vassiliou, Alberts, and Jonathan (2015:98-99 posits that a whole human being is made up of the soul, the body and the mind. Thus suggesting that there are certain aspects in a human being that motivate performance. It is important them to identify skills that enable leaders and or managers to effectively execute project processes.

3.3 COMPETENCIES AND SKILLS

A skill is an individual's pre-determined ability to carry out a task and undertake an assignment too often within a given amount of time and energy (Cowan, 1997:179) The definition is in itself general in nature and in its expanse it comprises of many other different aspects of the human activities (Marcel, 2015: 453–465), this necessitates classification. Consequently, there are different types of skills that are found amongst people, namely; domain general skills and domain specific skills. Some more elaborate classification would provide the following skills, namely; labor skills, life skills, people skills, social skills, soft skills and hard skills. Table 3.2 below illustrates these different type of skills.

Table 3.2 The different skills found amongst people

Labor skills	**Skill** is An evaluated work related training or and experience that makes one an expert in a specialised focus area where performance is needed. The presence of a skill in an individual is a form of guarantee that they will be able to perform the tasks at hand. Skilled workers are generally experts in their field and are speciailised thereby enabling them to acquire higher salaries and have better chances of getting to the positions to supervise other people in the work environment (Cowan, 1997:179). The skilled worker is dependable in terms of delivery of their ability to bring about the desired results.
Life skills	Problem-solving relevant (contextual) behaviors that an individual uses to manage personal affairs, these are human skills that an individual learns through training or experience and uses these to solve problems within the societal norms. **Life skills** are essentially about abilities to adopt appropriately in solving life challenges by positively engaging, it's a form of psychological competenc. These may be learnt either in a formal way or through experieince, they can generally be associated with emotional intelligence.
People skills	The ability to understand oneself and moderate one's responses to the situation showing empathy appropriately and building trust and respect from the followers or subordinates. This includes both psychological and social skills. People skills comprises of many other sub-skills that related to the interaction between, specifically (in this case) the interaction of the leader and the subordinates and can be classified into three behavioral interactions, namely; personal effectiveness, interaction skills, and intercession skills.
Social skills	The ability to facilitate interaction and communication amongst the people one deals with leading to the development of acceptable norms within the group or community (socialisation). A **social skill** is

	any ability to facilitate interaction with other people through effective communication with them (Uekermann and Daum, 2008: 726–35). Normally terms of conduct and acceptable norms of interacting and cooperating with each other are developed. To achieve this, an individual needs a high degree of positive interpersonal skills like being a good listener, being a persuasive person, a good listener, delegation of responsibilities and responsiveness.
Soft skills	Soft skills are a combination of interpersonal people skills, social skills, communication skills, character traits, attitudes, career attributes and emotional intelligence quotient (EQ) among others.
Hard skills.	Hard skills are any skills relating to a specific task or situation. These skills are easily quantifiable unlike soft skills which are related to one's personality.

Source: own construction

Skills are inevitably a critical aspect of human life at work, at play or in our social life, there is always this ability to do certain things which differentiates between people and their ability to do things as individuals. The implementation of engineering projects is unique in that there is an expectation that having an engineer to managing engineering projects would make better sense. The two critical skills talked of often in engineering (construction or information technology) are the hard skills (technical ability) and the soft skills (the human relations ability).

3.3.1 Hard skills

Hard skills are the technical skills that employers are looking for to get work done, it is those practical operational skills (Silber and Foshay, 2009:63) that an engineer learns in the curriculum. The accountant in a firm has unique skills that are needed to keep and interpret financial statements and help the company know the status in terms of the finances in the organisation. Blume, Ford, Baldwin and Huang (2009: 1065–1105) posits that hard skills are specific and add a different texture to the quality of project execution as they are complementary to each other. A carpenter will be different from a plumber who will be different from a brick layer who in turn has skills different from those of a bricklayer and civil or electrical engineer. By their nature hard skills are more measurable and can be transferred easily to the other person and one can obtain a certificate after getting a hard skill. The ability to use the project management tools is another example of a hard skill, which most engineers would found easy to master and use. As alluded to

above, hard skills are clearly defined teachable and measurable abilities that can be quantified. Easy examples of such are that can be defined and measured much more than soft skills. Hard abilities are easy to quantify. Soft abilities are personal-driven.

Table 3.3 Examples of hard skills

degree certificate,	foreign language knowledge,
programming knowledge	mathematics,
software developer,	development language like Java,
use of project management tools	business analysis knowledge,
certifications as PMP, PRINCE	use of Risk Management Tools,
use of Workflow Software	use of Gantt chart software
use of CPM software	civil engineering qualification
electrical engineering certificate	use of data visualization software
use of flowchart software	knowing foreign languages
use of planning tools	accounting qualification

Source: own construction

Hard skills are characterised by the fact that they can be quantified and these are often listed when organisations adverts job opportunities. Hard skills are essentially an expression of your intellectual capability (IQ) and they can get you an interview (Burke and Hutchins, 2007: 263–296). Hard skills have set standards by which proficiency can be measured and evaluated since these can be learnt from a school textbook.

3.3.2 Soft skills

Soft skills can be summarised as a sum total of all interpersonal people skills, the ability of an individual to work well with others. The Collins English Dictionary defines "soft skills" as "desirable qualities for certain forms of employment" not dependent on acquired knowledge but more to do with common sense and flexibility. Soft skills characterise one's relationships with other people, they are a cluster of personality traits which include among other the ability of the individual to mix freely, socialise and influence others. Table 3.4 below identifies some of the traits that constitute soft skills.

Softs skills are behavioural competencies which include among others proficiencies in emotional intelligence (EQ), communication skills, conflict resolution, negotiation and team building and group facilitation (PMBOK (2012). These are personality traits which

make an individual what they are and may not be easy to transfer and yet the comprise of the single most important aspect of a leader as required in project execution. This personality cannot be defined in a singular form and yet it comprises of the single most effective panacea for human motivation at work. Waggoner (2013:6) postulates that soft skills are a cluster of personality traits, social graces, communication skills, personal habits, friendliness, and optimism which individuals acquire as they grow and mature.

Table 3. 4 Soft skills

social graces,	communication abilities,	language skills,
personal habits,	cognitive empathy	emotional empathy,
time management,	teamwork	decision making
interpersonal relationships	self awareness	assertiveness
Resilience	equanimity	coping with stress and loss
problem solving	creative thinking	critical thinking/perspicacity
character traits,	Positive attitudes,	career attributes,
social skills,	emotional intelligence	social intelligence
courtesy –	Flexibility	integrity
professionalism	Responsibility	work ethic –

Source: own construction

Robles, (2012:453-465) identifies soft skills in a project that complement the technical skills (hard skills) which should assist in the execution of the project. Technical skills may focus on the "what is to be done and how it should be done" without looking at who will be doing it and what is their condition. A Harvard University study concluded that 80% of success in a career are achieved by soft skills with the remaining 20% as a result of hard skills. In concurrence, Silber and Foshay (2009:63) posit that soft skills training for any individual should start during their school and or college days to prepare them for the future. Consequently soft skills in addition to standard qualifications are sought out for by employer because of the recognition of soft skills' impact on productivity.

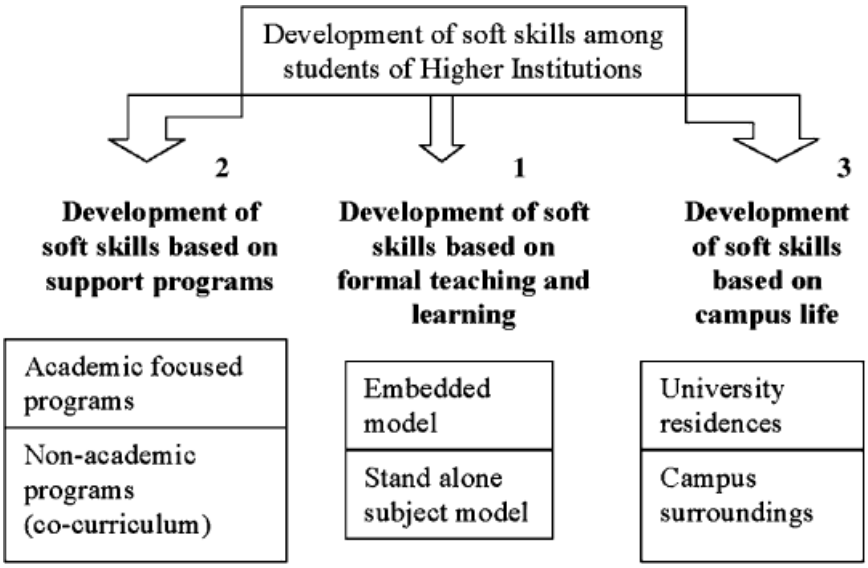
The Carnegie Mellon Foundation among Fortune 500 CEOs found out that 75% of long term job success is directly attributable to soft skills, with 25% contribution from technical

skills. Robles (2012:453-465) of the Eastern Kentucky University compiled a list of 10 top soft skills required for leadership. The listed is in the table below. Danilova and Pudlowski (2006:385-398) opined that lack of communication skills can greatly disadvantage graduate engineers if they take up management positions. In practice the manager spends close on 80% of the time involved in communication forms of one kind or another. Kakepoto *et al.* (2013: 255) concur and indicate that engineers with good communication skills can accrue various financial benefits for their organisations.

3.3.3 Designing models for engineering graduates

Consequently many institutions have tried to move from the traditional engineering curriculum and have modelled an ideal structure for all hard skills graduates. The Malaysian Institute of Higher Learning developed a framework (figure 3.) below for all tertiary institutions in Malaysia. This framework was a guideline for addressing the soft skills gap in the curricula as stand-alone or embedded subjects.

Figure 3. 1 Model soft skills development for Malaysian Tertiary Education

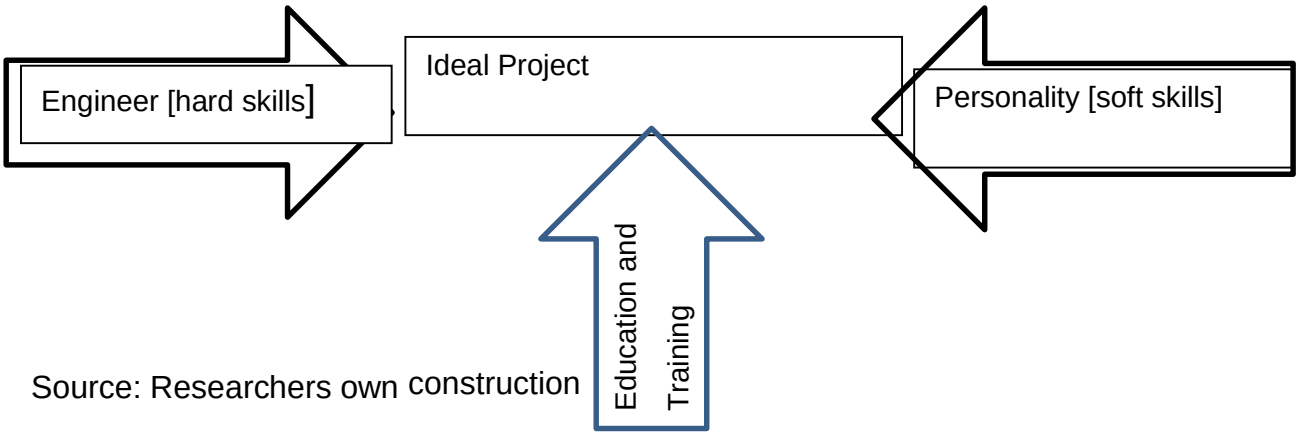


Source: (Shakir, 2009:309)

The Malaysian government's model for implementation of soft skills in Institutes of Higher Learning is based on the express belief that soft skills are critical for graduates as they

work with other people. The problem with hard skills trained people is they use one side of the brain the left side which is about logic and reasoning. But dealing with people needs the right side of the brain which would allow for emotional intelligence, presumably lacking amongst engineering graduates as alluded to above. People are social beings with emotions, problems, personalities and have their own objectives and plans when they come to a workplace. A conceptual framework of what constitutes the ideal project leader is illustrated in figure 3.2 below.

Figure 3.2 Conceptual Framework



Source: Researchers own construction

Personality traits are generally behaviour based on upbringing, religion, culture and other behaviours informed by empathy. Some of these are learnt over years through interaction with people who become role models or through lessons seen and learnt such as emotional intelligence. From the conceptual model above it is postulated that there should be a balance between the use of the left brain (hard skills) and that of the right brain (soft skills) if work is to be done effectively and efficiently. Hard skills graduates tend to focus more on tasks than on people who actually get the work done. From extensive studies on work performance it is a known fact that a demotivated workforce may not produce any more than the barest minimum that will keep them at work. Knowledge of the engineering field is undoubtedly important to the project manager, but for the manager to be a project leader, there is a need for acceptance that projects are executed by people for people through people.

3.3.4 Comparing hard skills to soft skills

The expectation of the business owners and customers is that they should get all their requirements met within the specified time in the execution of the project. The IT industry sitting with a failure rate at 47% causes concern in business since this translates into loos both financially and time taken. Figure 3.3 below shows the differences between hard and soft skills. Possessing strong hard skills typically requires the left brain, or logic center. In contrast, strong soft skills are typically formed in the right brain, or emotional center. A leader will have specific traits that enable her / him to have influence on the basis of which the leader gets followership. Some of the personality traits found amongst leaders are listed in table 3.5 below.

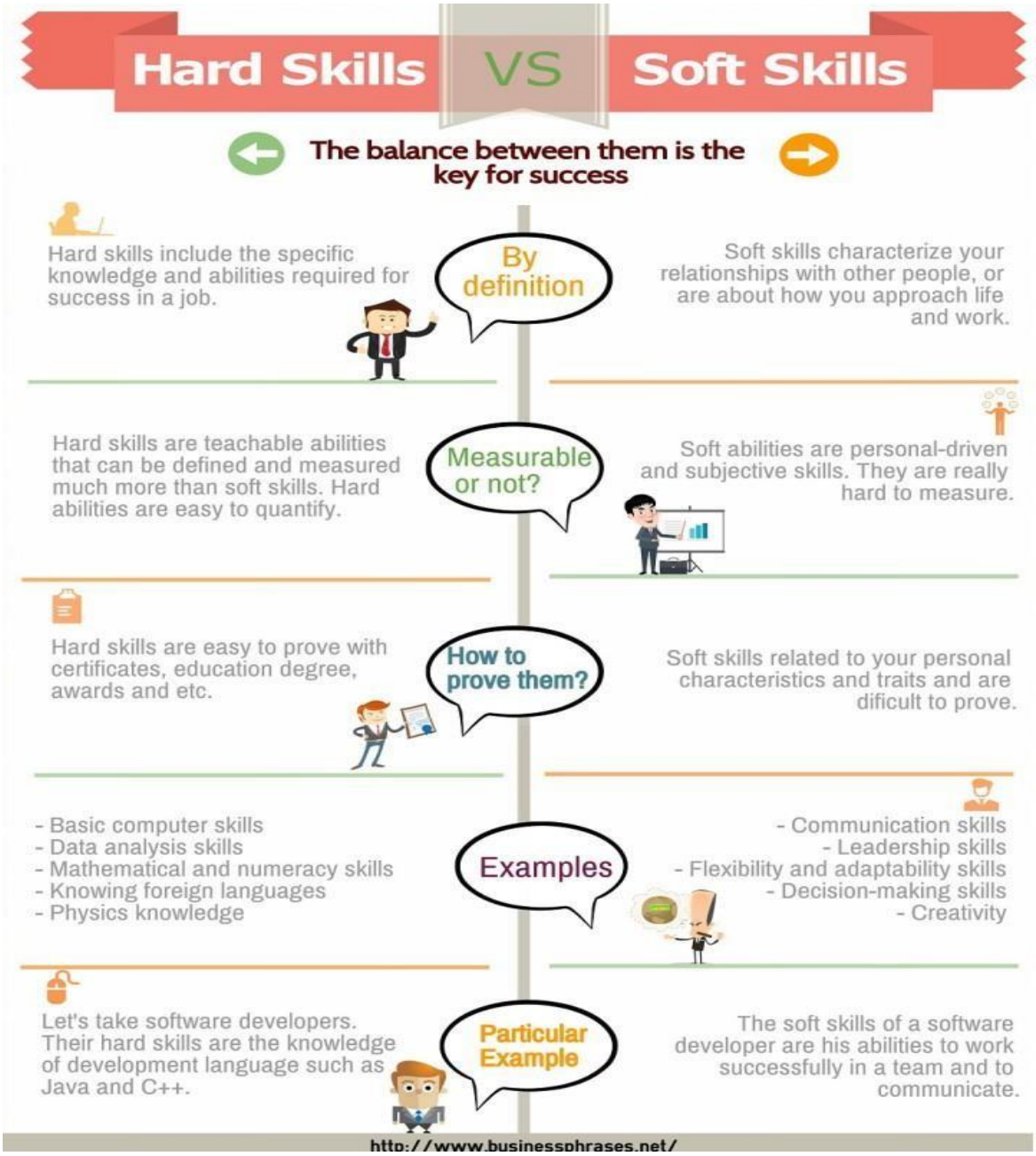
Table 3.5 Leadership personalities that get work done

Adaptability	Emotionally stable	Persuasive	Listener
Alertness	Energetic	Persistent	Creative
Ambition	Honesty & integrity	Responsible	Intelligent
Assertive	Independent	Self-confident	Considerate
Dependable	Organised	Tolerant of stress	Teachable

Source: Adopted from Swanepoel, Erasmus, Van Wyk and Schenk, 2000:376

There are specific personality traits that pull people towards and individual if the subordinates feel that the leader fits their prototype. The prototypes are informed by the subordinate's expectations and the promise of getting their expectations and objectives met.

Figure 3.3 Comparison of hard and soft skills



Source:http://businesszone.ghqtfco9k6baqenwtb.netdna-cdn.com/wp-

Much has been covered in comparing hard and soft skills as indicated in the preceding literature above. A lot of emphasis has been put into the development of hard skills over the years with the use of impeccable technology and techniques. The failure rate has not abated regardless of the effort. It is comparatively easier to transfer hard skills than it is

to transfer soft skills, and yet hard skills are used always for the appointment of individualsas project managers. The hard skills are always indicated when jobs are advertised and they form the basis of recruitment for project managers in the engineering field, but the failure rate remains. This failure rate has necessitated the study to identify what the possible cause for the unabated failure of project execution processes.

3.4 MAIN CAUSES OF PROJECT FAILURE

Numerous reasons have been identified as causes for the failure in or of projects, with specific emphasis on engineering related projects. The IT industry has recorded up to 50% failure rate over the years (Whitaker, 1999:23-29) yet the operations are done by technically competent managers. Kutsch and Hall (2005) define project failure as the inability to deliver a complete project within the time, the cost, the technical specifications and the scope. This is essentially because the specifications have not been met or the stakeholder is not satisfied and therefore not happy. The greatest puzzle remains why with the availability of all these tools, techniques and hard skills of the managers, projects continue to fail. The reasons commonly used or given to justify the failure rates are discussed below.

3.4.1 **Exclusion of project leader from the begging;** project managers should be involved with the project from the planning stage as this provides a clear understanding and picture of what is expected by stakeholders. It should be meetings after meetings to iron out any possible doubts about deliverables.

3.4.2 **Poorly defined project scope;** from the planning stage the project leader must be involved to allow a clear understanding and proper definition of the scope. Undefined scope leads to doing things that may not be necessary or different from what the customer needs or expects resulting in conflict, cost overruns, etc.

3.4.3 **Inadequate risk management;** too often little effort is put in the identification and preparation for uncertainty and the risks that go with the project processes. Project leaders need to identify and make provisions or pre-empt or minimise the impact of any risk related to the execution of their project.

3.4.4 **Inaccurate Cost Estimations;** cost overruns are either because the costing was not done accurately or other unpredicted factors may have caused the sudden change. Most project managers (or the stakeholders) do not put the cost buffers

during planning, resulting in project failure due to inflation, change in some economic structures, etc.

3.4.5 **Lack of detail in the project plans;** most project plans are not detailed enough leaving room for likely different interpretations which may cause concern with stakeholders. The plan should have all the necessary detail supported adequately by appropriate tools to monitor progress at every stage of the execution.

3.4.6 **The authority gap may be a destruction;** because of the temporary nature of the project the personnel seconded to the project have dual loyalty or are looking for permanent positions elsewhere. The resultant labour turn over creates a problem of new people that have to be either trained or oriented for them to understand and share the vision.

3.4.7 **Inadequate documentation and tracking;** regular review (in office or at meetings) of the project progress is needed to keep track with the progress. Regular updating, monitoring and controlling of project execution would allow for early intervention and possible corrections to avoid failure.

3.4.8 **Under utilization of tools;** though there are so many technologically advanced tools, not all project managers use the tools adequately, either because they do not know how or they may want to depend on intuition. The tool is just as good as the person using it knows how to use it and the willingness to correct or pre-empt any problems.

3.4.9 **The X theory in project managers with technical training;** the presumed tendency and belief that people do not have common sense and can't think because they don't understand what is purely common sense to the engineer. Subordinates are considered to be lazy and cannot be left to work on their own thus micro-management will make them perform the assigned tasks.

3.4.10 **Failure to adequately track project progress and requirements;** monitoring and controlling is a step by step programme during project execution. This is purely a project leader / manager's responsibility, as alluded to above, the failure of project implementation is clearly a process experienced step by step. Properly

integrated execution will provide warning signs of project stress in time and allowing for redress.

3.4.11 **Project scope creep**; or the kitchen syndrome refers to continuous change on the scope of the project too often due to unclearly defined project scope, weak management resulting in poor communication between the parties or the absence of initial project versatility (Kendrick, 2015: 50–52). This can be averted by involving the project manager from the beginning and training them or developing a communication skills programme.

3.4.12 **Inexperienced project managers**; experience for a project engineer manager should not be their understanding of what is to be done, the hard core skill that speak to technical specifications. Experience for a project manager should mean the manager's ability to connect to the operational staff starting with the team members, most probably fellow engineers. A likeable engineer can do more work than a very intelligent engineer without interpersonal skills.

