A COMPARISON OF FRAMEWORKS THAT MEASURE THE SUCCESS OF INFORMATION TECHNOLOGY PROJECTS

By

Manthomeng Eliza Chele

(25605186)

A dissertation submitted in fulfilment of the requirements for the degree

Master of Science in Computer Science

in the

School of Information Technology

In the

Faculty of Economic Sciences and IT

at the

NORTH-WEST UNIVERSITY

Supervisor : Prof Philip Pretorius
Co-supervisor : Dr Daan de Villiers

Vanderbijlpark
March 2017

ACKNOWLEDGEMENTS

Embarking on this research study was a journey of exceptional personal exploration and discovery. The rewards thereof were gratifying and fulfilling. I would not have achieved all this without the selfless assistance of the following people:

First of all, I would like to give exceptional appreciations to Prof. Philip Pretorius, my supervisor for his information sharing spirit, direction and persistence.

Secondly, I would like to give exceptional thanks to Dr. Daan de Villiers, my co-supervisor, for his support, consolation and inspiration.

Thirdly, I would like to give exceptional thanks to Mr. G Mhlongo, who proofread my work and edited my grammatical usage of English language.

Lastly, I would like to be grateful to my husband Simphiwe Dyantyi and my sister Malintle Fosa for their support and consolation.

SUMMARY

Project management is an enhanced way of managing people, materials and/or equipment that is used when pursuing projects in different organizations. As described, a project is a brief attempt to create an end result or a product/service. Information technology (IT) projects are in no way different from any project. They are also carried out with the hope of successful end results but unfortunately the literature review or previous studies have shown unsatisfactory results in some of IT projects. The number of failing IT projects has been increasing in the past few years, even now the percentage of these projects is still surprising IT project managers.

According to the past sources these failures are caused by a number of factors including poor time management, poor cost estimations, not understanding the scope and the list can go on and on depending on the project type and organization pursuing it. In some books, the success of a project is measured using three points; was the project completed within time, was the project completed within budget and was the customer satisfied? All these factors are common in the project management frameworks (PRINCE2, SDLC, V2P, The square route, Iron triangle, etc.). These are key factors are assist the project managers to measure the success of individual projects using project management frameworks. According to some reports by some IT project managers, some of the frameworks have produced optimal success for other organizations although others still need to be enhanced to suit the nature of the projects and to reach the required level of performance expected by different organizations.

The research has therefore been carried out to compare the existing project management frameworks in order to determine which frameworks can be used by IT project managers to yield the maximum success of IT projects. This research resulted in a majority of project managers discovering that PRINCE2 in its nature is more suitable for IT projects yet one project manager suggested that using SDLC is their best as they could somehow manipulate it to suit their business needs.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER: ONE

INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Background of the problem

The main focus of project management has been on project scheduling although this has imposed hitches since the 1950s. This led to project managers assuming that improved scheduling techniques development would result in healthier projects and help enhance management thereby ensuring successful completion of projects (Belassi & Tukel, 1996:141). Nonetheless, to normalise the success of IT projects there are numerous factors that need to be considered outside the control of management. Latendresse and Chen (2003:221) stated that managing IT projects is a very challenging and inspiring task based on the huge number of projects which are weak enough not to succeed to their anticipated objectives. Due to the fact that most organizations fail to unfavourably notice the reasons for these projects failure, it then results in them not learning from their mistakes (Hillam & Edwards, 2001).

According to Zarina *et al.* (2014:61) a few studies in the project management literature concentrate on the critical factors that have an impact on the project success as shown by the research. However lots of these studies produce lists of critical success factors and each list varies in its scope and purpose. Turner and Müller (2005) stated that the success factors are typically listed as either very general factors or very specific factors affecting only a certain project. Though missing a complete list makes it challenging not only for project managers but also for researchers to assess projects based on these factors.

According to Cooke-Davies (2002:185), besides the well-known research results and regardless of column-miles of words that have been transcribed about project management, regardless of periods of separate and mutual experience of managing projects , regardless of the speedy growth in membership of project management professional bodies and regardless of a dramatic increase in the amount of project

working in industry, project results continue to dissatisfy stakeholders. So the need for critical factors to be established to lead to successful projects was crucial.