3.4.13 **Little Communication at Every Level of Management;** communication throughout the entire organisation at all levels (relevant to the level and expected functions) is the thread that should permeate through all sections of the organisation. The absence of communication increases uncertainty, increases anxiety and affects the workflow from its optimum to a "just enough" level which harms the productivity.

3.4.14 **Conflict in project management;** this is the single most potentially destructive variable in the implementation of the project plan. This is encountered at different levels and stages and sometimes throughout the life cycle of the project. Jowah (2016:010-17) identified the different conflict stages in the life cycle of a project. Needless to state that conflicts will inevitably impact on project management and are experienced at different stages in the life cycle of the project.

In Table 3.6 below the types of conflicts are demonstrated according to the activities indicating the type of conflict in increasing order (the lowest at the top and the highest cause at the bottom). At every different stage there are different types of conflicts as illustrated in table below.

Table 3. 6 Conflict areas in the project life cycle in ascending order

Defining phase	Planning phase	Executing phase	Delivering phase
Interpersonal	Cost	Interpersonal	Procedures
Technical	Interpersonal	Cost	Technical
Cost	Workforce	Procedure	Cost
Workforce	Technical	Priorities	Priorities
Schedules	Procedure	Workforce	Workforce
Procedures	Schedules	Technical	Interpersonal
Priorities	Priorities	Schedules	Schedules

Source: Jowah (2013:176)

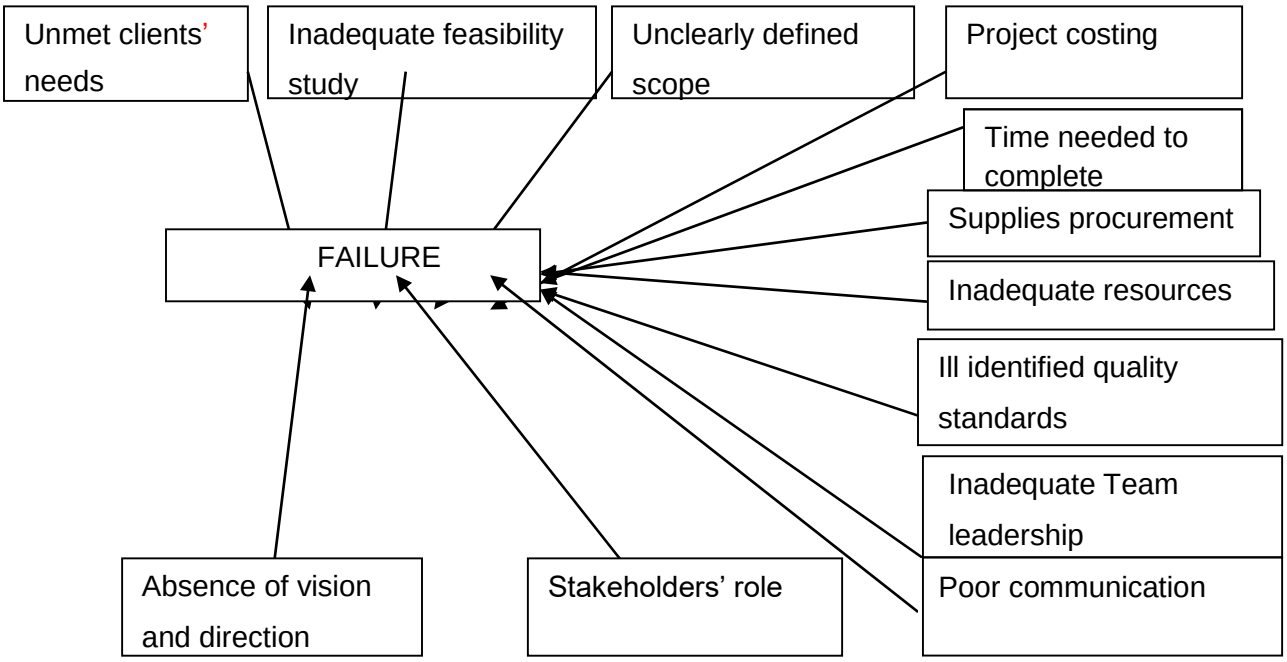
Leadership is needed critically during conflicts and it is at this stage that hard skills play no role and soft skills are the all in all (Mitchell, Skinner, White, 2010:43-53). Conflicts deal with people and persuasion, negotiation and compromising. These are purely the reserve of the leader and not manager, and the power to influence is most paramount at these moments. The competencies of the project leader inevitably depend on the activities involved and the stage in the life cycle of the project. Consequently the project leader needs powerful influence vested in the personality to dissuade members of destructive activities.

Work done on causes of conflicts by Thamhain and Wilemon (1975:31 - 49) identified areas or aspects of the conflict and their causes, namely; project priorities, administrative procedures, performance trade-offs, manpower resources, scheduling, cost estimates, sequencing of the work, technical opinions, and personality conflicts. These causes can be summarised into two fundamental causes as planning and human skills, clearly indicating that the success or failure of the project revolves around the human element. Therefore many factors are involved in the failure of project execution and no one cause may be mentioned. But studies have been conducted extensively on this subject, and there is some clarity on some of the factors causing these untold levels of failure. Knowledge about these failures helps the project practitioner to correct the common errors.

3.5 ACTION MANAGEMENT

The success or failure of the project is largely determined by meeting or not meeting the expectations of time, budget, quality and scope (Burke, 2010:265). Research into the failures, apart from what has been alluded to above, is summarised by Burke as is illustrated in figure 3.4 below.

FIGURE 3.4: Summary of factors that influence project failure



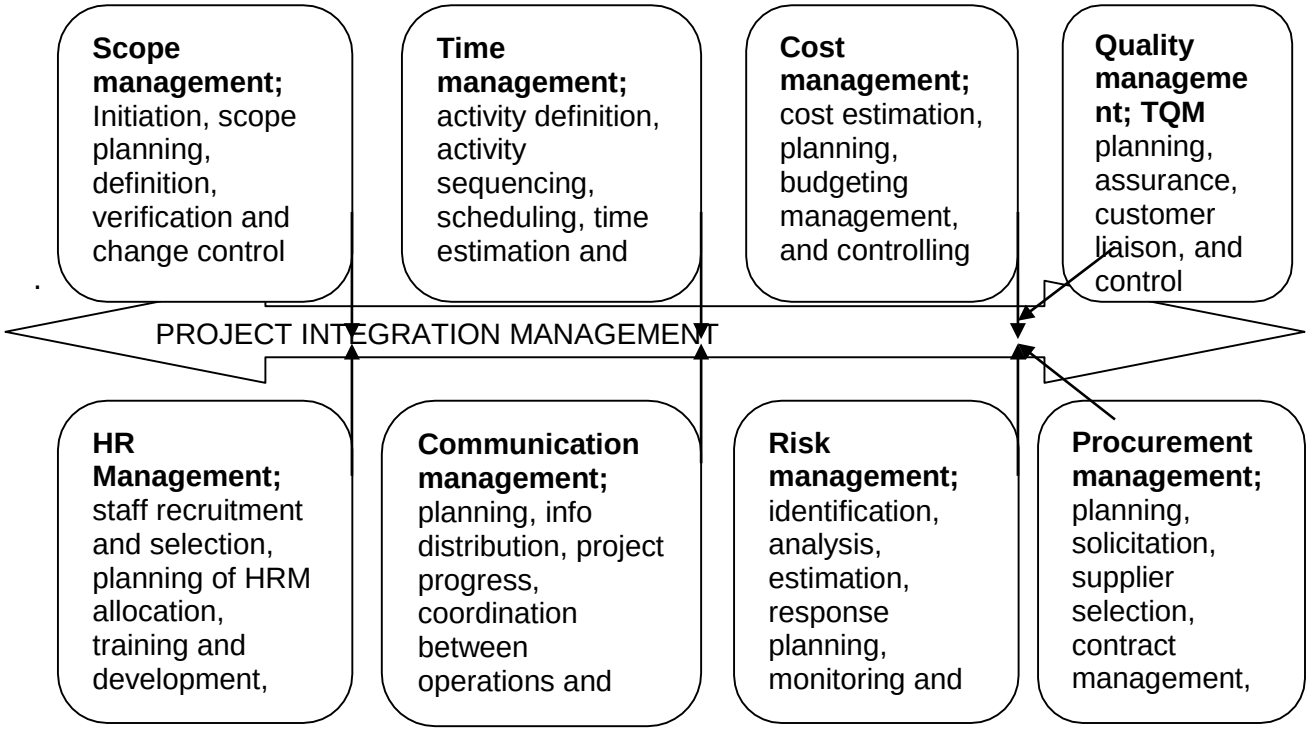
Source: Adapted from Burke 2010:265

Generally the failure in the execution manifests itself in the form of late delivery, overrun costs or under budgeting, under performance, poor quality and the deliverables failing to meet the customer expectations. Many factors come in between the initiation, planning, execution and handover stages of the project execution process. This suggests therefore that project failure is a process (Jowah, 2013:276) since the successful implementation of the project is also a process. Because this is a process, failure can occur at any phase in the process, a proper review of the project failure process would need an analytical look at each process including its pros and cons. A proactive approach to the project execution should work to avert possible failure through effective project risk management and leader's ability to marshal the human resources to perform.

3.5.1 Critical role of the project manager

Barki, Rivard & Talbot (2001: 37-70) position the manager as the central figure in the project execution process. The function of the manager is that of coordinating and integrating the different aspects, elements, operations into one unit which becomes the complete project eventually. It is from the project leader that the resources, the progress and risks are coordinated together allowing for proper decisions. The focus of the project manager should be getting to achieve the project objectives through creation of a unified culture of working towards the vision. If the coordination does not integrate the different elements (Andres and Zmud, 2002:41-70) involving all project activities (initiation, planning, execution and closure) and systems (costs, schedules, quality, staffing, etc), the execution process is likely to run into problems. The linkages that promote project execution success are illustrated in the diagram (figure 3.5) below.

Figure 3. 5 The interface between knowledge areas



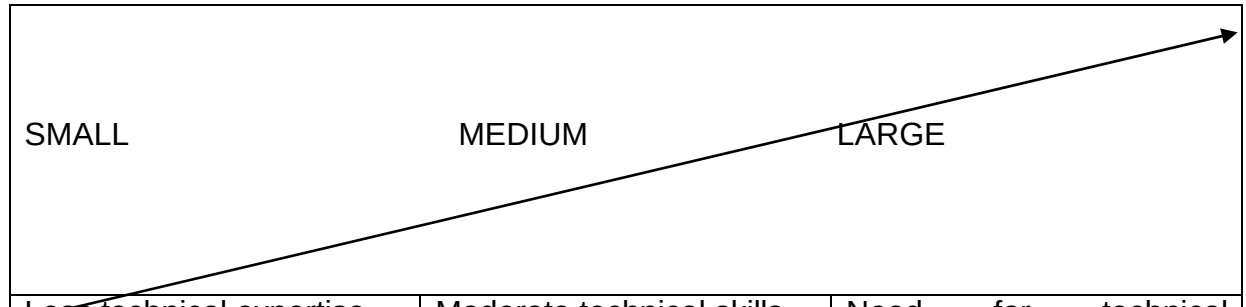
Source: Jowah, 2013:216

All these multi-activities converge into the plan which will be working towards reaching the objectives for the execution. The planning is based on the project brief and scope and the deliverables are clearly defined and identified. There is continuous planning throughout the life cycle of the execution process since there are always differences between the original plan and the actual results from operations (Burke, 2007: 49). The ten different knowledge areas suggested by the PMI and the 40 areas by the APM all aid in the final achievement of the completion of the project execution process. Project integration management (PMBOK, 2018:6) the ninth knowledge area is the central hub around which all the processes rotate either simultaneously or one after another depending on the *interdependability* of the operations. Apart from these 10 project management knowledge areas, the other managerial functions remain in operation, namely; planning, organising, budgeting and controlling (Sroufe, 2018:4). To this should be added interpersonal skills, thinking skills, judgement, integrity, initiative, self-confidence and organisational awareness.

3.5.2 Project leadership as a success factor

Project management functions and responsibilities move on a continuum depending on the size of the project (Brown 2008:1 - 10). Small projects will generally be simple and straight forward, medium size needs more attention, but large projects demand more technical competencies and or tools. This is illustrated in Figure 3. 6 below.

Figure 3.6 Project manager – leadership continuum



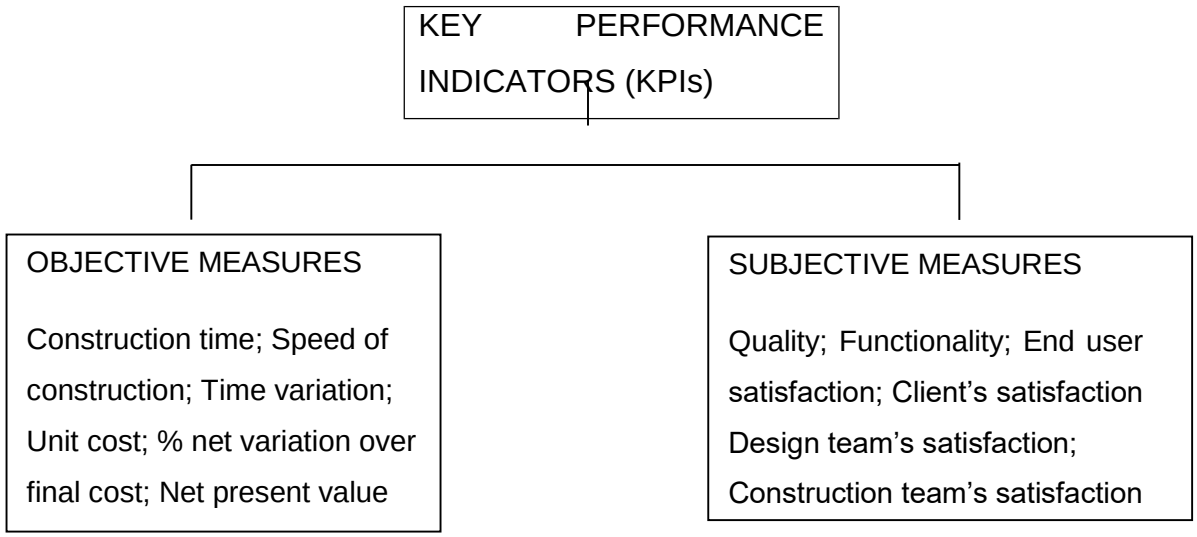
Less technical expertise Small risk of loss of money Less political interest Manager works like GM Manager makes most decisions	Moderate technical skills More interest on possible loss Increased political interest Command and influence	Need for technical expertise High risk more senior concern High political interference

Structure hierarchical	Decisions shared with team Hierarchical – matrix structure	Need for leadership approach Management team decides Pure matrix structure
Project Manager	Project Manager / Leader	Project Leader

Source: Author's own construction

Technical skill requirements increase with the complexity of the project as the time needed to complete, the scope to be covered, the budget set aside and the risk levels increase. The size of the project is an important variable in the project execution success as the risk also increases along the continuum. As the size increases, there is a corresponding demand on the skills of the project manager, and leadership increasingly becomes necessary. Norrie and Walker (2004:47 - 56) posit that as the size increases, there is a greater need for project leaders and not managers. The resources needed are directly proportional to the size of the project and its complexity given the complexity of the technical requirements. The success factors influence the success of the project negatively or positively depending on other factors that relate to project execution. Success criteria are the measures by which project success or failure is judged. Chan and Chan constructed a model illustrated in figure 3. 7 below.

Figure 3.7 Key performance indicators for projects



Source: Chan & Chan 2004:203 – 221.

Of particular interest in all these models is the absence of the emphasis on technical qualifications with them being mentioned briefly. Whilst there is no agreement amongst researchers on what exactly constitutes Key Performance Indicators (KPI), the literature shows that performance measurements of projects are moving away from the iron triangle towards more qualitative and quantitative measures (Toor & Ogunlana 2010:228 - 236).

3.6 CHAPTER SUMMARY

The world has advanced in the use of technology and most operations that used to be painstaking performed by human beings are performed more accurately by tools (machines, computer software and many other gadgets). Many more technicians have been developed that have accelerated the processes during project execution, and yet projects continue to fail. At one time it was believed that technical expertise was a guarantee for the success of a project, to date ICT companies prefer to employ IT professionals as project managers, but projects continue to fail. This therefore seems to say that there are certain aspects and variables to the process of project execution beyond the hard skills. Universities and colleges teaching engineering courses have realised that whilst their engineering graduates leave institutions of higher learning with the best qualifications, the management of these ICT projects requires more than the hard skills. Increasingly educational institutions are moving towards introducing the soft skills to the students in an effort to produce graduates that have both hard and soft skills.

CHAPTER 4

RESEARCH DESIGN AND METHODOLOGY

4.1 INTRODUCTION

Research is a systematic approach of gathering data or information (Upadhay and Singh 2008:178), analysing the data, interpreting the data into information (knowledge) which will be used for desired purposes for which the research was conducted. Suri (2013:83) concurs and posits that the knowledge emanating from the research is generally used for decision making, to advance other causes, develop theories, satisfy curiosity or to help understand some unknown phenomenon. Welman, Kruger and Mitchell (2005:2) say research is a process involving scientifically gathering scientific knowledge by means of various objective methods and procedures. What is important is note that the research is a systematic, mathematical and methodical process (Collis & Hussey, 2009:3) used to gather data during an investigation. The investigation should have objectives, chief among them to increase the knowledge and help in finding solutions to certain problems or to answer certain unanswered questions. Because it is a scientific method, it can be subjected to tests for validity and reliability to prove the absence of bias in the findings (Kumar 2005:14). A problem has to be identified or a study gap must be established on the basis of which the objectives and the questions will be developed to respond to or answer the problem statement (Maylor & Blackmon, 2005:5) which is the reason for which the research is conducted in the first place.

4.2 PROBLEM STATEMENT

The world has experienced an unprecedented increase in knowledge and the levels of technology available has reduced human effort drastically. Much work that took many hours and many people to perform has been reduced to the need for a handful of technicians and doing the same work more accurately and yet in a much shorter time. This has impacted positively on the costs of getting work done in terms of less person power, reduced costs (labour), more accuracy and shortened time, yet the project execution failure rate has not changed. Highly qualified (hard skills) graduates have been released into the market and many have quickly occupied positions of management in projects, to no benefit to the project execution failure rate. Evidently the modernisation technical education, advances in the quality of operational tools and techniques has failed

to reduce the failure rate. Projects have continued to fail to meet the iron triangle expectations with most (57% plus) of the ICT projects abandoned half way, the little that are completed have run into cost overruns, poor quality, or never delivered in time. Clearly hard skills have done nothing to solve the problem, it is left to the research to find the impact of soft skills and the likelihood that these can motivate people to perform.

4.3 RESEARCH OBJECTIVES

Objectives are the expected outcomes of the research in response to or with special reference to the gap identified in the problem statement. The objectives for this research were to identify the extent to which the soft skills could be the solution to redeem the projects from this high failure rate. In this study the objectives were classified as primary and secondary objectives;

4.3.1 Primary objective; The primary objective is the main or direct reason and expectation for the research.

- To identify why project execution by highly qualified and experienced engineers generally ends as a failed endeavour.
- To establish the impact of soft skills in getting employees to perform in contrast to use of hard skills by manager.

4.3.2 Secondary objectives; The secondary objectives are derived from the primary objective and seek to refine the primary objective.

- To identify the role played by hard skills in project management success if any.
- To identify the benefit of focusing on soft skills and not hard skills on the execution of projects.

4.4 RESEARCH QUESTION

The purpose of a research question is to help answer the problem statement, which is the gap to be studied. Jowah (2015:77) posits that a research question assist in giving direction to the study by pointing out what is supposed to be known. In this study the main research question is stated as;

- Why does project management process led by qualified and experienced engineers fail to meet the expectations?

4.5 RESEARCH DESIGN AND RESEARCH METHODOLOGY

Because research is a process and to that a scientific process, it follows therefore that it should have a sequence of events or activities. Consequently the process is divisible into two parts that are interrelated, namely; research design and research methodology. Jowah (2015:77) argues that these two are constantly wrongly interchangeably used as if they mean the same thing.

Research design – is defined as the road map or path (steps followed) in the process indicating what is expected to be done in a scientific (logical) manner. The activities are and a lined up in a specific (chronologically) order with one step leading to the other, thus milestones are implied. In this process the "what" question was asked and was answered; what was the research problem, what was the research objective, what was the research question, what method of research was to be used, what was the population under study, what was the sample, what method was used to sample the population, what instrument was used to collect the data, and what method was used to analyse the data?

On the other hand, **Research methodology** speaks of the methods to be used – how will the steps (activities in the research design) be executed to comply with the research design. The research methodology is operationalization of the research design, and thus, the how of what was responded to as indicated below. The two are therefore different from each other and these differences are discussed in the passages below. These two are related and intertwined in that the design informs what the methodology will be addressing, a comparison is made in table 4.1 below.

Table 4.1 Differentiating research design from research methodology

RESEARCH DESIGN	RESEARCH METHODOLOGY
Strategic master plan	Operational or execution plan
Emphasizes the road to be walked	Emphasizes how the walking is done

Emphasis on what results are expected	Emphasis on tools/techniques for results
Guided by research problem / question	Guided by the tasks and work packages
Focuses on rationality of research	Focuses on procedures and processes
Focuses on the “what should be done?”	Focuses on “how should it be done?”

Source: Jowah, 2014:77

From the table above the design is the master plan for the research clearly indicating what steps or activities were to be undertaken by the researcher? The methodology is the operational plan discussing how the design was implemented, the design identified the path to be followed, and the methodology spoke to how that path will be travelled by the traveller. The design was about the logic behind the ‘doing’ and methodology was interested in the processes and procedures. Thus the research methodology described how each of these milestones (activities) were converted from a plan to a completed research project since the research methodology is an explanation of how the techniques identified in the research design are used (Babbie and Mouton, 2001:55).

4.5.1 Research methodology used – there are three most prominent methodologies used in research, and these are the quantitative method (generally referred to as the scientific method), the qualitative method and a combination of both methods (mixed methods. The researcher opted to use both methods to take advantage of the strengths of both methodologies because of the type of study and information that was required. Maree (2016:162) defined quantitative research methodology as a systematic objective process that uses numerical data extracted from large samples on the basis on which generalisations about the population are made. Burns and Grove (2005:23) concur positing that this is an objective, systematic and formal process where numerical data is collected and interpreted to generalise on the population.

On the other hand Berg (2007:7) defines qualitative research as a process that involves the interaction of the research objects with the researcher where information collected is not numerical but verbal. Elliot and Timulak (2007:147-169) referred to qualitative as an inquiry seeking for the understanding of the personal meanings of individual experiences within their environment. The mingling with the respondents is perceived to be beneficial

in that it gives a personal and better understanding of the subject under study. Interpretivism (qualitative approach) makes the following assumptions;

- human life can only be understood from within – mixing with respondents
- social life is purely a human product and answers will come from these people
- human life is the purposive source or origin of meaning for all research purposes
- human behaviour is inevitable influenced by the knowledge of the social world.

A comparison table is provided below to assist in understanding the primary differences between quantitative and qualitative research methodologies (table 4.2) below.

Table 4.2 Difference between quantitative and qualitative research methods

Quantitative [positivist approach]	Qualitative [anti-positivist]
1.focus on observable behaviour	1.focus on laws of relationships
2.focus on universal relationship laws	2.focus on human experience
3.focus on causes of phenomenon	3.focus on experience of phenomena
4.uses the natural science model	4.uses the experiential model
5.is aided by firm checks and balances	5.does not have firm checks and balances
6.emphasis measurement and analysis	6.emphasise investigating processes
7. have natural science built structures	7.have socially built nature of reality
8.focus on causal relationships and variables	8.focus on object relationship with researcher
9. ideal for objective data with numbers	9.uses subjective data from opinions
10. uses rigidly structured methods	10. uses flexible exploratory methods
11.tries to understand from outside	11.tries to be involved with subjects
12. needs a static environment	12 work with non-static realities
13. uses of particularistic approach	13. uses holistic [wide data] approach
14. uses large samples	14.uses small samples

Source: Jowah, 2015: 103

Though these methodologies differ in many respects, they are actually complementary to each other and ideal for most researches where detailed aspects of the investigation may be necessary. This research used both these methods since they are complementary to each other (Creswell, 2008:18) and their positive attributes were used to assist with providing a holistic approach to the research.

4.5.2 The population under study - The population for the research was operational staff that worked with or under technically qualified project practitioners in these IT

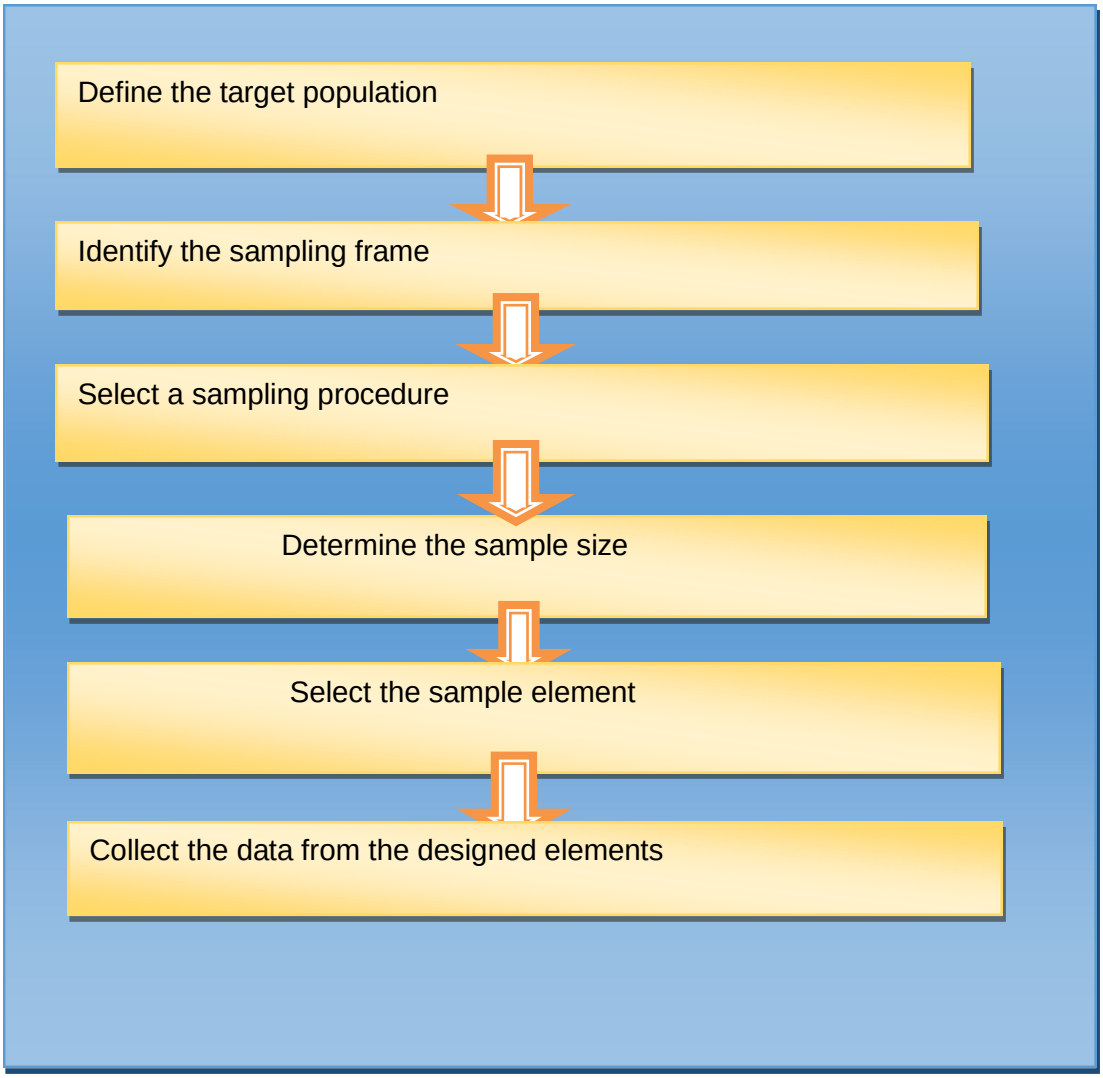
companies. It had to be operational staff that took instructions from the engineers and journey involved in the industry as they worked to execute the projects. These were expected to measure or evaluate the interpersonal relationships with the technical staff and how they we treated including whether the work ethics motivated them to work.

4.5.3 The population sample - Five IT projects under way were identified and arrangements made with the managements in those places to allow the research access. The choice of the organisations to be "researched from" depended largely on their willingness to participate in the research and their proximity to the researcher. Costs were a major consideration for this exercise, therefore availability, more than anything else, was paramount.

4.5.4 The sampling method - Inside the organisations the researcher randomly choose whoever put on the work suit (the IT companies were in premises of other organisations where they were executing the projects and they wore labelled work suits). No particular sequence was used suggesting that it was both convenience with a degree of randomness.

4.5.5 Sample size – The numbers of respondents that would be accessible were not known before hand and it was difficult to pre-determine the size of the sample. In total 115 respondents were interviewed and the findings are based on a total of 103 after the other 12 were removed during editing. Kobus' (2016:162) postulation on the size of a sample (the larger the sample the higher the chances of getting accurate results) was used as a guide on what would be an acceptable size. According to Welman et al (2005:71) the larger the sample the lower the standard error, and Maree (2008:179) suggests eight factors that influence sample size decision, namely; type of research, research hypotheses, financial constraints, importance of findings, number of variables, data collection methods, levels of accuracy needed and population size. The steps as postulated by Churchill and Lacobucci are illustrated in their chronological order in the figure 4.1 below. These are to be followed as listed as one step leads to the other and a change in this order may create problems in the system.

Figure 4.1 The six-step procedure for drawing a sample



Source: Adapted from Churchill & Lacobucci 2009:283

4.5.6 The instrument used to collect the data; It was decided that since the research was going to be a combination of both quantitative and qualitative methodologies, a structured and semi-structured questionnaire was appropriate. After constructing the instrument, the instrument was trial-run on 12 people in an IT environment, after which some adjustments were made. The instrument was given to a statistician where further corrections were suggested in order to improve on reliability of the instrument. The corrected and polished instrument was then used to collect the data required for the

research. The instrument comprised of three sections, namely; Section A, Section B and Section C.

Section A – was essentially biography which was considered necessary to qualify the respondents, anyone who filled the form needed to be an employee in an IT organisation and involved in project execution. Four (4) respondents had their questionnaires withdrawn because they were considered not to be qualified as per the requirements for respondents.

Section B – this part of the questionnaire was a Likert scale meant to evaluate the opinion of the respondents on the personalities of the hard skilled managers. This was based on the known theory on what soft skills are and their impact on performance as understood from existing literature on management and leadership.

Section C – this was an open ended section where the respondents freely expressed themselves within the limits or parameters of the research. This section (qualitative) opened up discussions between the respondents and the researcher and enabled the inclusion of other issues that might have been omitted in the instrument.

Motivation for using the questionnaire as research instrument; The questionnaire is a collection of logically put questions asked around the subject of interest, and there were a few considerations made, namely;

- It was ideal because the data was collected anonymously and no connection could be made with the respondent since no names or markings were allowed.
- The response was considered confidential and thereby protecting the respondent – no one else knew what a respondent said in their response to the questions.
- The questions asked were standard thereby allowing all respondents to answer to the same questions – this provided the required uniformity making the questionnaire reliable.
- If there was any need to refer to the data after the research (later on) the responses remained standard as provided for by the respondents.

- The questionnaires remain a valuable tool for future researchers seeking to use the data as secondary research material subject to the same interpretation.
- The questionnaire method allowed the researcher to reach out to more people within the short space of time required.
- The questionnaire was subjected to reliability and validity tests and in the event of any doubts it still could be conducted to the same tests for relevance and dependability.
- Questionnaires are editable and can be subjected to cleaning and coding before data capturing by different people coming up with the same data and possibly result.
- The standard / uniform nature of the questionnaire enables unquestionable objectivity which is necessary for scientific research.
- Personally administered questionnaires allow for effective monitoring of the responses and enables the researcher to keep (and not forget) the answers given.

Demerits of the use of questionnaires; The questionnaire has its advantages and this is why it was chosen as an instrument for this research, but it has its demerits (disadvantages) too. The weaknesses of the questionnaire are listed below;

- Emailed questionnaires generally have a low response rate with many prospective respondents ignoring the questionnaires.
- Identifying the correct target population and using the most appropriate sampling method becomes difficult because the researcher has no direct control.
- There is no one present to assist with any ambiguity in the questionnaire when this is sent on line or left for the respondent to attend to alone.
- Questionnaires do not interpret context nor can they tell a meaning behind a response and there is a likelihood of socially desirable responses to certain questions.

Conducting the survey face to face eliminated the weaknesses that would have otherwise impacted on the return rate and other factors during the process. This also allowed the researcher to manage time, quality and the costs for the research project by being physically present. Specifically Section C with open ended questions enabled direct interaction between the researcher and the respondents in their own environment. The

respondents had an opportunity to express themselves to the researcher and interact and understand the subject and explain their situation.

Testing for reliability and validity

The instrument was tested for both reliability and validity; reliability was intended to guarantee that the respondents understood the questions in almost the same way and would therefore give answers correct to what is requested (Kobus, 2016:238). It was intended that people would give the correct answer based on clarity of the question asked. The types of tests that were conduct are;

- Test-retest reliability
- Equivalent form reliability,
- Split-halves reliability, and
- Internal reliability

Validity test – under the supervision of the statistician the questionnaire was tested for validity by subjecting it through the tests for validity, namely;

- Face validity,
- Content validity,
- Construct validity,
- Construct validity, and
- Criterion validity

4.5.7 The data collection method: The questionnaire / instrument was personally administered to the respondents to enable them to ask any questions for clarity where necessary. Besides the decision was also based on the understanding that the return rate of submitted instruments will definitely be high since the respondents acted on the instrument on the spot. Because of the ethics close informing that the respondents filled in voluntarily, 3 people opted out after starting and two refused from the onset.

4.5.8 Data analysis method; The collected data was edited and cleaned then coded before capturing it onto an excel spread sheet which was used for the analysis. The excel spread sheet was used because that was the only software the researcher had access to, and besides, it served the purpose as required by the researcher. The excel software enabled the data to be converted to tables, bar charts, pie charts, graphs and histograms. The illustrations were in direct response to specific questions or statements which were ranked on the Likert scale. In the analysis report each question as it appears in the questionnaire is repeated and accompanied by the illustration in the form of diagrams and or tables. The relationship between the variables as illustrated in the diagrams and tables was therefore explained in detail with generalisation made were or theories constructed where there was consensus. This data was therefore interpreted and recorded as research findings.

4.6 ETHICAL CONSIDERATIONS

The government has high expectation from academic researchers in an effort to protect the citizens from harm, be it physical or emotional. The questionnaire started with an indication in the form of a statement that research participation was voluntary and that no one was compelled to be a respondent. Further to this it was clearly indicated on the form and explained by the researcher to every respondent that they were protected, no names were to be written, no markings that can be used to identify them, and that they could pull out anytime during the research process. Six considerations by Trochim (2006:1) were adhered to, namely.

Table 4.3 Six ethical considerations for researchers

Voluntary participation	the participants at no time should be forced into taking part in the research.
Informed consent	It is imperative that the participants get a letter before participating which gives them the opportunity to say no if they wish to do so.
Risk of harm.	Ethical standards clearly state that the researcher must at no given time put the participant in danger while conducting their research.
Confidentiality	Information gathered needs to be taken into consideration and must be respected at all times.
Anonymity guarantees	The right to privacy to the participants especially if it could mean that their views on a certain subject could cause problems in the workplace which could lead to job loss as an example.

Right to service.	The participants have the right to benefit from any research that might incur a positive outcome. This would most certainly in most cases be an improvement of the conditions that they find themselves in.

Source: Constructed from Trochim (2006:1)

These principles were adhered to and all participants were informed of their rights before the interviews began. There was no personal information that was given to any official or any authority to protect the respondents as per agreement.

4.6 LIMITATIONS OF THE RESEARCH

It is not possible to carry out a research of this nature without limitations and risks that may affect the results, or the working thereof. It was impossible to conduct a country wide research on this subject because;

- the cost to carry out such a nation wide research is too high
- the importance of this research may not be of national interest
- it was difficult to know the total number of foreign employees
- thus it became difficult to decide on the proper sample size
- some of the respondents struggled with the simple English
- respondents suspected that the researcher was from Home Affairs
- getting permission to research was somewhat difficult
- some people were too busy to participate in the research

To the best of the researcher's ability, objectivity remained primary and the survey was carried out professionally. Time, costs and getting permission were factors that constrained the researcher from covering more institutions in the country. However despite the limitations, the research was objectively carried out and the processes clearly outlined and followed scientifically. The results are expected therefore to be objective and any other researcher using the same methodology may come to the same findings as recorded in coming chapters.

4.7 CHAPTER SUMMARY

The research was conducted systematically in accordance with the expectations of a scientific research. All necessary precautions were taken to allow for valid and reliable results that are repeatable by other researchers. The findings may be the first step in the training of managers on diversity and the management of diverse workplace environment. The use of both quantitative and qualitative methods enabled the researcher to capture a somewhat holistic understanding of the respondents' perceptions. Whilst these may be regarded purely as perceptions, it is these perceptions that form the reality of the people who are affected. Such feelings may affect the performance of the recipients of that perceived good or ill treatment. All the concerns showed by the respondents were attended to immediately and all assistance to understand, what was not clear was provided. After the data editing, cleaning, capturing, and analysis was completed, the work was subjected to a review to iron out any possible errors before presenting the data as the final finding.

CHAPTER 5 –

DATA ANALYSIS, INTERPRETATION, PRESENTATION AND DISCUSSION OF THE RESULTS

5.1 INTRODUCTION

This chapter presence the findings of the research in diagrammatic form with explanations to the relationships between the variables under study. The primary purpose is the seek to find a solution to the problem as stated in the problem statement of the study. The problem to be solved is essentially to seek to understand why the failure rate for technical projects remains high even with projects executed by highly qualified technical professions. The advancement of technology and the presence of sophisticated and efficient tools and techniques does not seem to have reduced the failure rate. Though the use of technology has shortened the implementation of most tasks has improved and was shortened because of use of efficient techniques and tools, yet the failure rate in IT projects continues to linger at 47% failure rate. The objective of the study was therefore to identify the reasons project failure rate remains high in the presence of all this technology. The study looked at the impact of soft skills and hard skills (which are already there in the technical qualifications of the project managers) to try to establish possible links. The study was conducted amongst IT specialists at different levels as alluded to in the previous chapter, using a questionnaire divided into three sections.

As stated above, the sections are, namely; Section A – Biography, Section B – Likert scale and Section C – Open ended questions. The reporting is in the same order used in the questionnaire to allow for comprehensive understanding of the different responses to the different questions asked. Each question or statement is repeated as it appears in the questionnaire, a brief explanation to justify the asking of that particular question or submitting that particular statement for ranking. This is then followed by the responses, firstly in diagrammatical format and then the illustration (diagram) is discussed to clarify the relationships of the variables in that particular study.

5.2 FINDINGS

The findings a clearly structured in a way that will allow for adequate information on the response given to each question, statement or request. Each response compares the variables, and where generalisations are possible, the same is stated.

5.2.1 Section A Biography

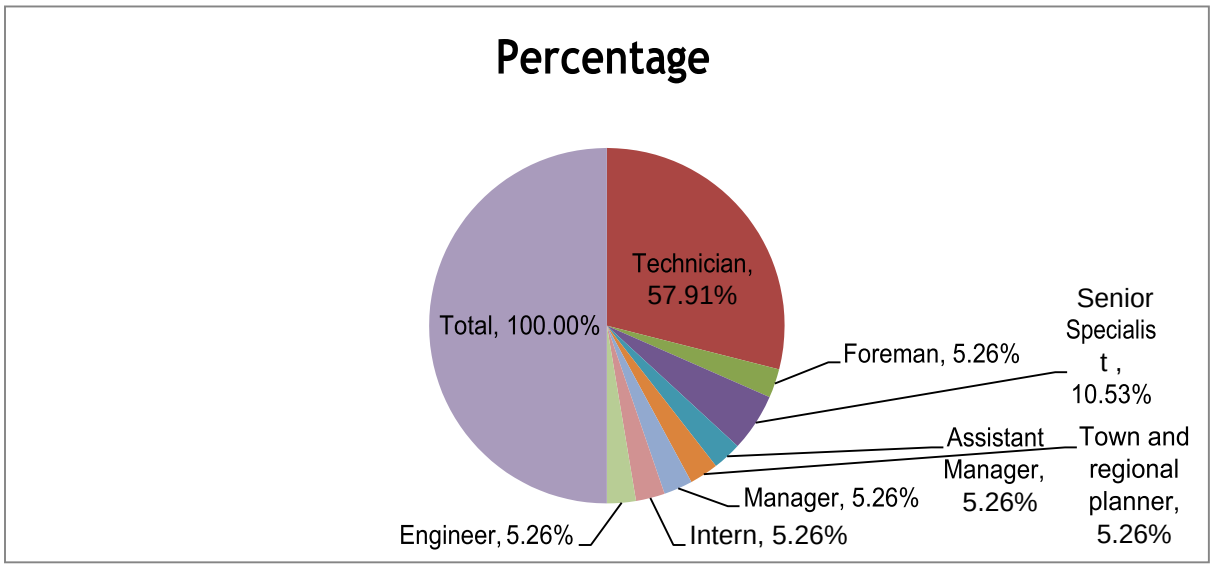
The questions that were asked in this section included the following: What is your position in the organization, your qualification, number of years in the industry and the age of the respondent. This was strictly for people in the ICT and these questions intended to sought to establish an understanding of the type of respondents in terms of their position in the industry; and number of years in that particular position as an indicator of how much they understand in relation to effective project leadership.

QUESTION 1: What is your position in the organisation?

Knowledge of the position in the industry had a lot to do with the respondent's understanding of what constitutes project failure. Figure 5.1 below indicates the positions of the respondents in their organization.

RESPONSE: The first expectation was that whoever was involved in the project would need some basic qualification in the ICT industry. Consequently they would have an understanding of what take place in the industry which would allow for meaningful contribution to the survey. The position would also assist in determining the degree to which the individual may influence the systems, practices and the attitude in general. Many leaders are known for their ability to work well with people, compared to managers who depend largely on the policies and procedures laid down in a book somewhere. Keeping the team together and or motivating people requires more of interpersonal relationships than anything else. The response from the participants is illustrated in figure 5.1 below.

Figure 5.1 Positions of the respondents to the research



Source: author's own construction

The participants in the research were largely technicians at 57.91% followed by senior specialists at 10.53%. The rest of the other respondents were at 5.26% each of the five including among others the engineer, the interns, the managers, the town planners, and the assistant managers. It can be generalized here that the bulk of the practitioners involved were technicians who do the actual implementation of these projects.