1.2 Problem statement

Information technology projects continue to fail but this is not only due to technical reasons. This failure is mainly due to the absence of comprehension of needs, especially those of clients. Lack of initiative at the project and official levels is also to blame in this regard. Project Management Frameworks have their own purposes, namely; to communicate all that has to be done in a project, clarify the necessary strategies utilized to accomplish project goals and energetically manage project risks (Lynne, 2004). Irrespective of Project Management Frameworks use, it is still difficult for IT projects to meet their goals. This difficulty or failure happens due to the absence of improved collaboration and decision making (Bredillet, 2005:3). With respect to using PMFs, most organizations fall somewhere along the bureaucracy-adhocracy spectrum. In organizations where bureaucracy is excessive, frameworks are taken as paperwork and overhead with no obvious benefit. This could lead to malicious compliance. Organizations that employ an ad hoc approach allow each contributor to apply their own structure, which may or may not mesh with those of their team members (Lynne, 2004).

1.3 Purpose of the study

The motivation behind the current study is to inspect which project management frameworks are available for Information Technology (IT) projects and how these frameworks are used to optimally yield effective success of IT projects. Frameworks are observed according to the methodologies that are used in different organizations, for an example, which frameworks (the square root or triple constraint) are available under Agile or PRINCE2 methodologies? Then these frameworks are compared to distinguish which ones would perform well in measuring the success of the IT projects. The study also gives a background or an inside of project management as a topic. This is broken down into a few project management components as the researcher’s aim was also to gain an understanding of. These include the knowledge

areas of project management, project management processes and a brief look into project management methodologies. Most importantly the interpretive paradigm was explored also for the researcher to gain basic understanding as the study followed a qualitative research and used this paradigm.

1.4 Research questions

With the problem identified and stated in 1.3 above the researcher tried to find responses to the next research questions:

- To what extent are the project management frameworks different?
- What are the significant factors in the project management frameworks that contribute to an IT project success?
- Which frameworks can be used to optimally measure the success of IT projects in organizations?

1.5 Significance of the study

This research study endeavoured to outline whether project management frameworks like PRINCE2 and Systems Development Lifecycle assume any part in ensuring optimal success of IT projects. The results of this study provided valuable data from two divisions in the government sector; the finance, the integrated subdivision and one independent company regarding the effectiveness of usage of project management frameworks. This study adds valuable information to the restricted research database relating to the assessment of project management frameworks.

1.6 Definition of terms

Project Success – A project is said to be successful if it has reached its goals and produced acceptable product or service and that all these are accomplished within set time, budget and scope. Most important, the stakeholders and the users need to be satisfied as well (Turner, 2014).

Project Management – “It is the application of knowledge, skills, tools and to project activities to meet project requirements” as described by (Schwalbe, 2010).

Project Management Framework – It is a division of undertakings, procedures, apparatuses and layouts which are used in blend by the management group to get comprehension of the primary basic segments, “of the project keeping in mind the end goal to start, arrange, execute, control, screen and end the project exercises all through the project lifecycle”, (Shenhar *et al.*, 2005).

Critical Success Factors – These are the various key factors, attributes or conditions that have momentous effect on the adequacy, productivity and supportability of an association, program or project (Poon & Wagner, 2001).

Project Management Methodology – A typical method and guidelines that guarantee that projects are carried out in a controlled, properly governed and reliable custom that encourages the provision of quality products and results that are accomplished on time and within budget (Shenhar *et al.*, 2005).

PRINCE2 (Projects in controlled environments) – Is an arranged management of a project which denotes managing the project in an analytical, controlled way that trails the well-defined steps. It is a methodology that incorporates quality management, control and organization of a project with uniformity and analysis to support the objectives (Bentley, 2010).

Key performance indicators – Are an arrangement of quantifiable measures that exhibit how workable an association is realizing key business goals. They are utilized at numerous positions to evaluate the success of they are accomplishing objectives (Walczak, 2014).

1.7 Delimitations

Delimitation is the fact that the study focuses on selected organizations as it is a case study. For example, the study concentrates on use of PRINCE2 and SDLC as

methodologies and as frameworks and project managers working under mentioned divisions. An extra delimitation is that the review is constrained to the assessment of the performance of the frameworks to measure the success of IT projects.

1.8 Organization of the study

The current study is divided into seven chapters. Chapter one provides the background of the problem, problem statement, purpose of the study, research questions, significance of the study and definition of terms, delimitations and the organization of the study. Chapter two provides an overview of Project Management philosophy and mission. The concepts of project management such as key project management knowledge areas, key performance indicators and critical success factors are also discussed in this chapter. Chapter three provides an overview of PM frameworks and Methodologies. In this chapter a literature synthesis is also given on project management methodologies, relevant and recent literature related to the following topics: The Iron Triangle, Life-cycle based Framework, Monitoring and Evaluation Framework, Vision-to-Projects Framework and The Square Route.