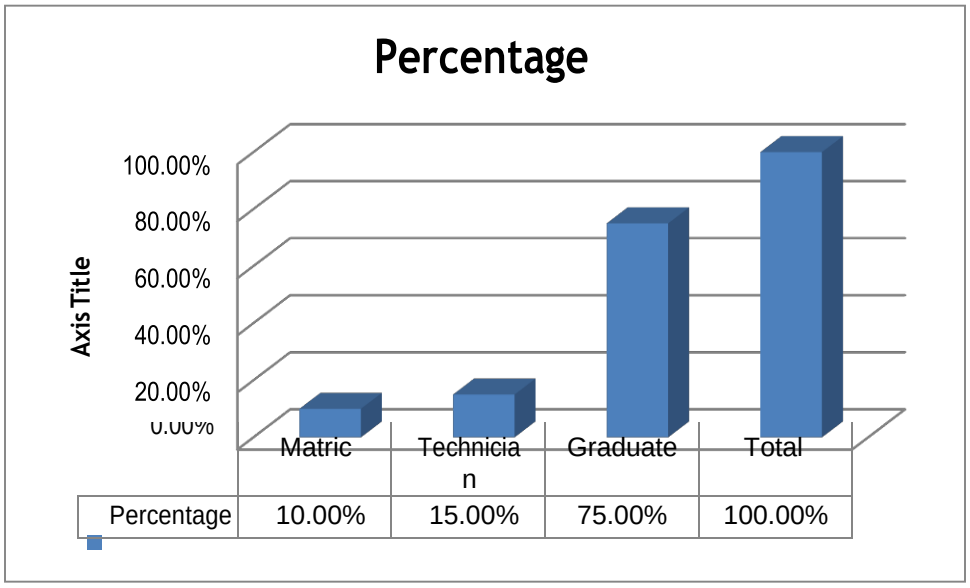
QUESTION 2: What is your qualification?

It is important to understand the level of education of the respondents because of how education can relate knowledge about a certain field of study and industry. Educational qualification will influence the respondent's perceptions of good project management practice.

RESPONSE: The ICT industry comprises of those qualified in hardware engineering and those qualified in software engineering, the two are complementary in the instalment of new systems in an organisation. This question would assist in establishing the nature of operations the organisation is involved in, and specifically what the individual does in the organisation. It would be expected that the higher the qualification, the higher the chances

of the respondent being in a management or supervisory position. The respondents' answers are illustrated in figure 5.2 below.

Figure 5.2 The educational qualifications of the respondents



Source: author's own construction

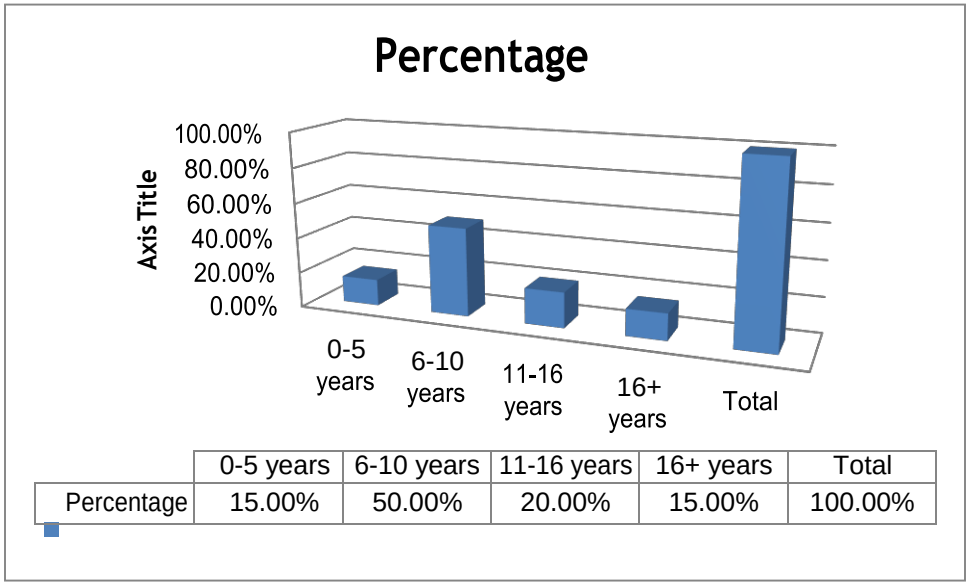
It was interesting to note that 75% of the respondents have a tertiary qualification, albeit respondents mostly come from management of ICT projects. There was no specific mention of a particular area of specialisation requested for in the survey questionnaire. This is followed by those with national and technical diplomas at 15%, thus a total of 90% of the respondents had a tertiary qualification, aligned to IT**.** The remaining 10% matric are matriculants, but it is not specified as to what knowledge they have in IT.

QUESTION 3: How long have you been in this industry?

Years of experience in the industry definitely assist with a possible development of emotional intelligence. Jowah (2013:278) submits that there is a direct relationship between the levels of emotional intelligence and an individual's experience. People without formal IT qualifications may end up knowing much of the operations from exposure, that should be understood as a development of the skill.

RESPONSE: The more experience you have, the better the respondent will be able to assess the project failure, because of their ability to understand the pros and cons of projects execution. In the same vein, a higher position in the organisation enables the respondent to be in the shoes of the project manager. Whilst formal qualifications are necessary, the “hands on experience” cannot be discounted as a form of education. Figure 5.3 illustrates the requirements as sought by the question.

Figure 5.3. The number of years in the industry



	0-5 years	6-10 years	11-16 years	16+ years	Total
Percentage	15.00%	50.00%	20.00%	15.00%	100.00%

Source: author’s own construction

Figure 5.3 above illustrates that a majority of the respondents (50%) have been involved with projects at their level for between 6-10 years; followed by 11-16 years at (20%); 16 years-more at 15%; and 0-5 years also (15%). From these results it can be seen that a majority of the respondents have been involved with projects at a professional level for between 6-10 years. This can be attributed to the current trend in the Information communication and technology industry, where there is a huge gap between professionals in their mid to late 30s and 50+ year old professionals. This gap poses quite a problem for the industry because it threatens the knowledge transfer element of the industry. This also introduces an opportunity for the project management fraternity where these young technicians/engineers/professionals can be taught the basics of project

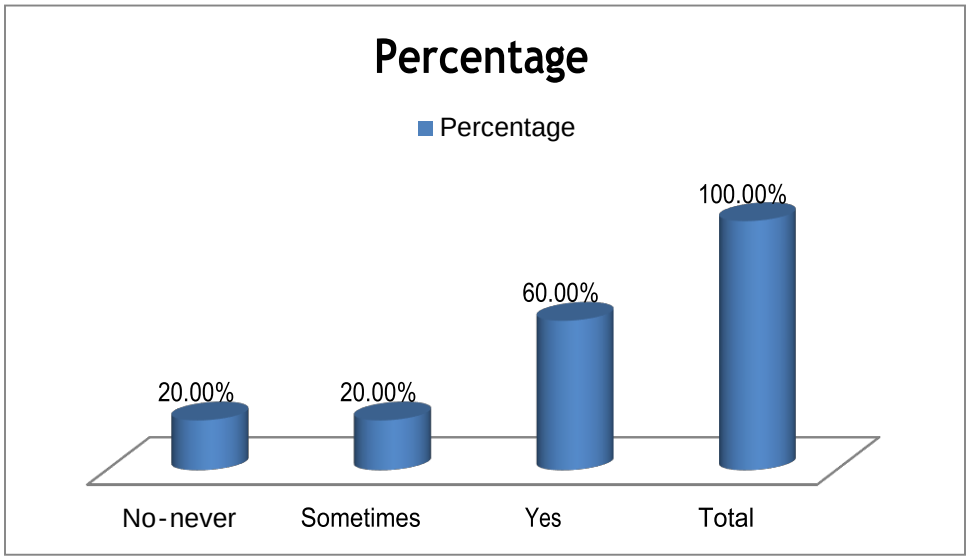
management. Technical skills are not a given for the effective management of a team, so, exposure and experience can help them deliver better projects when compared to their predecessors. In the past, engineers were required to fulfill the roles of project managers without a project management background. Some universities have started to include project management in their engineering courses, evidence of the need for a soft skill to professionals in hard skills.

QUESTION 4: Do you perform any management / supervisory functions?

Being in the position of authority gives one decision making power and this relates to how one will make those decisions to influence the project success or failure. Exposure in supervisor role allows one to interact with executive on a more strategic level, but helps the individual to understand better what it means to work with people. Project managers, supervisors, and team leaders have a duty to give guidance and motivate team members in a project environment.

RESPONSE: Having the exposure to management role allows an individual exposure and thus more knowledge and understanding of the organisations objectives. This can help the individual to drive the business towards meeting its objectives. Interaction with management helps understand the importance of people as a biggest asset of any organization. Understanding management requirements and what is expected to grow the organization is key aspect of a manager and helps them train, motivate, inspire and encourage employees in the organization. This is exactly the interpersonal skills required of a project manager, the interviewees provided information illustrated below in figure 5.4.

Figure 5.4 Performing management/supervisor role response below illustrate the results.



Source: author's own construction

Majority of the respondents (60%) have performed management or supervisor functions in project environment in their respective organizations; followed by (20%) who indicate that only perform when asked by their managers or acting on their positions; and another (20%) who have never had an opportunity to act on managerial or supervisor position.

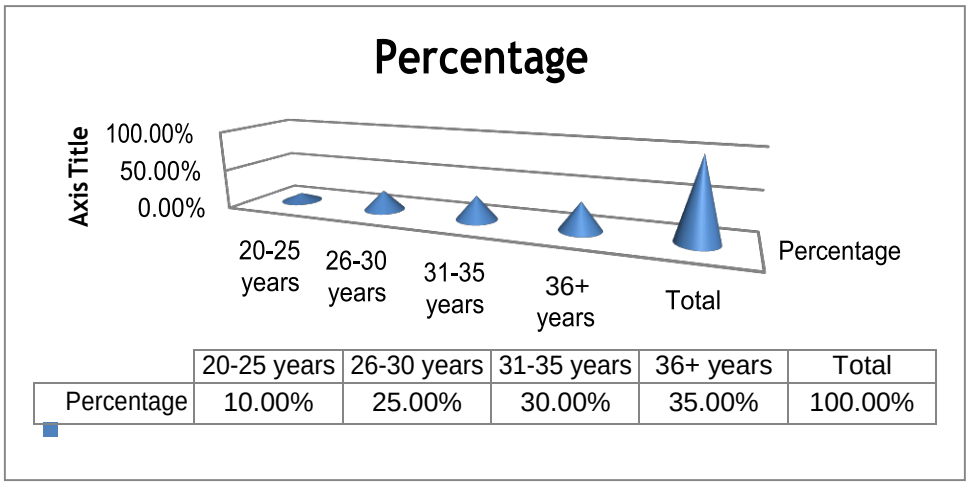
QUESTION 5: What is your age range?

A certain age is associated with a particular knowledge because of years of exposure and experience in your field of work (Shipley, Jackson, & Segrest, 2010:1-18). Indicating therefore that, on the law of averages, the more exposure one has the higher the probability of making good judgment on issues.

RESPONSE: The old you are the more you'll be expected to have some knowledge of the field you are in. You have been around which means you have been also exposed in different levels of management and different people from different cultures. You have some experience in how to deal with different challenges in the work place and working with people becomes one critical key in any organisation. It also allows one to be informed

of the decisions they make which can actually make or break the project. Age range can also indicate the number of years one has been involved in project environment especially working with people and learning the interpersonal skills required to work with people.

Figure 5.5 Age of the respondents below is the results.



	20-25 years	26-30 years	31-35 years	36+ years	Total
Percentage	10.00%	25.00%	30.00%	35.00%	100.00%

Source: author's own construction

The Figure 5.5 above illustrates the age range distribution amongst the respondents with 35% in the range 36+ years, 30% in the range 31-35 years, 25% in the range 26-30 years and the 20-25 age group trailing at 10%. As was expected in this case more respondents came from 36+ years people who of course have couple of years under their belt in the field of project management. Their experience in the industry tells how much they understand the importance of soft skills in working with people and in ICT projects.

QUESTION 6; Anything else you want to say

This section meant to open up a discussion with the respondents in relation to their biography, no responses were given on this issue.

5.2.2 SECTION B – LIKERT SCALE.

This section presents and discusses the technical expertise for the Project Manager as observed or understood by the respondents. The respondents were required to rate how relevant the technical skills were to the industry under study. The rating scale was

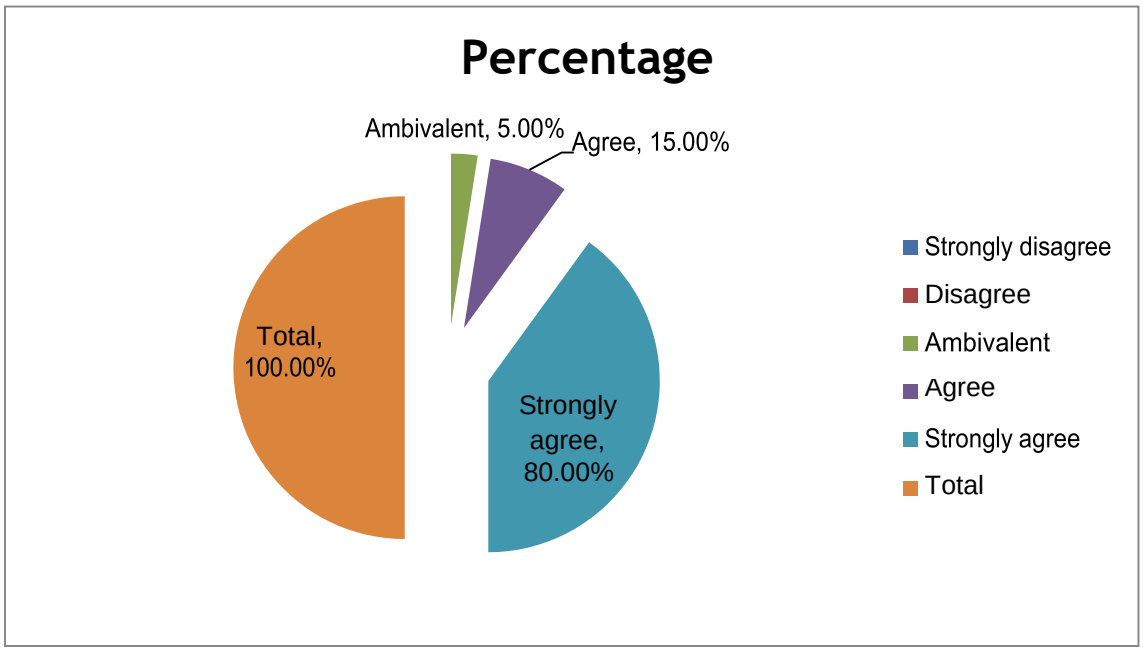
between 1-5 with 1 being Strongly disagree, 2 – Disagree, 3 – Ambivalent, 4 – Agree, and 5 – Strongly agree. These scales do not measure the strength of an attitude or perception, but they assist in determining the extent to which the individual ranks the statement.

STATEMENT 1: Technical skills must be relevant to the industry

There has always been an association between a technical qualification and the ability of an individual to manage better because they should know and understand what takes place.

RESPONSE: This statement is asked against the background of high failure rates of projects managed by people qualified in the specific industry in which the project is executed. Thus the question was appealing to the experience of the respondents to assist with information on whether they can put a direct relationship between the qualification of an individual and their ability to manage people who execute the project. The responses are illustrated in figure 5.6 below.

Figure 5.6 Relationship between technical skills and ability to manage project execution processes



Source: author's own construction

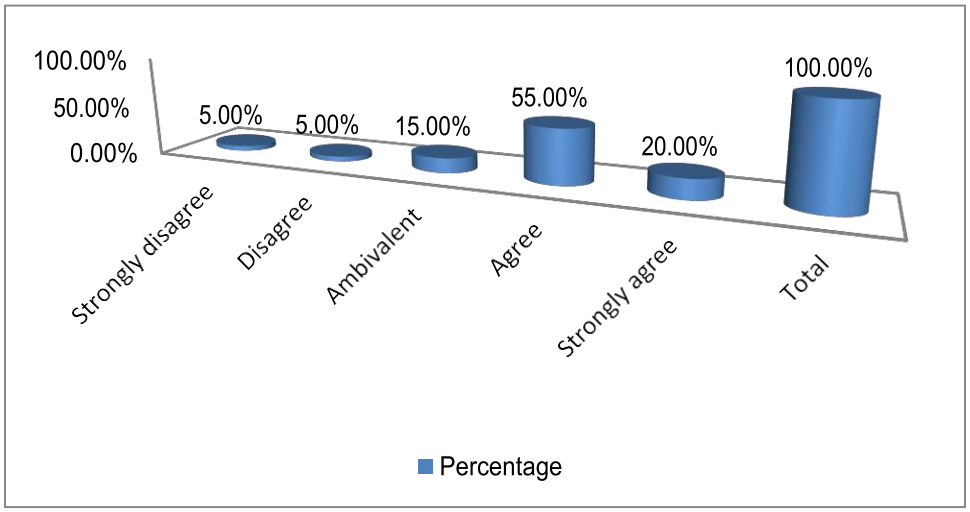
The respondents in this case overwhelmingly strongly agree at 80% that project managers with technical skills relevant to the industry will definitely successfully manage projects; followed by 15% respondents who also agree that with technical skills project managers have better chances of completing projects on time and within quality, only 5% of respondents did not respond to the question.

STATEMENT 2. A technical skill is necessary regardless of industry

Technical knowledge is always associated with understanding the details of the project. The assumption is that you understand how the tasks should be performed in a particular project, and what tools and techniques are required effective project execution.

RESPONSE: A project manager must have basic understanding of the industry which they apply their trade in. This will enable them to understand technical designs for the project during project initiation. It would help to be part of technical drawing design team which will edit and evaluate the final design drawings before the project can move to next process group which is planning. Figure 5.7 illustrates the results.

Figure 5.7 Technical skills necessity in the industry



Source: author's own construction

The Figure 5.7 above illustrates the responses amongst the respondents with 55% agreeing on how essential technical skills for the project manager are, followed by 20%

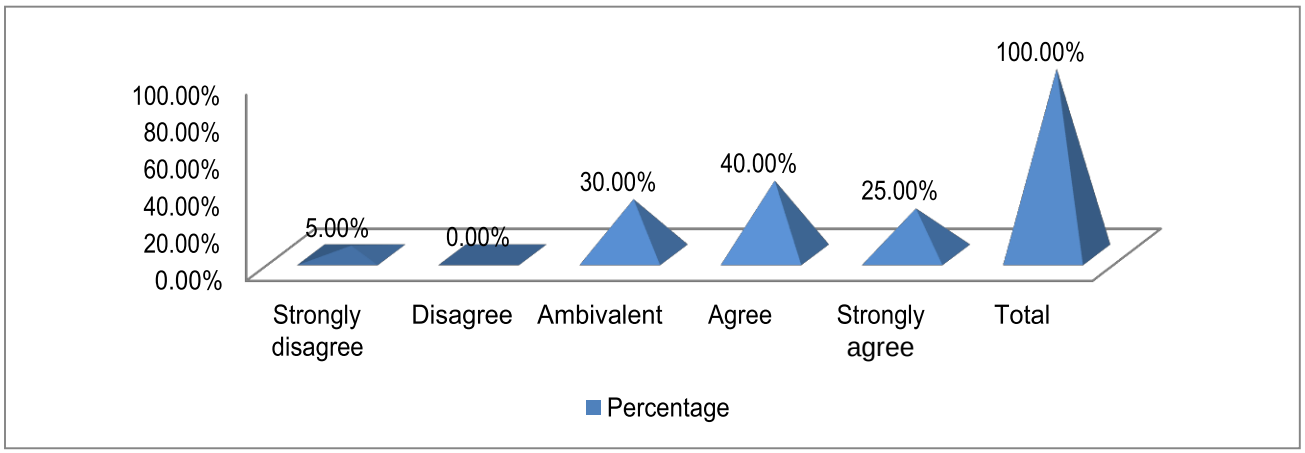
respondents who also strongly agree that it's necessary for project managers to have technical skills. 15% of respondents were ambivalent and chose not to respond, with only 5% of respondents strongly disagreeing.

STATEMENT 3. Higher technical qualifications mean better success chances

Expectation is that project managers with higher technical qualification are expected to manage their projects successfully because of the knowledge. Every engineering study promotes the technical knowledge of engineers and some of these engineers become project managers.

RESPONSE: The higher the qualification the more knowledgeable one is expected to have (May and Aikman, 2003:139-145), primarily the reason why people are sent to school. The curricula is expected to enable the recipients enough knowledge to function. Continuing to study and furthering your studies in a certain field helps you develop your intellectual property and human capital and that benefits the organisation. Project managers are expected to study and grow their careers so that they become knowledgeable in their field. Figure 5.8 below illustrate the respondent's response.

Figure 5.8 Relationship between higher technical qualification and project success



Source: author's own construction

The survey results indicate that the highest group of respondents feel the higher technical qualification will play a critical role in project success at 40%; they are followed by 25%

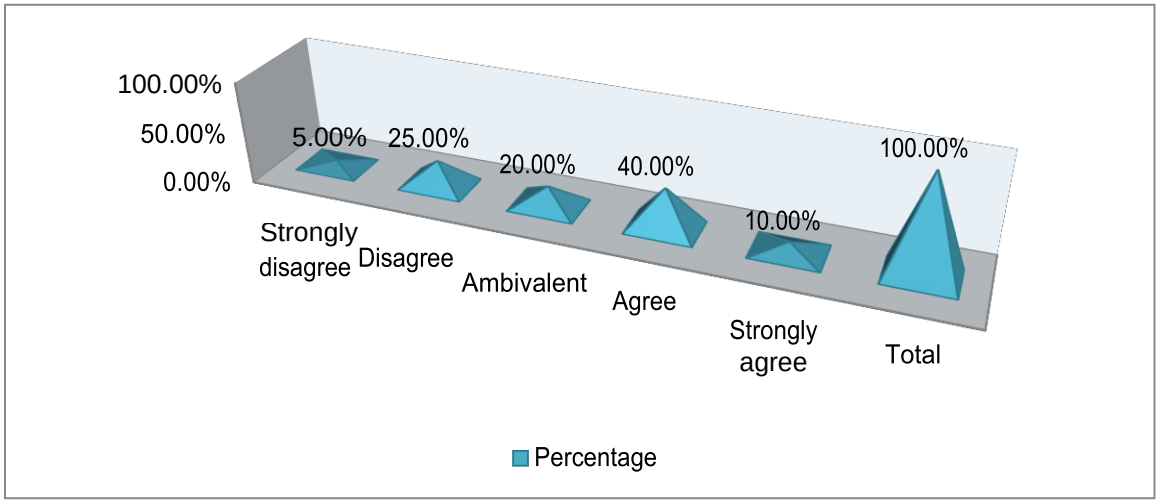
who strongly agrees that higher technical qualification is key as it means better project success, 30% of respondents were neutral and did not pick an answer, only 5% strongly disagree with higher technical qualification as a determining factor for project success.

STATEMENT 4. Good technical qualification means good management

Technical qualifications mean understanding of the industry requirement and engineering aspects of the field. Can technical qualification lead to good management? Good technical knowledge does not mean that you are qualified to effectively manage project teams. Though your contribution to the technical discussions may of tremendous help, projects are done by people, for people, through people. The general understanding over the years has been that when you have technical skills it meant you were able. From experience, 47%-63% of projects that fail are managed by technically skilled people.

RESPONSE: This question was asked to understand if good technical qualification simple means well understanding of the project designs and technical specification. A project manager with good technical qualification will definitely make informed decision on technical implementation. This contributes towards the project success through meaningful contribution of someone with technical understanding of the project. Good technical qualification will lead to good management. As depicted on figure 5.9 below.

Figure 5.9 Relationship between technical qualification and management



Source: author's own construction

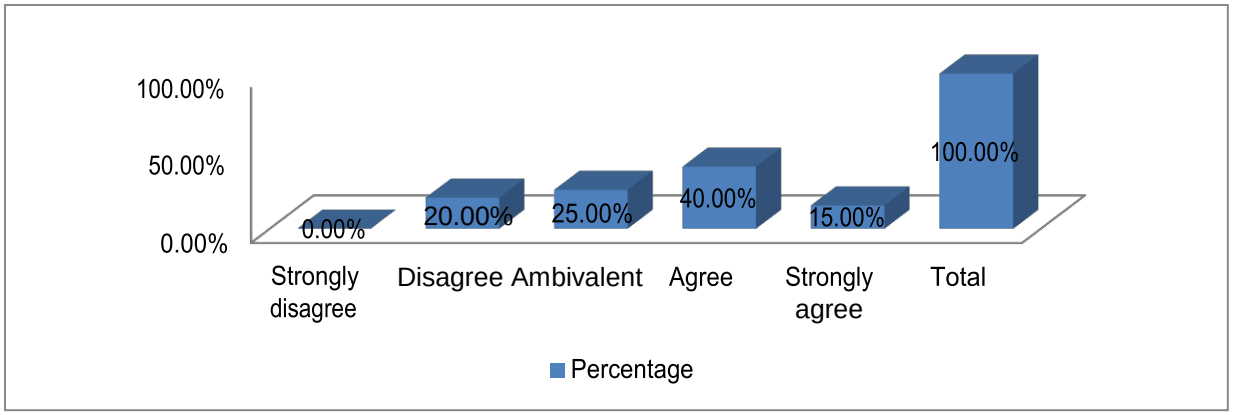
40% of the respondents think good technical qualification can assist project manager with good management of project teams; while 10% strongly agrees that project managers with good technical silks means they are able to become good managers, followed 25% of respondents who disagree and thinks there is no relevance, 20% were ambivalent to the question, and only 5% of respondents who strong disagrees that good technical qualification has anything to do with good management.

STATEMENT 5. You cannot manage a technical operation you are not an expert in

When you show attributes of an expert in your field you tend to have followers who respect you and are willing to be led by you. You pay attention to details especially technical details of the project, unless if you have an understanding of what the tasks entail.

RESPONSE: This is meant to understand how much of your knowledge can contribute to project success. Being an expert in your field makes you contribute valuable in the project and can also convince your team members to respect your decision making because they are led by someone who has experience, illustrated in Figure 5.10 below.

Figure 5.10 Management of technical operation you are not an expert in



Source: author's own construction

Respondents feel it's necessary for project managers and managers to be an expert in their field of work so that they are able to excel in their roles. As confirmed by 40% of respondents; followed by 15% who strongly agrees that one has to an expert in their field of work so that they can manage any projects in that field. 25% chose to be neutral and

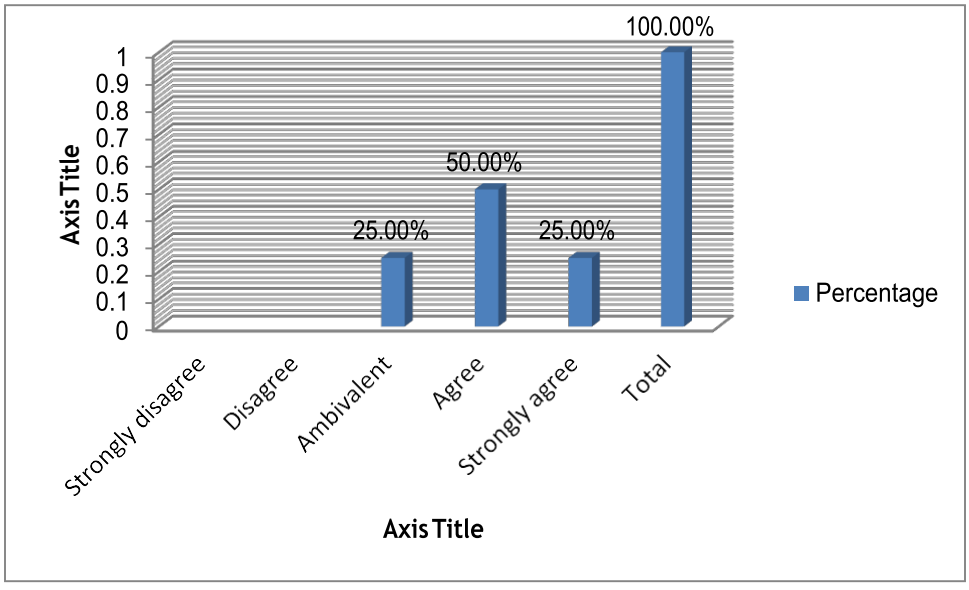
not respond and 20% disagreed, they felt that anyone can manage an operation or project without being an expert in that discipline.

STATEMENT 6. Technical people understood use of tools and techniques better.

Technical understanding of that engineering discipline is known to contribute to better understanding of the tools used in that sector. In the case of ICT, technical knowledge of information and communication technology will always provide and advantage on working with tools and techniques in this field.

RESPONSE: People with technical understanding of their field of work will always make meaningful contributions especially around tools and techniques to be used in that project. Their advantage also creates a positive vibe within the project team which leads to good performance of the team. Those project managers with technical skills will always manage projects better than people with no technical background. Below figure 5.11 depicts the response.

Figure 5.11 Relationship between technical people, tools and techniques



Source: author's own construction

The survey results indicate that the highest group of respondents think technical people will better use tools and techniques in projects better than those with no technical

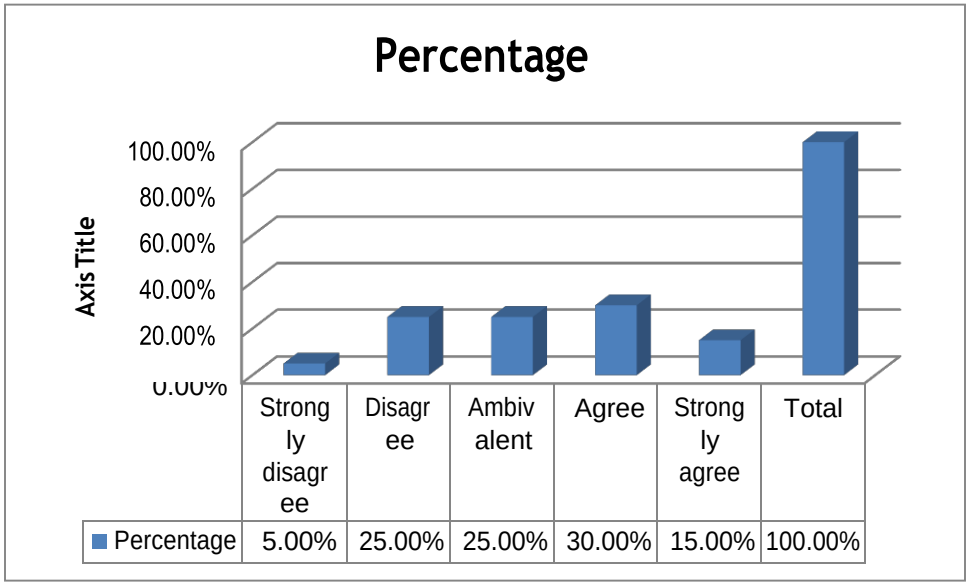
background and this is confirmed by 50%; followed by 25% of the respondents who also strongly agree that technical knowledge will definitely contribute towards the use of tools and techniques, with another 25% who remained neutral and never gave an answer.

STATEMENT 7. Technical knowledge is more important than anything in projects

Technical knowledge is very critical in projects but is it the most important factor for project success, let's consider all factors that contribute to project success.

RESPONSE: This question intends to compare the importance of technical knowledge with other forms of knowledge in projects. Technical knowledge is important but understanding of other project management process groups and knowledge areas is also critical for managing projects. The response is presented in 5.12 below graph.

Figure 5.12 Technical knowledge importance



Source: author's own construction

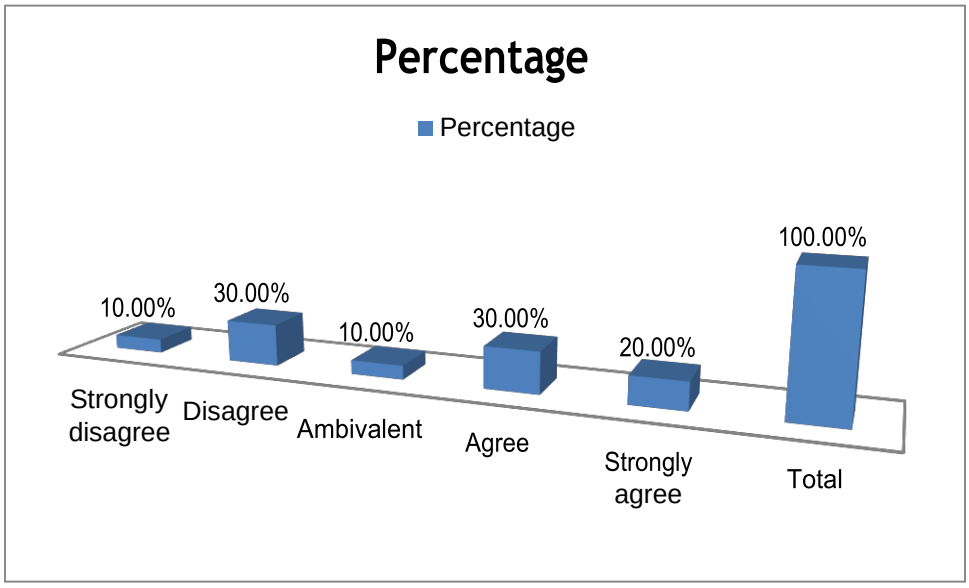
In the figure above the respondents who feels that technical knowledge is more important than any other knowledge in project were 30% which is just of 5% of those who disagree but 15% strongly agree that yes technical knowledge is key in projects, with 25% of respondents who did not answer the question and only 5% who strongly disagree that you can only manage projects successfully alone with technical knowledge.

STATEMENT 8. The manager must know more about the project than everyone

Project Manager is key in the success of the project and his/her knowledge is very important especially during project implementation.

RESPONSE: Project manager drives project success and demonstrating his/her knowledge about the project can definitely convince project teams members to also contribute significant to the project which can lead to project success. Figure 5.13 below depicts the responses.

Figure 5.13 Managers knowledge of the project



Source: author's own construction

The survey results indicate that the respondents who agree and disagree are equal at 30%; followed by those who respondents who strongly agree that the manager of projects must know more about the project than anyone else in the project, 10% undecided and 10% strongly disagree respectively.

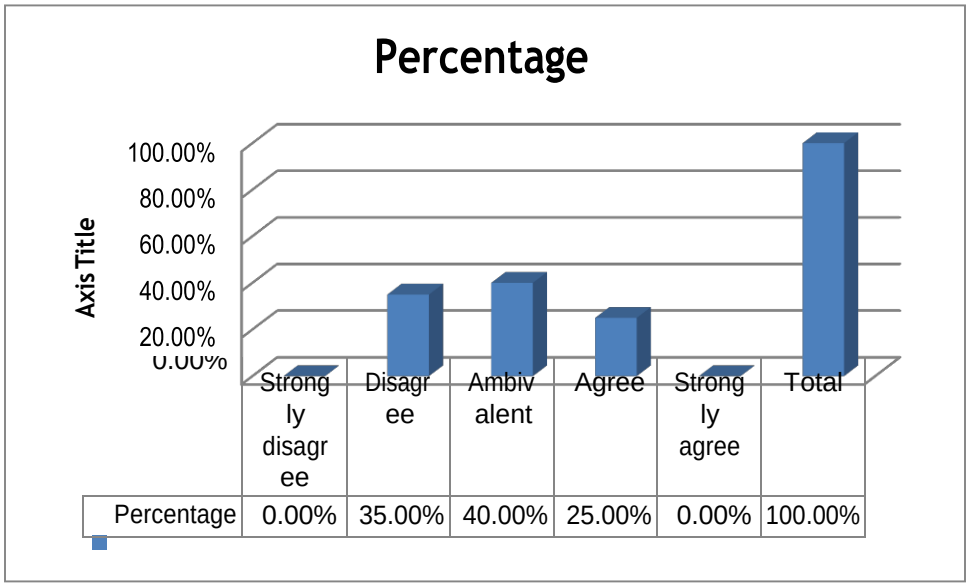
WHO / WHAT GETS WORK DONE

STATEMENT 9: People knowledge is more important than technical expertise

Interpersonal skills are important for managers and project managers because this determines how the manager will relate to his/her team and how he/she will motivate the team. Understanding people involves EQ which has the added advantage of knowing how to motivate people.

RESPONSE: Understanding people is a difficult skill but once a project manager master this skill it helps the manager to interact with the team, motivate team members and get team members to perform to their best ability. Interpersonal skill is very important for the leader and in projects the project manager is a leader. Figure 5.14 below show how people responded in answering the statement above:

Figure 5.14 Relationship people knowledge and technical expertise



Source: author's own construction

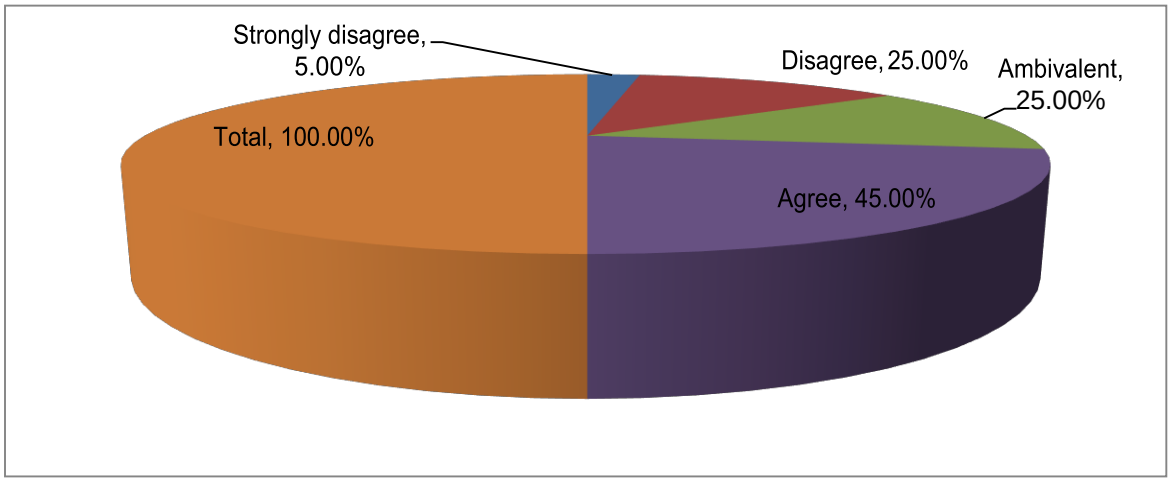
The figure above indicates that respondents who were undecided were more than the rest of the people at 40%. This was followed by 35% of respondents who disagree that people knowledge is more important that technical skills, 25% respondents this people knowledge is more important than technical skills for project manager.

STATEMENT 10: You manage people and not projects

Projects are executed by people and the duty of the project manager is to manage people not projects. That is why project managers must possess people management.

RESPONSE: People are most critical resource in project management and success of the project depends entirely on how these people perform their duties. People are the key stakeholder in any form of projects and they play a critical role in project success. Let's look at what the survey on figure 5.15 below says.

Figure 5.15 Manage people not projects



Source: author's own construction

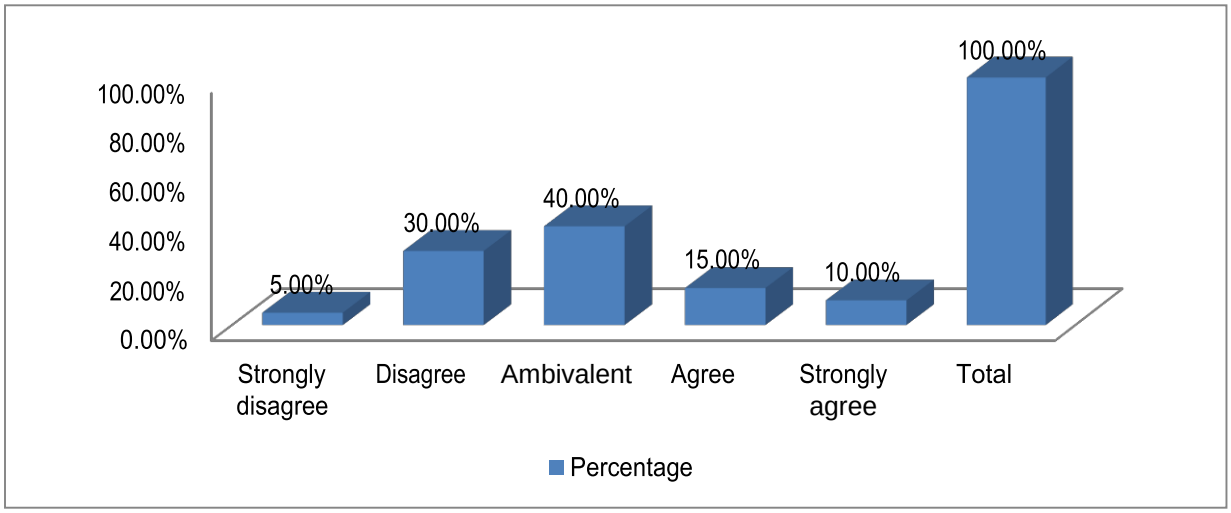
According to the graph above 45% respondents agrees that people implements projects and so project managers must know how to manage people; followed by 25% and 25% of undecided and those who disagree respectively and only 5% of respondents that strongly disagree.

STATEMENT 11: People and not technical knowledge get work done

Again this statement refers to the people as the important element or factor in project management. Its people knowledge and commitment that gets work done not technical skill.

RESPONSE: Project management is about project execution and the question is who perform this work. People execute projects and get the work done. This is why people management is a key skill for project managers, the findings are below in figure 5.16.

Figure 5.16 Relationship between people and technical knowledge



Source: author's own construction

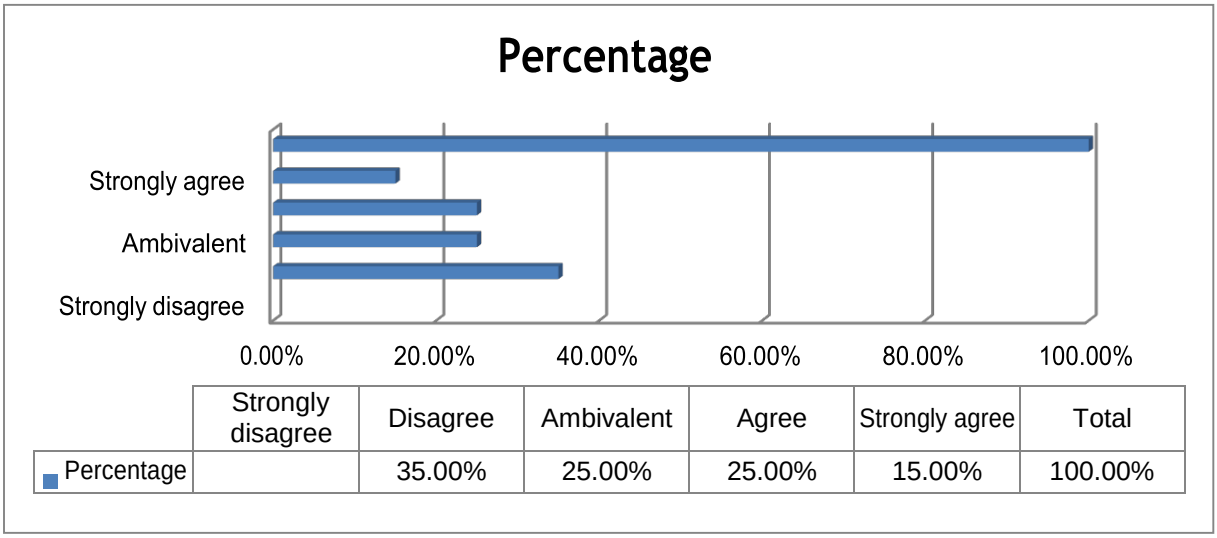
The survey results indicate that the highest group of respondents were undecided and could not answer; followed by 30% who disagree that people not technical knowledge get the work done, 15% respondents agree that people actually perform the work not technical knowledge and only 5% who strongly disagree.

STATEMENT 12: Teams perform well because of the managers technical skills

Manager's technical skills will not be a factor for the team but the manager. The manager will understand the project's technical drawings and designs. Manager's technical skills will not have any influence in the team's performance.