Chapter four describes the research methodology carried out and address the challenges in frameworks. In this chapter a review of the lessons and understanding which came from studying real industrial case studies is given. Chapter five stipulates the data collection in detail and data is analysed. This chapter is dedicated to giving the analysis of the data provided through the literature review and the interviews carried out. Chapter six provides the results of the data analysis and interpretations. These results are evaluated and analysed in order to make final conclusions on the performance of the frameworks. Chapter Seven delivers a summary of the conclusions that can be drawn from the study. Firstly, the conclusion with regard to the theoretical background is given and then the conclusions and understanding that resulted from the studying of real life scenario is given. Finally, recommendations for further research are also given.

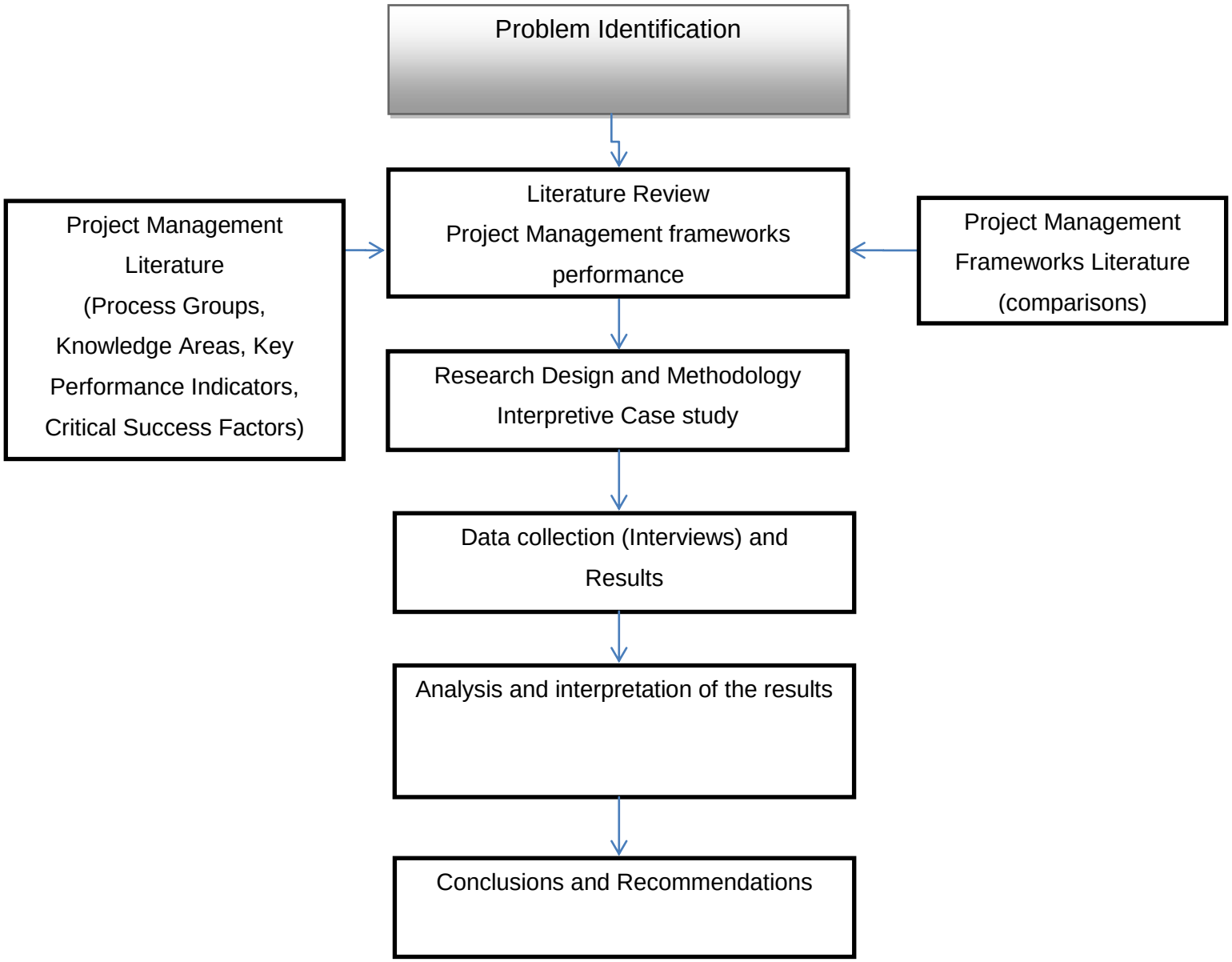

Figure 1.1: Illustration of the processes followed in this study (Chapter 1)

CHAPTER: TWO

OVERVIEW OF PROJECT MANAGEMENT PHILOSOPHY AND MISSION

2.1. Introduction

This chapter introduces the project management terminology and a literature related to Information technology (IT) projects. Literature review is an evaluation of information that has been done in the past and relates to the current study being carried out. This literature provides the theoretical background for the research and guides the researcher to determine the nature of their research. The following diagram shows the direction of the study and how it unfolded.

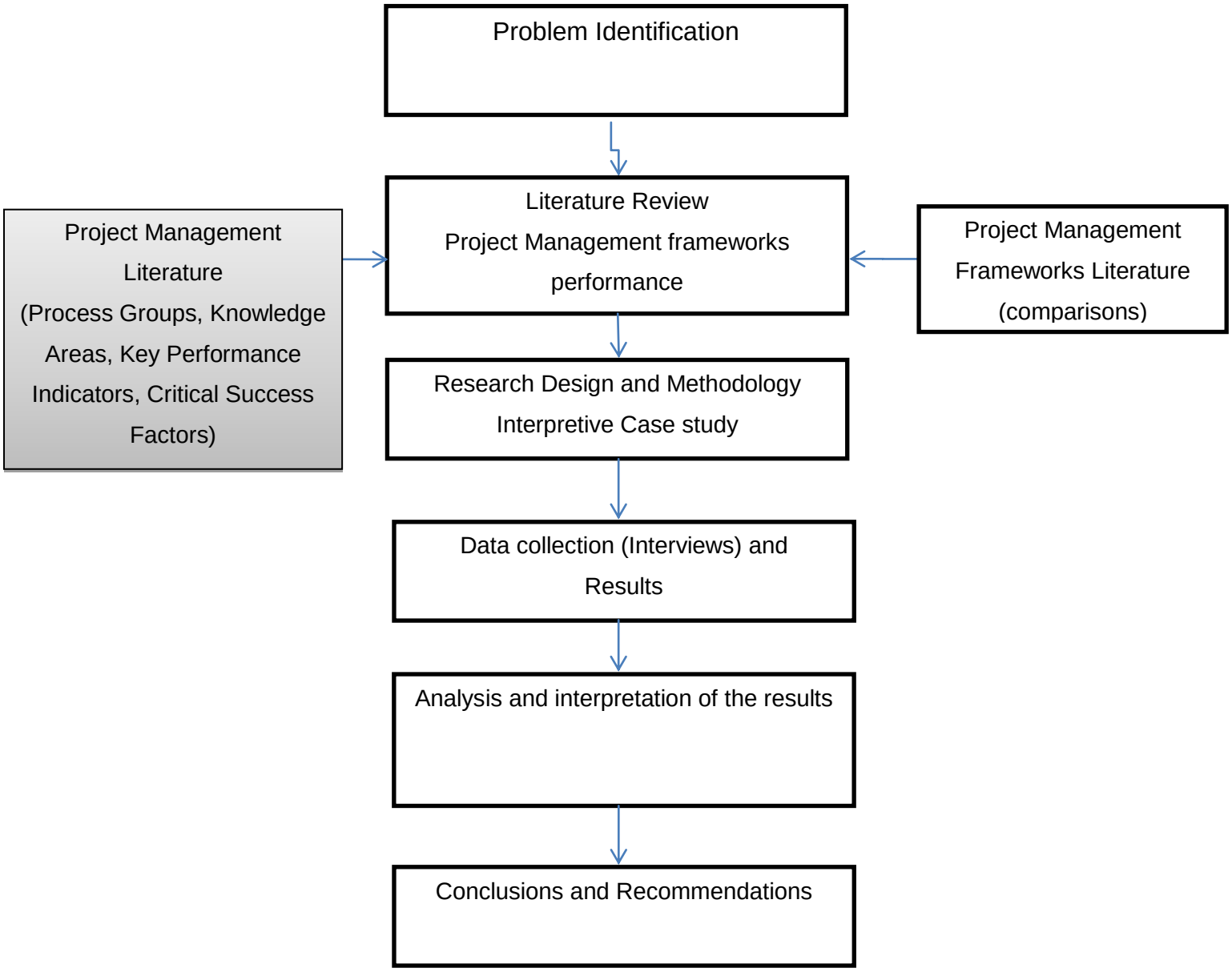

Figure 2.1: Illustration of the processes followed in this study (Chapter 2)

2.2. Project Management Philosophy and Mission

Understanding project management starts with describing and defining the terms project and management. According to Villiers (2014:5), a project is an impermanent effort carried out to make or produce a discrete product, service or result. The project's nature of being impermanent simply means that it has an exact start and finish. However, this literal meaning does not guarantee that the length of project is short. It refers to the projects arrangement and endurance. Projects end when their objectives have been reached or the project has been terminated because its objectives will not or cannot be met or when the need for the project no longer exists. Projects are the most important components of any functional organization's business strategy. As a way of achieving defined objectives of a business, its management should be at the centre of organization and coordination of all the activities (Drucker, 2011).