RESPONSE: The question's purpose is to identify what makes team perform well in projects, is it project manager's technical knowledge. It seeks to identify what really makes team perform well in projects. Can the manager's technical knowledge influence the team performance, the answer is shown figure 5.17 below.

Figure 5.17 Comparing team performance and manager's technical skills



	Strongly disagree	Disagree	Ambivalent	Agree	Strongly agree	Total
Percentage		35.00%	25.00%	25.00%	15.00%	100.00%

Source: author's own construction

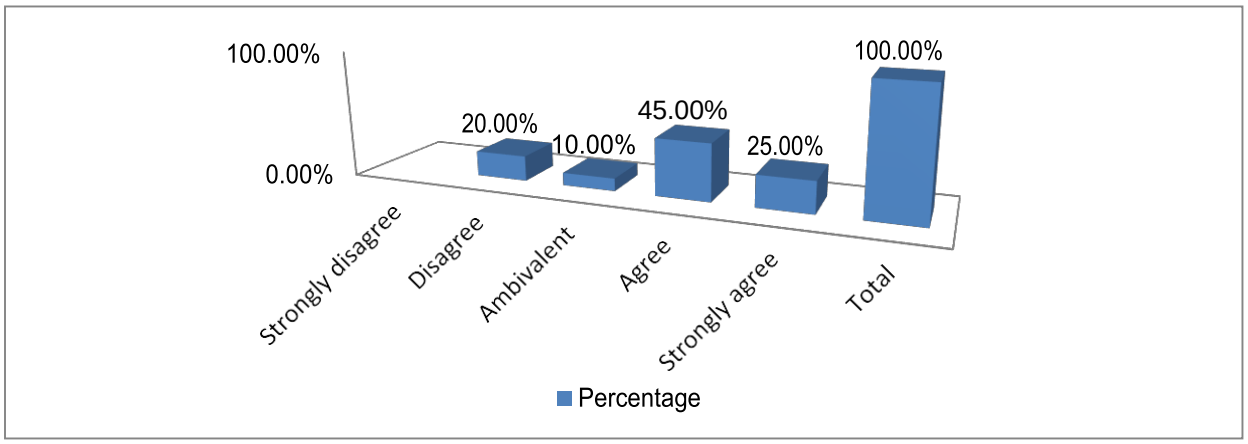
The figure above illustrates that most respondents disagree that team depends on the managers technical knowledge to perform well at 35%; followed by 25% and 25% of those respondents who agree and undecided respectively, with only 15% who strongly agrees that protect teams will perform well because of project manager technical knowledge.

STATEMENT 13: Teams perform well because of the managers human skills

Managers with good interpersonal skills always get it right especially when working with teams of people. We all know that projects are implemented by people and they need leaders who will motivate them.

RESPONSE: The intention of this question is to understand if the manager's human skills and how can that influence the team's performance. Managers play a very critical role in projects and their influence can always make or break the project. Managers must learn the human/interpersonal skills so that they are able to motivate teams. Leadership is the art of influencing others to their maximum performance to accomplish any task, objective or project. (Cohen, 1990: 9). Below figure 5.18 demonstrate the response.

Figure 5.18 Relationship between team performance and manager's human skills



Source: author's own construction

The survey results indicate that the highest group of respondents which is 45% agree that team will perform very well because of the manager's human skills; followed by 25% of respondents who strongly agree that manager's human skill is very important for team's performance, 20% respondents actually disagree that manager's human skill can influence the team's performance and only 10% of the respondents who stayed undecided.

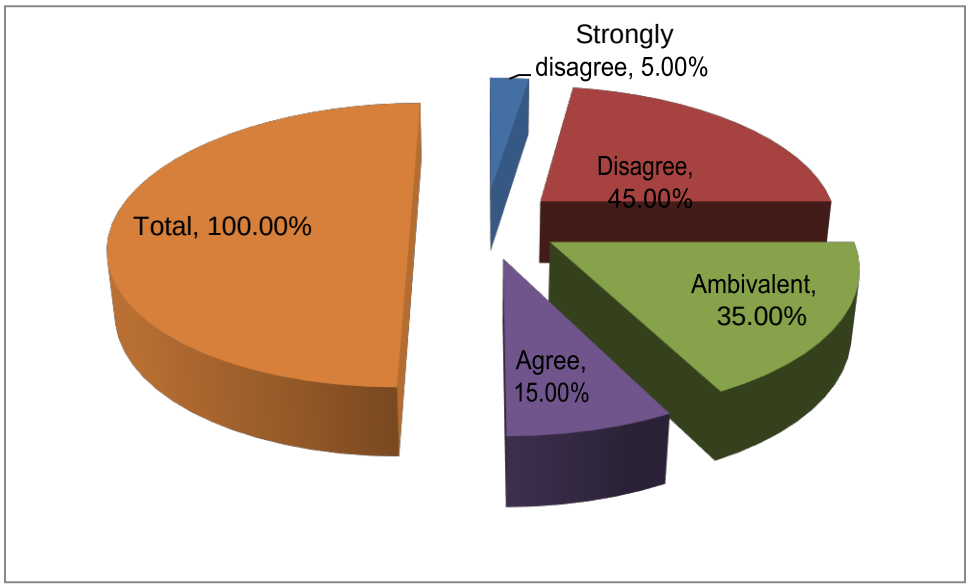
STATEMENT 14: The manager has to do the work himself and must know it

Do managers perform the work or team members do the work, does the manager have to know the work or must manage people who understands what needs to be done. Knowing the work will without a doubt benefit the manager's interaction with the team that is performing the work.

RESPONSE: This question wants to understand the manager's role in a project, does the manager have to perform the work himself/herself or the team must know what is expected of the project outcome. In this case one looks at how the manager can motivate the team to perform well in the project. The manager is a leader and leads a group of people that will look up to him so when the manager knows the work it gives a level of influence to the team members. But managers do not perform work, they only manager team members so then team members are the ones that must know the work because

they are expected to perform and excel in their responsibilities. Figure 5.19 below indicate:

Figure 5.19 Manager's knowledge of the work and performing the actual work



Source: author's own construction

Figure above indicate that 45% of the respondents disagree that a project manager must do the work himself/herself, they clearly say the team is there to perform the work and the manager can oversee the project; followed by 35% who stayed undecided and did not want to respond, 15% respondents agree that the project manager must do the work and must know it, only 5% of respondents strongly disagree that managers must do the work and must know it.

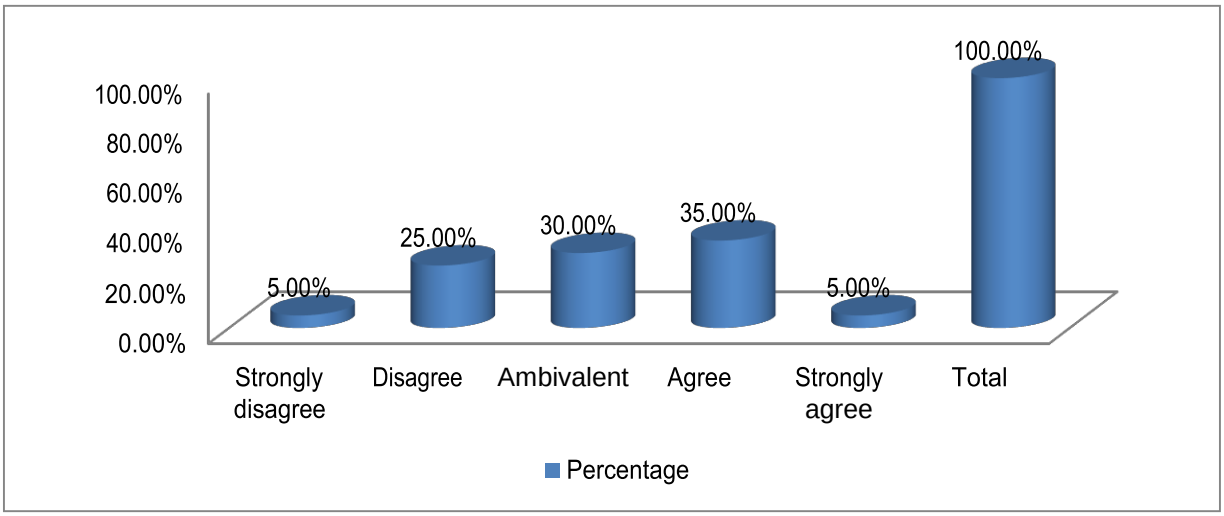
STATEMENT 15: The manager merely coordinates the work of experts

Managers must have a number of skills and one of those skills is to coordinate and organise project resources so that teams can have everything they need for the success of the project. Manager will have all these members in the team and some members will be experts in the field.

RESPONSE: The intention of this question is to determine the manager's responsibility in a project and how he/she should carry out his/her duties. Managers and project

managers are expected to perform miracles and ensure that task and activities are completed on time. Managers select experts in their teams so that they are able to organise these experts in getting the work done. Important knowledge a manager is expected to at least perform very well is to coordinate all the departments of the organisation to ensure a well-oiled team. Figure 5.20 below demonstrate:

Figure 5.20 Manager coordinates the work of experts



Source: author's own construction

The survey results indicate that the highest group of respondents at 35% agrees that the project manager only coordinates the work of experts which are the team members in this case; followed by 30% of respondents who are undecided, 25% disagree that project manager can only focus on coordinating the work of experts and only 5% strongly disagree and 5% strongly agree respectively.

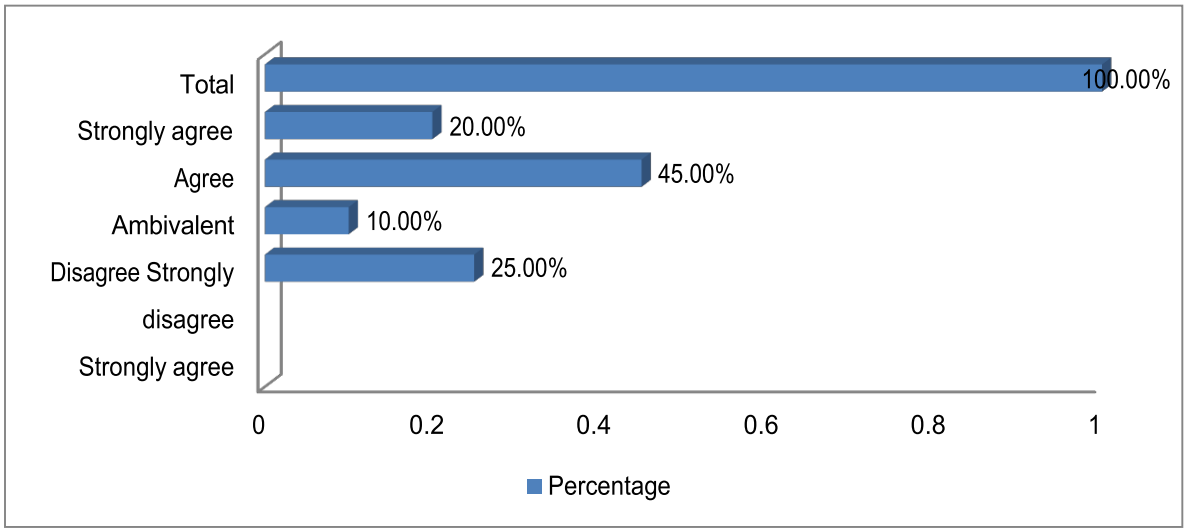
STATEMENT 16: The manager needs first the technical skills

Can a manager without technical skill be able to manage teams in a chronological manner? Managers need interpersonal skills first more that technical skills. We have noticed this in previous statements and response from respondents.

RESPONSE: This question wants to understand if the manager can perform his/her duties without really having technical skills. Is technical skills essential for project

managers to manage project teams. Managers and project managers lead teams and groups of people, they must therefore act as leaders and Leadership requires using power to influence the thoughts and actions of other people. (Zalenik, 1992). Figure 5.21 below show the respondent's results.

Figure 5.21 Relationship between technical people, tools and techniques



Source: author's own construction

Most respondents indicated agreement with the idea that the manager needs first the technical skills at 45%; followed by 25% respondents who disagree that a manager must have a technical skills to manage teams, 20% strongly agree that yes technical skills is essential for manager, 10% only who were undecided.

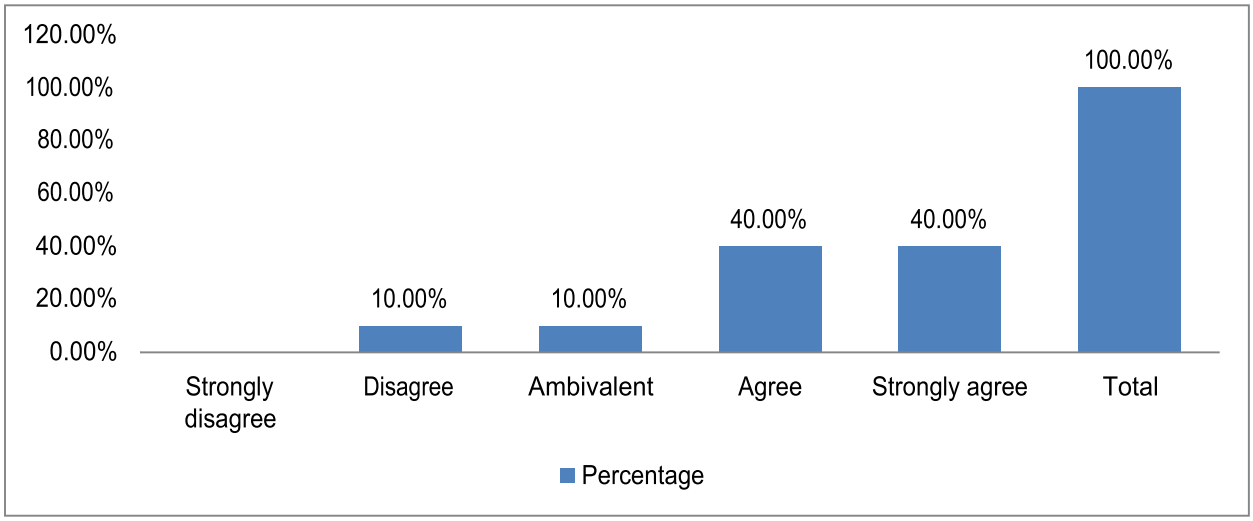
STATEMENT 17: The manager needs first the human skills

Human skills is very critical for managers as it allows managers to understand the individual team members and how to actually manage them. People are different and they always bring different challenges in team situations so a manager has to create that environment which will ensure a smooth and without conflict situation.

RESPONSE: The intention of the question is to determine if human skills is essential for project managers to be able to manage project teams and how human skill of a manager can aid team's performance. Interpersonal skills are a key knowledge for managers

especially when project teams have a conflict situation. The manager must have emotional intelligence which is one of the important skill that will help the manager to resolve issues without taking side. The figure 5.22 below demonstrate:

Figure 5.22 Manager and human skills



Source: author's own construction

Many respondents 40% expressed strongly agree and agree, but a roughly 10% indicated that they disagree and another 10% were ambivalent.

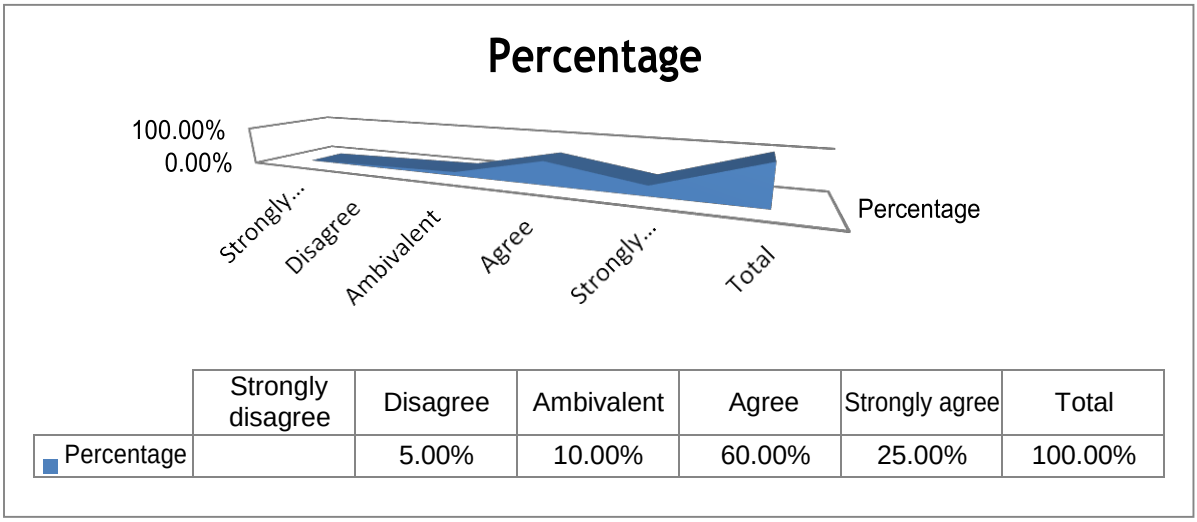
SOFT SKILLS – rank the following effective - leadership shows??????

STATEMENT 18: Personality of the manager

Character determines altitude and managers personality will without a doubt influence the team's performance. Working with people from different cultures and diversity will require manages with emotional intelligence.

RESPONSE: The intention of the questions is to understand how the respondents would rate the project manager's personal qualities and character. How his/her habitual behaviours and emotional patterns can play a role in project management. The better the manager understands his/her situation the better will be the circle of influence around the team members performing the work. As can be seen on figure 23 below.

Figure 5.23 Manager's personality



	Strongly disagree	Disagree	Ambivalent	Agree	Strongly agree	Total
Percentage		5.00%	10.00%	60.00%	25.00%	100.00%

Source: author's own construction

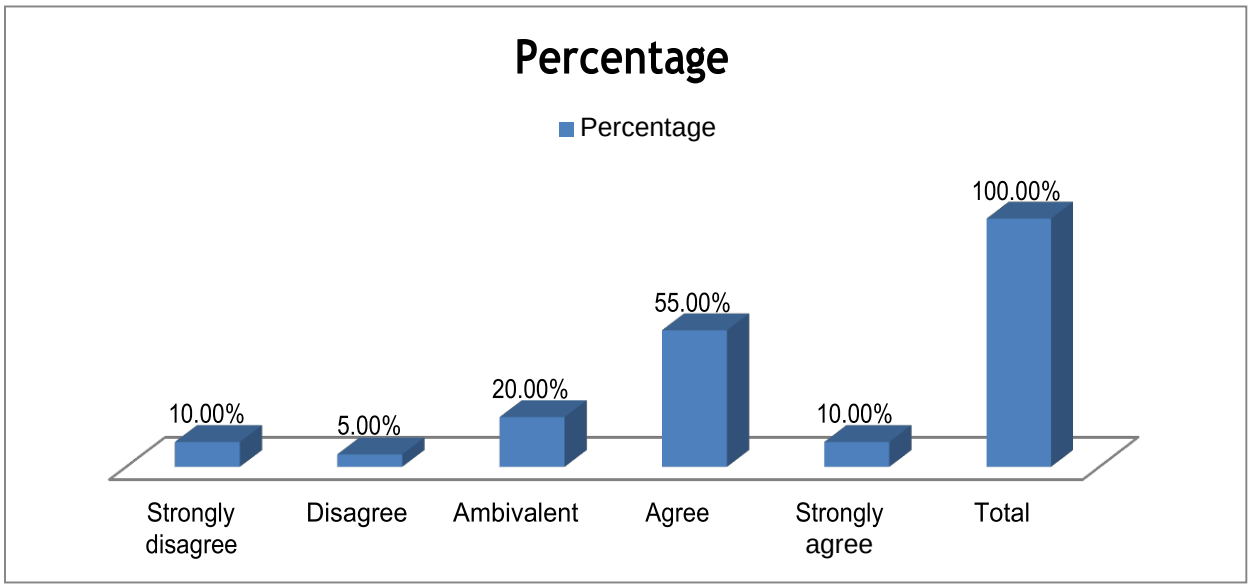
The survey results show that 60% of the respondents agree that the project manager must have good personal attributes; this was followed by 25% who strongly agree also that project manager's personality is key in project management, 10% did not respond to this question with only 5% who disagree with the importance of personality will play a role in project management.

STATEMENT 19: Persuasive personality

Leaders are known to very influential and persuasive so managers with this personality will definitely achieve greater heights working with people. This skill is critical for managers as they are expected to lead teams towards a certain direction.

RESPONSE: You lead by example, managers not only they lead teams but are expected to lead by example so that followers can actually follow in their footsteps. Leadership is the process of influencing the activities of an individual or a group in efforts toward goal achievement in a given situation. (Hersey & Blanchard, 1988: 86). One of the interpersonal skills is being persuasive which becomes very handy when convincing stakeholder and project team members on a particular trajectory. It's important for a project manage to win his/her people so that he gets the buying from them. Below figure 24 demonstrate the response.

Figure 5.24 How persuasive in the manager



Source: author's own construction

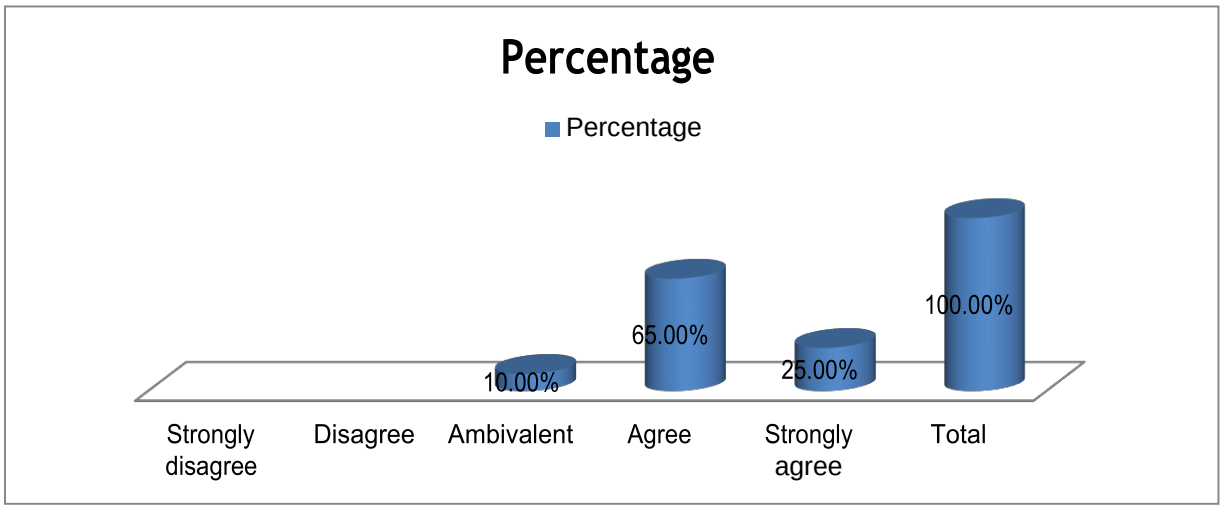
The survey results show that 55% of the respondents agree that the project manager must be someone who is very persuasive and can easily convince the team to do what he/she wants them to do; followed by 20% who decided not to respond to the question, 10% of the respondents strongly agree with the statement that project manager must have the persuasive skill to get work done, 10% strongly disagree with the importance of persuasive skill of a project manager and only 5% who actually just disagree that a project manage must be someone with persuasive personality.

STATEMENT 20: Good negotiator

Negotiation is a critical skill especially in project management because project managers they spend 90% of their time communicating with stakeholders. Good negotiators always win their followers.

RESPONSE: It is clearly shown in the graph below that a good negotiator will influence the team. Project team members follow a leader who can motivate, influence and negotiate his/her way with all stakeholders. Respondents understood the importance of being a good communicator and negotiator. Figure 25 demonstrates.

Figure 5.25 Manager's negotiation skills



Source: author's own construction

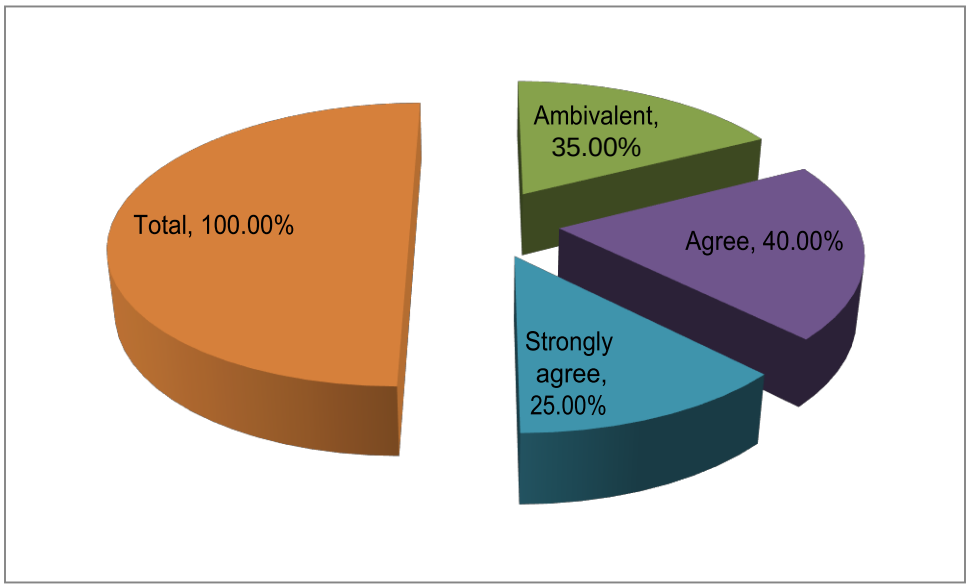
The respondents overwhelmingly agree at 60% that project manager who is a good negotiator is a contributor to project success; followed by 25% who also strongly agree that yes a project manager must have a skill to negotiate with team members. Some scholars say project managers spend 90% on communication so it's very important that they become good negotiators. Only 10% who chose not to respond to this question.

STATEMENT 21: Very empathetic

Emotional intelligence is one of the skill that project managers must possess. Being able to put yourself in a team members situation help you understand the team members and this will also help the manager to have a better understanding of the solutions required in the project.

RESPONSE: To get along with people you first need to understand yourself, yourself surrounding and their situation. How can you really understand when someone is going through challenges or facing issues in the team, putting yourself in that person's shoes will assist in understanding what they are going through. Understanding what they are going through is the first step in resolving that situation. Below figure 26 shows the response.

Figure 5.23 How empathetic is the manager



Source: author's own construction

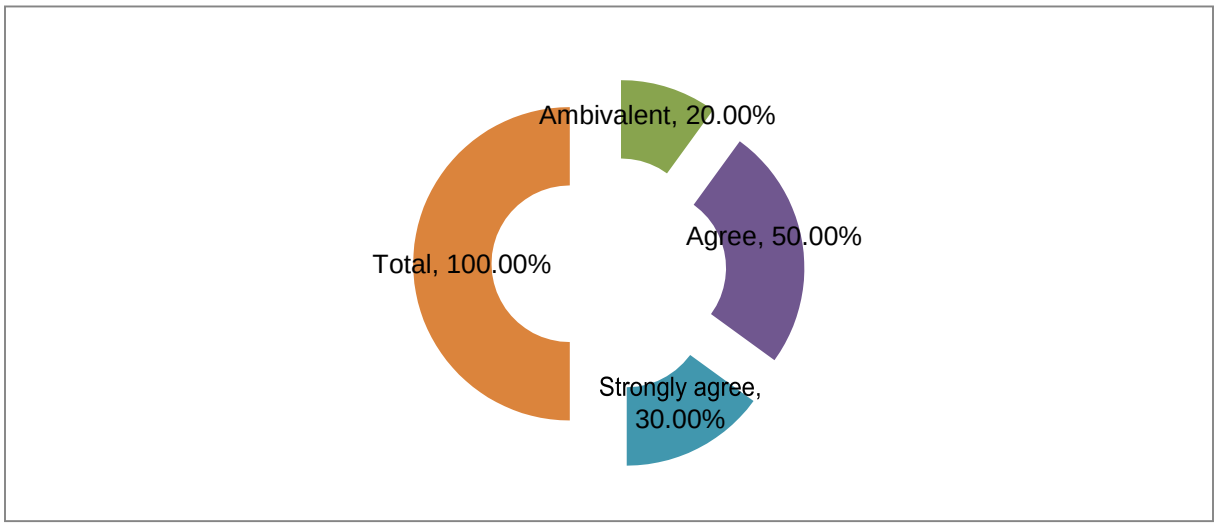
The Figure above illustrates how the respondents understand the importance for project manager's to develop empathy. 40% of the respondents agree that project managers must be empathetic to all members in the project for the project to be successful; followed by 35% who did not answer the question but another 25% agree that project managers must be very empathetic to team members so that the project can run smoothly.

STATEMENT 22: Good interpersonal relations

People with interpersonal skills are able to convince, influence and motivate project team members. Their influence will always convince stakeholders and help them manage stakeholder relationship.

RESPONSE: Interpersonal skills makes one be able to get along with people and this helps a leader/manager to get a buying from his/her followers. Relationship building is very important for managers so that he/she can sway them towards a certain trajectory. This skills helps leaders and managers to get information from all the departments of the company. Below figure 27 shows the response.

Figure 5.27 Manager's interpersonal relations



Source: author's own construction

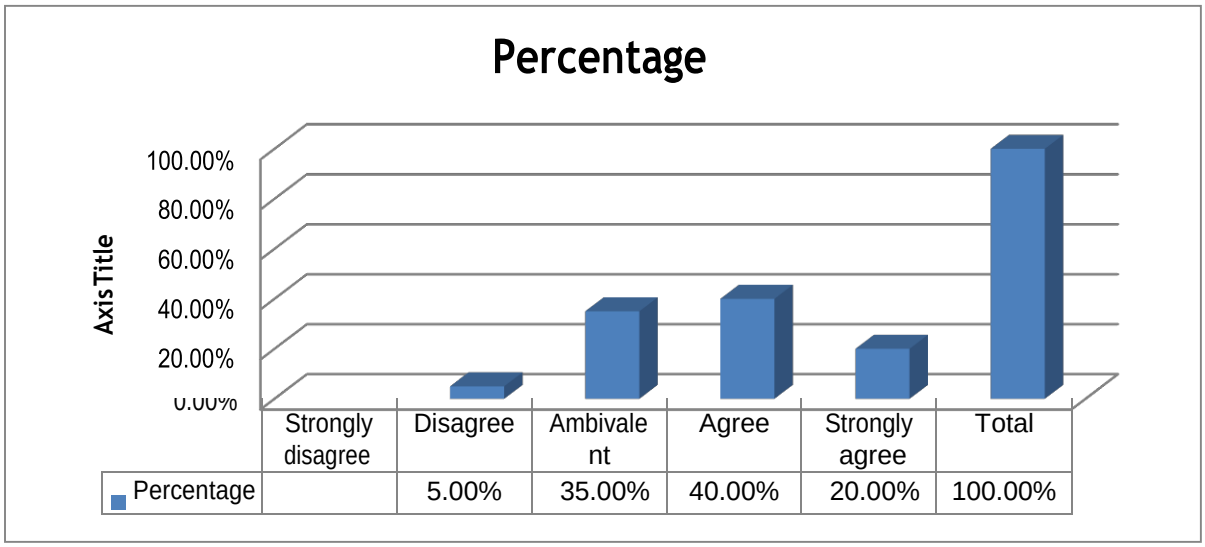
According to the figure above it shows that 50% of the respondents agree that the project manager must have good interpersonal relations with project team members and stakeholders in general; followed by 30% respondents who strongly agree that yes project managers main role is to relate very well with project team members for the success of the project. Only 20% who chose not to respond to this question.

STATEMENT 23: Expert in coalition

Being able to form and get stakeholders together even when they differ will always help achieve the goal. Project team members might be from different countries with different cultures and the project manager is expected to be able to make them work together and achieve a certain goal.

RESPONSE: It is very important for a manager and project manager to join together different views from individual project team members who differ fundamentally on certain issues. Figure 28 below indicate the respondent's views on this matter.

Figure 5.28 Manager's knowledge in coalition



Source: author's own construction

The survey results above show that 40% of the respondents agree with the importance of coalition as a skill for project manager; followed by 20% who also strongly agree about project managers role includes ensuring that different people from different diversity can jointly work together on a project to succeed. Strangely in this case 35% of the respondents did not answer and remain with uncertainty as to which approach should they vote for. Few respondents with only 5% disagree with the importance of coalition role in project management success.

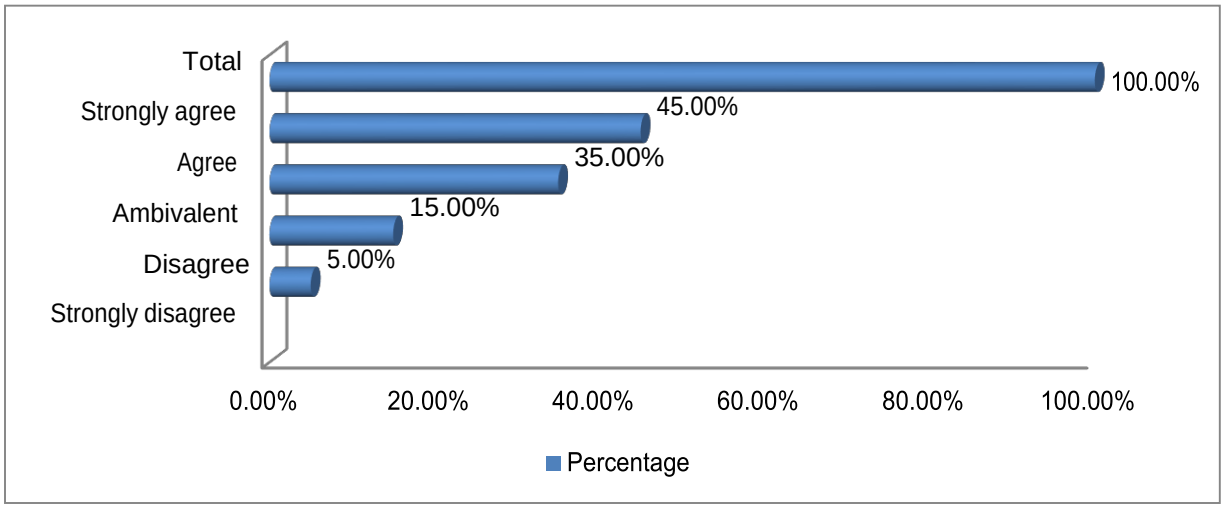
STATEMENT 24: His/her assertiveness

If you want people to listen to you, you'll have to learn to be assertive. How alert are you with what is taking place with your stakeholders, how easy are you to learn and understand what is going on not only with the project but with team members.

RESPONSE: Assertiveness generally refers to those people who are able to stand up for themselves and other people's rights in calm and positive way, without being either aggressive or passively accepting wrong. The responses relates directly on how the project manager will his/her interpersonal skills in dealing with project team member's

issues. How you address project challenges and issues affects the success of the project. Figure 29 below indicate the responses.

Figure 5.29 Manager's assertiveness



Source: author's own construction

In figure above, 45% of the respondents strongly agree that the project manager's assertiveness must be sharp to reduce project failure, followed by 35% who also agree that the project manager must definitely be alert with team members and any project challenges that are raised, followed by 15% of respondents with mixed feelings and only 5% who disagree with the notion of project manager's assertiveness.

CHAPTER SUMMARY

The chapter brings out interesting aspects of effective team management and the importance of relationships above the need for technical skills. There is no indication that technical skills are of a lesser value, but what is more glaring is the importance of competencies that impact on the human relations. The high failure rate in the industry is largely due to the misunderstanding of the hard skilled personnel ignoring the importance of human relations. Whilst task orientation is important as the objective for the business in the first place, the project is executed by people through people for people. It can be established from the findings that the success of any project undertaking may not be successfully executed without involving the soft skills in the process.

CHAPTER 6

SUMMARY OF FINDINGS, INTERPRETATION CONCLUSION AND RECOMMENDATIONS.

6.1 INTRODUCTION

The objective of this study was to evaluate the impact of soft skills as a panacea for the failure of project execution. The failure rate of projects run by highly qualified discipline specific people in the project industries is of concern. This has resulted in the quest for academia and the industry practitioners to seek to identify other complementary factors to this unprecedented failure rate. The survey commenced with the introduction of the study by providing a wide base of the theory involved in the project execution process. Possible causes of both failure and success were discussed extensively in subsequent chapters. This culminated in the decision on the research design and research methodology to be applied to the research process**.**

In chapter one (1) of the mini-thesis, the proposal outlining the literature review, the problem statement, research objectives, research methodology, as well as the ethics issues were presented. Problem statement clearly defines and indicates the need for the study.

In chapter two (2) discusses the tools and techniques as well as development of the project management subject and profession to date. Examples of large failed projects are discussed also.

In chapter three (3) the focus was put on international models of effective management and what makes people perform. Hard and soft skills are contrasted and the effect of each is discussed extensively

In chapter four (4) the research design and the methodology were outlined with special focus on the relevance of the design and methodology in relation to the problem statement and the research objectives. The target population and size were discussed including the sampling frame, sampling technique together with the reasons why those were chosen for the study. The chapter concluded with detailed information on data collection and the instrument to be used, data editing, data analysis instruments.

In chapter five (5) the data was presented in the form of bar charts, pie charts, graphs, tables, histograms and other physical forms of representing data. Each illustration was preceded by the question as it appeared on the questionnaire, motivation for the question / statement and with the introduction of the labelled illustration. The illustration was followed by an interpretation of the findings, and the illustrations were accurately labelled using the Harvard method of referencing.

In chapter six (6), in this last chapter, the discussion focuses on summarisation of the findings as recorded in chapter five, and to it is added the conclusion and recommendations. The reporting follows the same pattern exhibited in the preceding chapter (5) in that the commenting is done with specific reference to specific questions or statements that the practitioners responded to.

6.2 RESEARCH FINDINGS

This part includes a synthesis of empirical finding as answers to research questions, theoretical and policy implications. The main empirical findings are chapter specific and were summarized within the respective sections in the Research Results Chapter (Chapter 5). This section will produce the empirical findings to answer the study's research questions. The findings are clearly structured in a way that will allow for adequate information on the response given to each question, statement or request. Each response compares the variables, and where generalizations are possible, the same is stated. Section A, as stated above is biography – qualifying the respondents for suitability.

QUESTION 1: What is your position in the organisation?

Knowledge of the position in the industry had a lot to do with the respondent's understanding of what constitutes project failure. 58% of the respondents were technicians evidently knowledgeable about sector from a technical perspective. Engineers (5.26%), foreman (5.26%), senior specialists (11%), interns (5.%), town planner (5%and managers (5%). Technicians comprised for than 58% of senior specialists at 11% totaling 69% of the respondents. This was considered ideal to provide the required population.

QUESTION 2: What is your qualification?

Interestingly, 75% of the respondents had tertiary qualifications, allowing for a generalization that the respondents had a high level of understanding of how people should be led. The level of education also implies the level of subordinate and follower maturity as these are likely to be professionals and need less supervision. 25% of them had matric and technical certificates and or diplomas in the related field

QUESTION 3: How long have you been in this industry?

The length of service was tied on to the experience and ability of an individual to work with little supervision, that would also impact on the type of skill and focus required by the manager on the subordinate. Jowah (2013:278) submits that there is a direct relationship between the levels of emotional intelligence and an individual's experience. Half the employees (50%) have been involved with projects at their level for between 6-10 years; followed by 11-16 years at (20%); 16 years-more at 15%; and 0-5 years also (15%). **Conclusion;** it can be concluded that the longer the period the less micro-management is required for employees. Evidently, the bulk of the employees are able to work with little supervision. **Recommendation;** it would be most ideal to introduce some form of succession planning and allow employees to "criss cross" and allow others to understand what happens in other units. Organisations should avoid working in silos.

QUESTION 4: Do you perform any management / supervisory functions?

Project managers and managers have a duty to give guidance and motivate team members in a project environment. **RESPONSE:** A large portion of the respondents (60%) exposure in supervision and or managing, with only 20% who may have acted, the other 20% have never been given to.

QUESTION 5: What is your age range? This may also indicate the amount of time and possible exposure to both leadership and followership patterns in an organization. Of the 30% (36 years), 35% (36+years) 30% (31-35 years), 25% (26-30 years) and 10% (20-25 age).

Conclusion this organisation has a low labour turn over and is likely to be comprised of people who repeat the same things all the time,

Recommendation – it may be ideal for the company to diversify and create new opportunities to motivate it's employees who may be performing the same job tasks.

6.3 SECTION B – LIKERT SCALE.

The Liker scale assists in measuring the perceptions, attitudes and opinions individuals have about specific beliefs, attitudes and values. It is always difficult to quantify these perceptions and values, for this reason they are measured or ranked on a scale. These are identified during the literature review and are therefore a text of existing theory and perceptions around the subject of study. In this scale, the values are ranked on a scale of 1-5; with 1 being Strongly disagree, 2 – Disagree, 3 – Ambivalent (neutral –indifferent – or without a view), 4 – Agree, and 5 – Strongly agree. The answers to these were discussed in detail in the preceding chapter (chapter 5) and this section merely provides a summary of the findings, conclusuons and recommendations.

STATEMENT 1 Technical skills must be relevant to the industry; As expected the respondents believed that knowledge of the industry (technical skills) was necessary with 95% in favour. The interpretation may simply because they would understand better the requirements or be able to identify any mistakes early enough.

STATEMENT 2; A technical skill is necessary regardless of industry; There is an unexpected decline of 20% (from 95% above) on this item, it would appear that the respondents are saying there may be instances when the technical skill is not a requirement.

STATEMENT 3 Higher technical qualifications mean better success chances; There is unprecedented increase in those who are not sure about the importance of a higher technical qualification for these operations. This allows for numerous theories, among rthem, namely; operational issues are basic and do not need high academic qualifications, the more qualified people are the less they participate or understand operational issues, from 95% down to 65%, with ambivalence climbing from 5% to 30%.

STATEMENT 4 Good technical qualifications means good management; The respondents seem to have a different experience here, from accepting the need for technical skills at 95%, now only 50% believe that a technical skill = good management. Clear indication that they have seen well qualified individuals wfo failed to manage. This may allow the researcher to hypothesise that managing people is different from managing or understanding tools and equipment.

STATEMENT 5 You can't manage an operation you are not an expert in; Only 65% agree with the statement suggesting here that the respondents have nothing about or against technical skills. It would appear the respondents are saying, over and above the technical skills, the technician needs to know how to deal with people. After all, people is down by people, through people and for people (Jowah, 2013:107-119)

STATEMENT 6 Technicians understand use of tools and techniques better; There is a general understanding that technicians understood tools more than anything (75%) and th remainder opted for neutrality (25%). This allows for hypotheses, suggesting that technician's shoulf focus on what they know best – tools. That also may suggest that other people, other than technicians should focus on the human element. A good compromise would be that technicians be groomed in soft skills and help them understand that productivity is done through human effort and not tool precision.

STATEMENT 7; Technical knowledge is more critical than any knowledge; There is an apparent continuous decline from the respondents on the role and importance of technical knowledge. Only 45% of respondents think that the manager critical knowledge about technical aspects is supreme. The impression given is that the role of the project manager is to coordinate operations and leave technical expertise to those who know it well. Ambivalence remains high at 25%, it is disturbing to know that ¼ of the respondents are not decided on such an important issue.

STATEMENT 8; The manager must know the project than everyone; It would only be necessary and appropriate that the project manager be the one who knows the project through and through. It is expected that project managers must be involved from the beginning (too often they are hired after everything is done) which denies them thorough

knowledge about the project. It can be hypothesised here that their knowledge is more to do with them reading (studying the project) and the added value of meetings after meetings about the project. Only 60% of the respondents expected the managers' to know the project well, 40% disagree.