According to PMI (2004:32) the general definition of project management is therefore:
"the application of knowledge, skills, tools and techniques to project activities in order to meet or exceed stakeholder needs and expectations from a project."

In some cases this term is sometimes used to describe an organizational approach to the management of on-going operations. Project management has advanced from a management viewpoint limited to a few areas that are and considered as something positive to have to an enterprise project management system, disturbing all functional units of the organization. In easy terms project management has advanced into business process slightly from just a project management process. Most organizations are currently concerning project management as being mandatory for the survival of the organization.

2.3. Project Management Process Groups

According to Haughey (2013:1) project management entails five process groups. A process group is described as the coherent combination of the activities, inputs, techniques and outputs which are mandatory for any kind of project. Firstly, project initiation which is the identification of the satisfactory undertaking given the resource limits and preparation of documents for the approval of the project. . It is executed to outline a new project or a new phase inside a current project. When introducing a new project or project phase, it is crucial to recognize the stakeholders who are significant not only for gathering of requirements but also those who will be affected by project outputs. The project management method should be demarcated just as much by people-related requirement and needs of the organization as it is by the added technical project-related requirements. It is also essential to understand the needs of the executive and / or business sponsor (Jarocki, 2014).

Secondly, is the project planning which involves the definition of the work requirements and scheduling of various project activities. The planning process group is where the scope and objectives of the project (or project phase) are thoroughly defined with the suitable course of action (Evans *et al.*, 2009). When describing the scope, it is vital to keep the definitive objectives in mind and generate something that, when approved by the organization, will create value (Schwalbe, 2015). For instance, new technology all by itself would not make any significant difference. Value may be produced once the organization acknowledges the technology (project yield or output) then use it in a way to make value for organizations. Such an initiative is in the end about the use of deliverables and not just about the exchange of conclusive product or service. To this end, main project sponsors will get to an understanding that the worth of incorporating strong change management planning. Congruently, stakeholders on the operations side of the business as they are the ones exploiting those deliverables must be involved all through the project to warrant they are properly equipped to influence the new competences (Jarocki, 2014).

Thirdly, project execution includes coordinating individuals and different resources to do the management of project plan for the project and negotiations for the people

involved in the project. According to Jarocki (2014), this process group contains the procedures that are exploited to finish the work and objectives that are stipulated in the project management plan; for instance dealing with stakeholder anticipations and mixing the several project activities, comprising the people-related accomplishments. A project that is run properly will be familiar to the change management factors that have an impact on project execution and will give an explanation for these factors during the course of the project lifecycle (Aladwani, 2001). In a couple of occasions, it may be essential for the project to get embrace both subject matter expert (SME) and a change agent on the project. The SMEs must know the organizational necessities that ought to be addressed by the project while the change specialist might be gifted at understanding which components will or won't manage the expected hierarchical execution that prompts to fruitful results. In this manner the project manager needs to consider carefully about how to source the group to achieve the general organizational results, not only the project results (Jarocki, 2014).

The fourth process group is the monitoring and controlling which includes ensuring that monitoring and measuring progress to identify opening from project plan so that remedial moves can be made when essential to meet project objectives (McBride *et al.*, 2004). In this process the progress and performance of the work is trailed, considered and controlled. Continuous monitoring offers comprehension to the health of the project and the areas demanding supplementary thought. This comprises the necessity to fulfil the ever-evolving prerequisites plus anticipation of the stakeholders. For a case in point, should the team see instability or disappointment during the activity, they ought to include those participants to grasp their concerns and roll out the vital improvements as a result. This might need rolling out improvements to the matter of the project itself, for example, adjusting outlines or changes in how the project is being kept up or empowered by supporters (Jarocki, 2014).

The fifth and last process group is closing which includes approving endorsement of the project or stage and conveying it to an efficient end. This process group is employed to decide activities and officially complete the entire initiative or particular

stage. The end procedure potentially needs the most extreme consideration with regards to taking care of progress. Habitually, a project sponsor might leave a project incautiously once a solid deliverable is created for the organization. Conversely, for example if specified beforehand, the closing of a project is arrived at when the project's objectives are fulfilled. As project objectives comprise the formation of project value and that project value is typically reliant on organizational acceptance and exploitation, the project ought not to be viewed as closed pending organizational acceptance and different measurements of project success must likewise be proficient (Jarocki, 2014).

Despite the fact that it may not be the straight or proceeding with responsibility of the project manager to accomplish advantage till project worth is made, it is the obligation of the project manager to put the fundamental groundwork to support by making the above to transpire continuing to reassigning ownership to operations. Alternative key element of the closing process is to confirm that lessons learned are apprehended and used to improve the performance of the organization. Strategic project management practices can indicate disappointments of the project if components of the organization's way of life, organizational needs or environmental changes and those progressions remain not respected or duplicated in the advancement of project practices. Response, enrichment and flawlessness warrant that project management practices are excessively subject to change, making it impossible to vary as required to achieve business objectives (Jarocki, 2014).

Table 2.1: *Project Management Process Groups (FME, 2013)*

Process Groups	Initiating	Planning	Executing	Monitoring & Controlling	Closing
Activities	Define a new project or new phase, identify stakeholders and obtain authorization "Authorize the Work"	Develop an integrated project management plan to obtain project objectives "Plan the Work"	Complete the work and satisfy project objectives "Work the Plan"	Track and review project progress and performance; manage variance and change "Control the Plan"	Finalize all activities and formally close the project or phase "End the Work"
Key Outputs	• Project Charter • Stakeholder Register	• Project Management plans & related documents ✓ Scope ✓ Requirements ✓ Schedule ✓ Cost ✓ Quality ✓ Human Resource ✓ Communication ✓ Risk ✓ Procurement ✓ Change ✓ Stakeholders	• Project Deliverables • Work performance Data • Team performance Assessments • Project Communication • Selected suppliers & agreements • Change Requests • Issue Log	• Change Logs • Approved change Requests • Work Performance Information • Schedule Forecasts • Cost Forecasts • Updates to Project plan • Quality control measurements • Verified Deliverable • Accepted Deliverables	• Final Product, Service or Result (purpose of project) • Closed procurement (formal signature of acceptance)

Information technology projects are passed through entire mentioned process groups of project management as shown in the above table taken from FME (2013). This helps the development team and stakeholders to set achievable goals in projects and to ensure the success of these projects. The process groups are also supported by the nine key components of the project management. The following section will give a brief look in the knowledge areas in project management. In most cases the knowledge areas are mapped to process groups.

2.4. Overview of the Project Management Knowledge Areas

In the past years, project management was known to have nine knowledge areas and they were as follows: project integration management, project scope management, project time management, project cost management, project quality management, project human resource management, project communication management, project risk management and project procurement management (Jarocki, 2014). According to Villiers (2014:5), there is a tenth knowledge area being added to the family of project management, the project stakeholder management.

According to Houston (2011:27), the Project Management Institute has perceived nine knowledge areas that encompass process groups that are followed for operational project management. Some of these knowledge areas lead to a portion of the project goals like cost, scope, time, quality management. Other areas give a few methods to fulfil the objectives like those related to human resources, procurement, communication and risk management.

2.4.1. The Project Integration Management

The start-up of a project is pretty much the same with the start-up of another organization. The head or leader of the project advances the project infrastructure that has been utilized to plan and execute the project. Amid the early periods of the project, the game plan between the real stakeholders ought to be progressed by the project team. At least one kick-off meetings must be held or development planning sessions by the project manager to bring the few parties of the project together and

begin the project team building vital to perform effectively during the project team (Chung, 2015).

The various nine knowledge areas of project management and their procedures are amalgamated to ensure that the project is finished as effectively as could be expected under the circumstances. It incorporates six of the forty seven process bunches archived by the PMBOK (Team, 2015). The Project Management Institute (2008:115) pronounces project integration management as:

"Project integration management includes the processes and activities to identify, define, combine, unify and coordinate the various processes and project management activities within the project management process groups."

Integration Management is a PMBOK quality that underscores on ensuring that all project parts are facilitated effectively in this manner achieving the project's objectives and targets. Integration management is a serious component of large scale information technology execution, assumed the numerous interconnecting activities and work streams that must viably be assembled to fulfil the success of the project. During the project integration management, the project managers guarantee that they are defined to the core. It encompasses bringing a few distinct strategies, activities and team members into a unified project. The project manager goes about as the paste to hold together the project therefore viewed as a key integration point (Campbell, 2012:1) .