Table 6.1 Importance of technical skills

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	IMPORTANCE OF TECHNICAL SKILLS	%	%	%	%	%
1	Technical skills must be relevant to the industry	0	0	5	15	80
2	A technical skill is necessary regardless of industry	5	5	15	55	20
3	Better technical skills mean higher success rate	5	0	30	40	25
4	Good technical skills mean good management	5	25	20	40	10
5	You can't manage a project you are not an expert in	0	20	25	45	15
6	Technicians know use of tools and techniques better	0	0	25	50	25
7	Technical skills are more critical than any knowledge	5	25	25	30	15
8	The manager must know the project than everyone	10	30	10	30	20

Source; own construction

The general feeling about the above summary (as alluded to above) is that though technical expertise is not discounted, it seems to have relevance at specific places. There is a deliberate mixture of the importance of both human skills and tecgnical skills. The respondents interviewed are people who spend their work life in these environments and were expressing their experience.

CONCLUSION FOR THIS SECTION

It can be concluded with little concern of error that hard skills are very necessary, but they are not the all in all. Technically skilled people 9hard skills and the related) are inevitably indispensable. But their effectiveness should be blended with the understanding that they manage people not skills (Jowah, 2013:107-119).

RECOMMENDATIONS;

People skills, or better known as soft skills should be taught together with technical skills. After all, all technicians are human beings, come from homes where there are human beings, and get work done through human beings. The next part of the summary of the Likert scale focuses on wgo gets the work done, the illustrations, likewise, are pasted below.

LIKERT SCALE PART 2

The debate on who and what gets work done has been a kife-long debate. For this reason, leadership is inevitably the most studied field. Much time is spent on teaching leaders how to lead, little information is sent to teach followers how to follow. The accepted norm is that if a leader is taught to lead people, or if he/she knows how lead people, then the obvious happens. The obvious in this case is production will go high. The summary (table 6.2) below seeks to assist in identifying who gets what done according to the perceptions of the respondents.

Table 6.2 Who and what gets work done?

		Strongly disagree	Disagree	Ambivalent	Agree	Strongly agree
	WHO/WHAT GETS WORK DONE					

9	People skills are more critical than technical skills	0	35	40	25	0
10	You manage people and not projects	5	25	25	0	45
11	People and not technical knowledge get work done	5	30	40	15	10
12	Teams do well because of the managers technical skills	0	35	25	25	15
13	Teams perform well because of the managers human skills	0	20	10	45	25
14	The manager has to do the work himself and must know it	5	45	35	15	0
15	The manager merely coordinates the work of experts	5	25	30	35	5
16	The manager needs first the technical skills	20	45	10	25	0
17	The manager needs first the human skills	10	10	40	40	0

Source: own construction

The traditional management approach is focused on production and organisational performance more than anything else. People are considered purely as factors of production, in a sense, a means to a desired end. Factually though it cannot be discounted that people a “a means” to company performance, but it can’t be denied that these are the only factors of production that think, have pain and have emotions.

STATEMENT 9; People are more important than technical expertise; The unusually high score on the neutrals (40%) is disturbingly high. It is expected that the respondents should have a view on this item, but many opted not to express their views. Only 25% agree that people are more important than technical expertise, with the 70% (neutral – 40% and disagreeing – 35%, a gloomy picture is painted about the value of human beings in successful project execution.

STATEMENT 10; You manage people and not projects; The statement is almost in direct opposite to the preceding statement 9, but this was done to seek to confirm if the previous statement was understood and properly evaluated. Ambivalence stood at 25%, again a

¼ of the respondents could not comment themselves, somewhat disturbing. But 45% strongly agree that management is not about systems but human beings, a 20% increase on the previous.

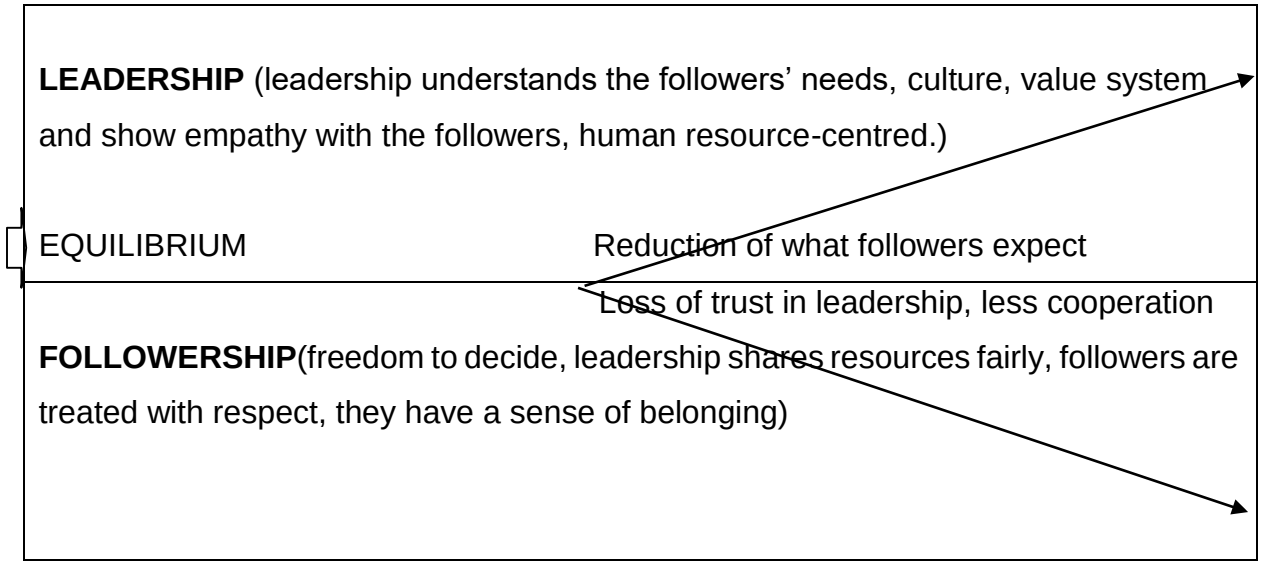
STATEMENT 11; People and not technical knowledge get work done; Fairly well related statement and against the answers are different or show interesting variations. Only 25% of the respondents believe that it is people and not technical expertise that make work done. Surprisingly, there was little if any of the current technical expertise but the pyramids still stands in the Egyptian desert, the Taj Mahal in Agra, the Golden Temple in Amritsar, Mapungubwe in Limpopo, etc.

STATEMENT 12; Teams do well because of the managers technical skills; Working in teams has always been an African way of doing things. Little is said about this type of team work – *letsema* in Tswana and or Pedi. People with technical skills were always given to head the operations, but the focus was always based on people under the *botho* philosophy. In this response, the participants express views rather contrary to the *letsema* concept, or the question did not speak directly to the *letsema* structure as it is known.

STATEMENT 13; Teams perform well because of the managers human skills; There is no denial in the literature or in practice that managers play a pivotal role in the productivity of a team. The contention has always been on the over-emphasis that the team leader is the soul "cause" for productivity in an organisation. Jowah (2013:107-119) posits that the effectiveness of the leader is a direct result of the congruency between the leader style and the maturity and acceptance of the leader by the followers.

Figure 6.1 below illustrates the meetings points at which leaders become effective. The equilibrium diagram below is based on the theory that followers "can shape the values, the perceptions, the attitudes and the character" of a leader. This suggests that there is a followership continuum whose effectiveness is a result of the congruency between leader, follower and organisational objectives. Figure 6.1 below illustrates this.

Figure 6.1 Equilibrium between leadership and followership expectations



Source: Jowah, 2013:107-119

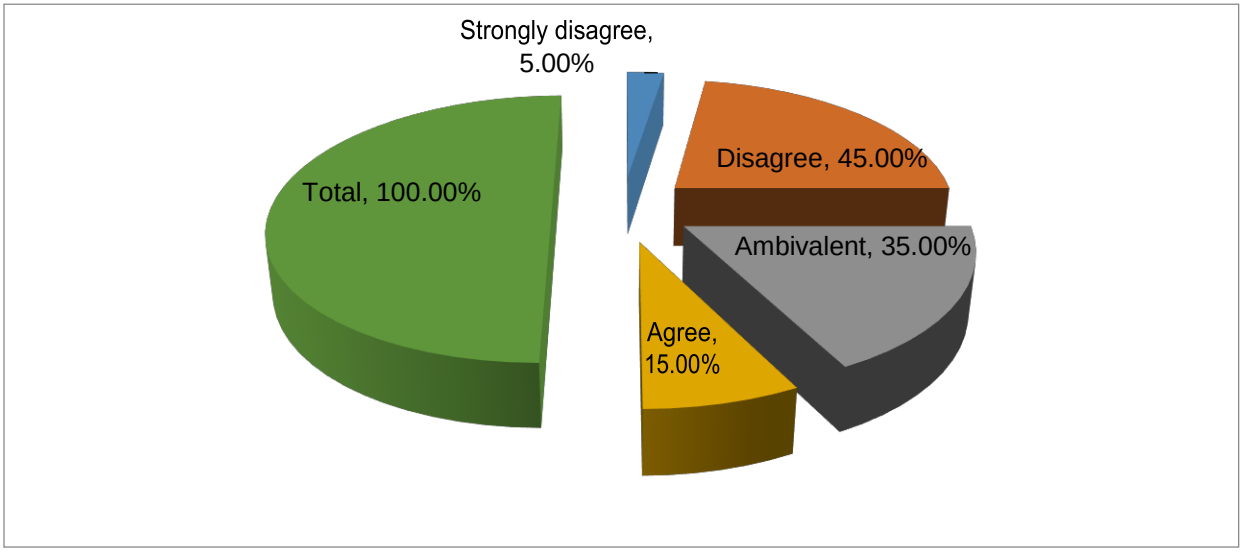
The concept of working together as a team has long been a cultural practice amongst Africans though very little of it gets published. The current move towards use of teams and consideration of the human element of business has always been practiced as a norm. It is necessary to have a "working degree of congruency" to allow for a stable work environment that brings about the desired productivity. It should be a win-win situation if productivity is to be maintained and harmonious collaboration is to continue to increase to accelerate organisational performance.

STATEMENT 14: The manager has to do the work himself and must know it;

The function of the managers should be to coordinate the operations, controlling, allocating, and obviously "drawing up balances" to enable the organisations, resources and expectations to be met. Ambivalence was uncomfortably high at 35%, with 50% of the respondents rejecting out rightly that the manager must do the work themselves. This clearly indicates that respondents expect that managers have their other functions other than operational matters and issues.

Managers do not perform the individual tasks that sum up the total deliverables in the project execution process. The function is evidently an over sight role to make sure that the effort by team members are coordinated and synchronised towards attainment of the project deliverables. Team members are the ones that must know the work because they are expected to perform and excel in their responsibilities. Statement 14 is illustrated figuratively in figure 6.2 below to visually and physically show the variations between the variables under study.

Figure 6.2 Respondent perceptions about the role of the manager in a team



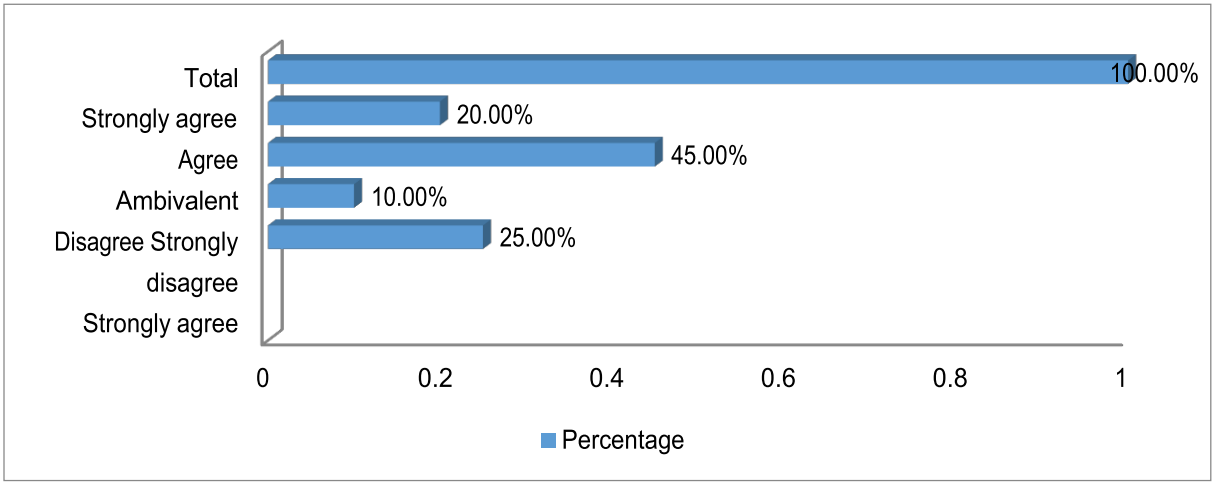
Source: author's own construction

CONCLUSION; The figure clearly shows that the project manager must not to the operational tasks, but should coordinate the implementation. In the process of coordinating, it is important for the manager to understand the value of the human resources to the success of this execution. It is equally important for the manager to know that employees have feelings, desires, expectations and ambitions that need to be shown in the management style. Failure to recognise and implement these may result in a dis-equilibrium which may manifest itself in poor performance, high labour turn over, low down or even labour strikes.

STATEMENTS 15, The manager merely coordinates the work of experts; Is merely an elaboration of the foregoing statement and shows the same level of ambivalence

(35%) even though less respondents disagree (35%) that the function of the manager is to coordinate the different tasks. **STATEMENT 16: The manager needs first the technical skills;** This showed rather interesting results consistent with the initial responses of the first 3 statements under the Likert scale. The technical expertise was highly rated as a necessity for the project manager to effectively manage the project team. The figure 6.3 below is a testimony to the way the respondents felt about the need for technical expertise in a technical project where there is need to manage, control, coordinate and motivate a technical team.

Figure 6.3 Technical expectations in the management of a technical project



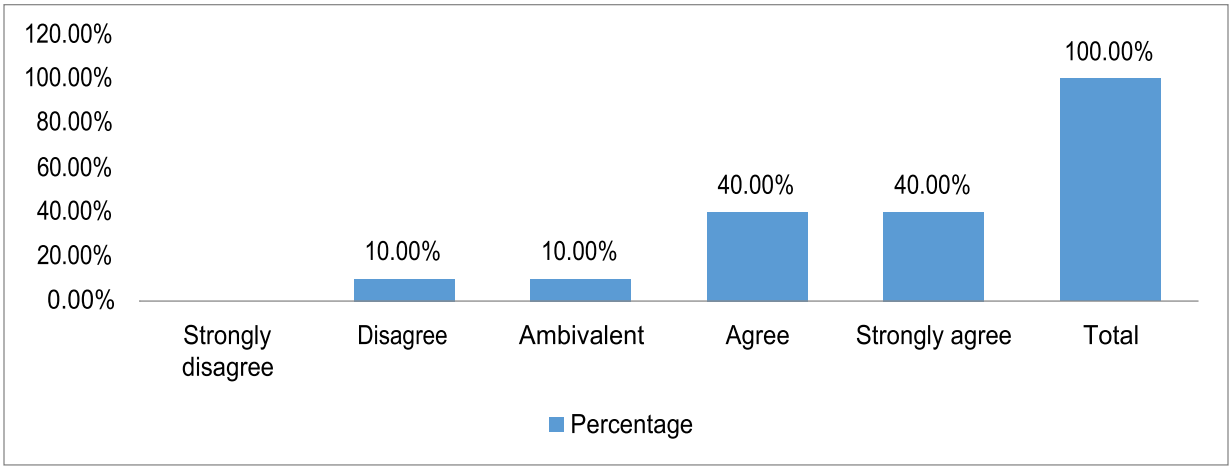
Source: author's own construction

Most respondents (20% strongly agreed and 45% agreed = 65% agreeing) that the manager needs to have technical skills, 25% disagreed, and only 10% were indifferent. **CONCLUSION;** It can be concluded here that team members may be more cooperative and motivated when managed by an individual who as least understands the trade.

The greatest puzzle in project management today is essentially why so many technical projects (47% - 69%) fail when 92% of them are headed by experienced and qualified technical (hard skills) people. For most if not all technical projects the entry requirements from entry level to senior management is a relevant or related hard skill. The understanding is an individual with the hard skill knows what to do, when to do it, and how to do it, the mystery is in why people who know would fail to succeed.

STATEMENT 17: The manager needs first the human skills; In his study on followership, Jowah (2013:107-119) opines that there is no project success without including the human element. Projects are conceptualised by human beings, for human beings, implemented by human beings, and therefire human beings are the single most critical element in the success of all human undertakings. Managers do not manage equipment or tools, but rather manage the people who use those gadgets. Appropriately managing the people will lead to effective use of the tools and equipment used for executing the project processes. A combined 80% response (40% agreed and 40% strongly agreed = 80% agreed) indicating the importance of human relations in project executions. Figure 6.4 below illustrates that.

Figure 6.4 Importance of human skill (soft skills) as perceived by respondents.



Source: author's own construction

No one strongly agreed with the statement, 10% disagreed and only 10% were indifferent to the assertion. The rest scored 80%. Thus, while technical expertise is considered a critical element in the execution of technical projects, proper and acceptable management of these human elements leads to effective implementation of the project processes. People are different and always bring different challenges in team situations, thus a good manager needs to create environments ideal for the appropriate team structure.

STATEMENT 18; SOFT SKILLS – rank the following effective; when asked to rank the attributes of leadership on soft skills, considering what had been the response earlier, the

table below shows the extent to which human relations – soft skills are considered important by the followership.

Table 6.3 Soft skills as an element of effective team management

	SOFT SKILLS –	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total agreeing
18	rank the following effective - leadership	0	5	10	60	25	85%
19	Personality of the manager	10	5	20	55	10	65%
20	Persuasive personality	10	5	20	55	10	65%
21	Good negotiator	0	0	10	65	25	90%
22	Very empathetic	0	0	35	40	25	65%
23	Good interpersonal relations	0	0	20	50	30	80%
24	Expert in coalition	0	5	35	40	20	60%
25	His/her assertiveness	0	5	15	35	45	80%

Source: own construction

Starting from statement 18 in the table above, it is interesting how the soft skills issues have been considered positively by the respondents. As indicated by the high scores, it can be theorised or hypothesised that human beings always have a social aspect of their being, which somewhat impacts on how they behave. Human beings think, have experience, harbour feelings (positive or negative), they also are not always honest about what they do or why they do what they do. All these are many other personalities and traits make it difficult to deal with human beings as machines. Hard skills alone do not address the realities that human beings live in, be thye perceptions. Incidentally, their perceptions are actually the realities they live by. that, making it difficult to predict them.

6.3 CONCLUSION

Using the evidence in the findings, it can be concluded as fact that no matter how well technically (hard skilled) qualified a manager can be, human relations matter the most. People want to be treated as fellow human beings regardless of their level in the structure, and they expect to be treated as individuals. Relationships seem to create followership and subordination, a typical error with most hard skill managers. Followership lead to management by impression, subordination will require micro-management leading to X theory. In this format of management people wait to be told what to do and how much they should do as they are considered to be incapable of doing anything and being unable to think. Effective managers form relationships with their followers and allow easy flow of information, in the process the practitioners are motivated and perform beyond the expected. As indicated above, hard skills managers should train themselves in these items below.

Table 6.4 Soft skills needed by hard skills professionals to manage effectively

Acceptable personality	Ability to persuade people	Negotiation skills
Compassion towards people	Willingness to compromise	Agreeableness
Empathy with people	Self-confidence	Assertiveness
Responsive	Good listener	Visionary
Emotional intelligence	Ability to supervise	Average intelligence

Source: own construction

Management or leadership is referred to in many ways, some consider it an art, some call it a skill, yet others call it a science. Whichever way people may want to classify it, it is clear that leadership is about dealing with people (Jowah and Laphi, 2015:15-39)**,** and how you deal with them determines the end product. From this study, evidently nothing will supersede the need for connection between leadership and followership = communication is the medium used to enable the relationship.

Character determines altitude and manager's personality will without a doubt influence the team's performance. Working with people from different cultures and diversity will require managers with emotional intelligence. The better the manager understands his/her situation, the better will be the circle of influence around the team

members performing the work. A leader must be influential and persuasive so managers with this personality will definitely achieve more. Leadership is the process of influencing the activities of an individual or a group towards objectives (Hersey & Blanchard, 1988: 86). Project team members follow a leader who can motivate, influence and negotiate his/her way with all stakeholders. Understanding what they are going through is the first step in resolving that situation. Interpersonal skills makes one to be able to get along with people and this helps a leader/manager to get a buying from his/her followers. Relationship building is very important for managers so that he/she can sway them towards a certain trajectory. It is very important for a project manager to join together different views from individual project team members who differ fundamentally on certain issues. Assertiveness generally refers to those people who are able to stand up for themselves and other people's rights in calm and positive way. How you address project challenges and issues affects the success of the project.

6.4 RECOMMENDATIONS

From the finding, it is recommended that all hard skilled managers be taken through extensive soft skills training. Emphasis should be made that though technical skills are an important part of the knowhow about the project, the exact execution is done by people and not technical knowhow. Qualified technicians who may feel mistreated can easily slow down or not cooperate in protest if they think they are not acknowledged. There is a need for a blend between task focus and relationship orientation of technical project failure rate is to be reduced.

6.5 LIMITATIONS OF THE STUDY

The constraints of the study will be mainly because of the size of the sample considering the thousands of projects carried out in different parts of the country. The nature of the training (institutions of training) were engineers are trained have the same curricula, largely because they are controlled by government bodies. However, the level of the maturity of the respondents may be of concern (Jowah, 2013:107-119) as they would have different levels of experience. Together with that, individuals have differing personality traits which may require adjustments on management styles.

6.6 FUTURE STUDIES

It may be necessary in future research studies to stratify both the leaders / managers and the followers / subordinates according to their personality traits – the big five. This may assist in identifying specific behaviours ideal when these different personalities have to work together.

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