Project integration management includes the following processes: the main process is building up the project charter which includes working with the stakeholders to make a document that formally authorizes a project (Kerzner, 2013). Example yield of this process is a project charter. The second process is the creating of the project management which includes organizing all endeavours to make a reliable and cognizant document (Crawford, 2006). The case of the yield here is the project management plan. The third process is the coordinating and overseeing project execution which includes doing the project management plan by playing out the

activities incorporated into it. The case yield is the change request (Schwalbe, 2009:130).

The fourth process is the monitoring and controlling project work which includes supervising activities to meet the performance objectives of the project. The example yield is also the change request. The fifth process is performing integrated change control which includes identifying, evaluating and managing changes all through the project lifecycle (Guide, 2001). The output here is the project document update. The last process is the closing of the project or stage which includes finishing all activities to officially end the project or stage. The yield here is thusly the final product (Schwalbe, 2009:130).

The following figure stipulates the procedures and the outputs of the project integration management. To explain thoroughly and paint a picture of how the stated knowledge area works, a copy of a figure from Houston (2011) has been used. This figure gives a full summary of predecessors, methods and deliverables of the integration management ranging from project to project and organization.

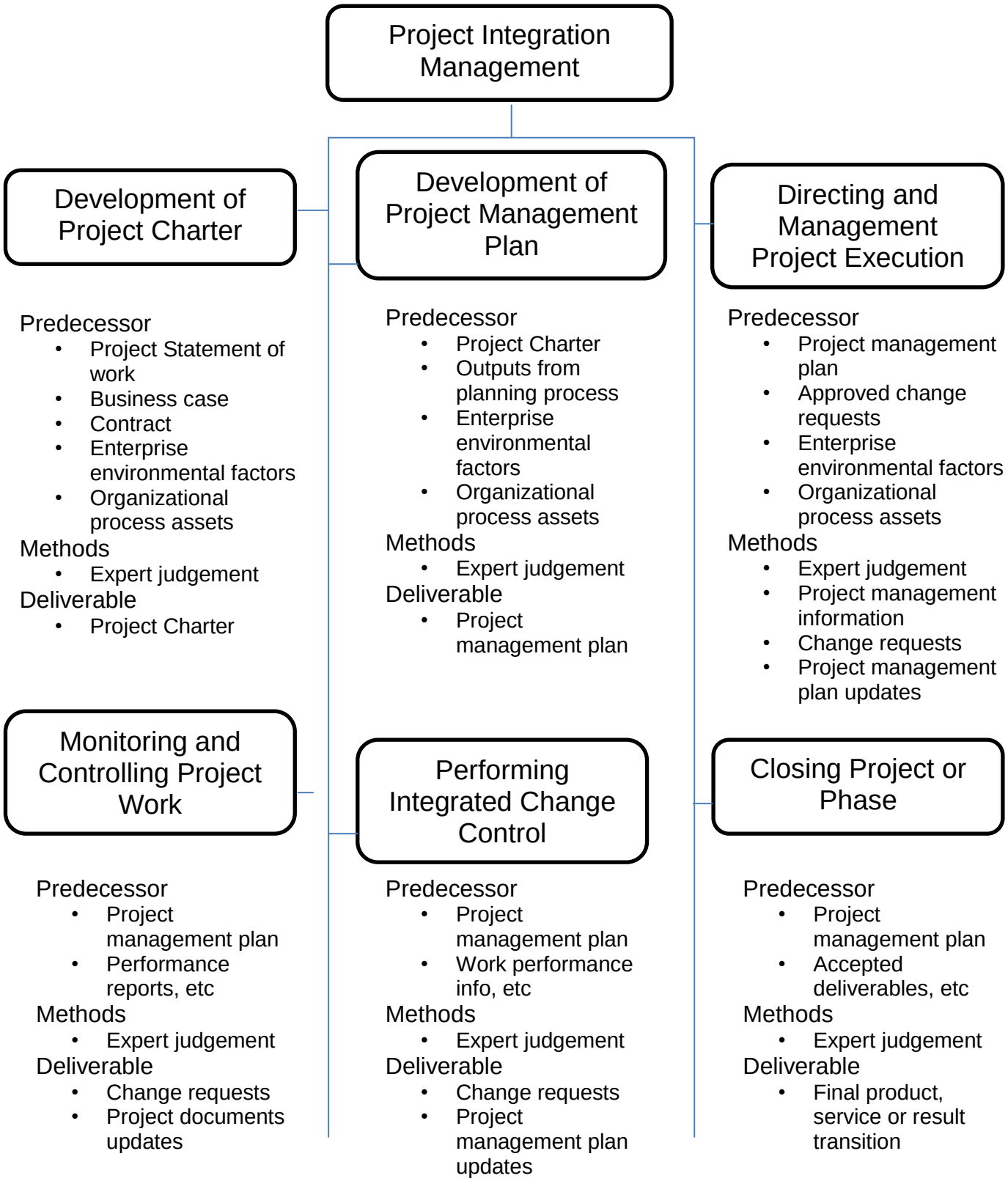

Figure 2.2: *Project Integration Management Overview (Houston, 2011:27)*

2.4.2. Project Scope Management

Notwithstanding whether the scope definition and management is done legitimately, it doesn't offer assurance or ensure to a successful project. Studies keep on showing that not characterizing these effectively in the early stages is a primary purpose behind failure of projects. The most difficult process is defining the scope, predominantly when various individuals are providing input. An understanding must come by the project stakeholders about what will and won't be incorporated into the scope. Once the scope is defined and endorsed, then the responsibility of the project manager is to confirm that the entire group has a similar comprehension of the scope, duties and how to convey the ultimate results (Houston, 2011:27).

The project scope management's primary processes begin with gathering requirements which comprises defining and documenting the features and functions of the products with essentials of the bits and pieces delivered during the project and additionally the techniques used to create them. The yields of this process incorporate the requirements management plan. The second process is defining the scope which includes surveying the project charter, requirements documents and organizational process assets to make scope statement, including more information as requirements are produced and change requests are endorsed. The yields of this process incorporate the project scope statement. The third process is making the work breakdown structure (WBS) which includes subdividing the real project deliverables into littler more reasonable segments. The yield of this process is WBS. The fourth procedure is verifying scope which includes formalizing acceptance of the project deliverables. The yield here is the change request. The last process is controlling scope which incorporates controlling changes to project scope for the span of the life of the project and the yield of this process is the project management plan (Schwalbe, 2009:130).

2.4.3. Project Time Management

Time is a typical measure of success of finishing a project furthermore referred to as the greatest challenge. The schedule issues tend to bring about the most conflicts over the project lifecycle. Once the schedule for the project is set and communicated, it is frequently the most widely recognized estimation of performance of the project. Paralleling planned action times with real action times to figure out whether a project is on time ought to think about modifications to the schedule from approved changes. Time is additionally the one true constant and it continues regardless of what happens on the project (Houston, 2011:27).

The project time management process includes the following (Larson & Gray, 2011); the planning schedule management which includes distinguishing every one of the activities that should be performed to create project deliverable. The yield for this process is the schedule management plan. The second process is defining activities which include identifying the specific activities that the project team and stakeholders need to accomplish to create the project expected deliverables. The yield here is the activity list. The third process is sequencing activities which include distinguishing and recording the relations between project activities. The yield for this process is the schedule network diagram. The fourth process is estimating activity resources which include estimating the quantity of resources (individuals, hardware and materials) a project team have to use to execute project activities. The yield of the process is the resource breakdown structure.

The fifth process is estimating activity durations which include considering the number of work periods that are expected to complete individual activities. The yield for this process is the duration estimates. The sixth process is developing the schedule which includes analysing activity sequences, activity resource estimates and activity duration estimates to make the project plan and the yield here is the project plan. The last process is controlling the schedule which includes controlling and managing changes to the project plan and the yield incorporates the change requests (Schwalbe, 2009:130).

2.4.4. Project Cost Management

It anticipates that projects can be exceptionally costly in some cases and even rocket way over spending plan/budget. In the event that the project manager can't acquire great requirements or good guesstimates of activities, the financial plan of the project will be challenging to get right. This is on account of most IT projects incorporate new innovation or new business forms. On the off chance that these components are unapproved their utilization can thusly lead to risks that cause expanded expenses, although definite projects using proven technology and accurate time estimates can lead to realistic budgets. The budget could incorporate a measure of cash set aside as a feature of the alternate course of action contingent upon the measure of risk and confidence in the schedule (Houston, 2011:27).

The processes incorporated into project cost management are requested to guarantee that project team members finish a project inside an approved budget. These processes are as per the following; planning cost management which includes deciding the real requirements of people, hardware and materials so as to perform project activities. The yield of this process incorporates cost management plan. The second process is estimating costs which include developing an approximation or estimate of the costs of the resources needed that would complete a project and the yield is an activity cost estimates. The third process is determining the budget which includes dispensing the overall cost estimate to individual work items to set up a pattern for measuring performance and the yield incorporates cost performance baseline. The fourth process is controlling costs which include controlling changes to the project and the last yield is the change request (Schwalbe, 2009:130).

2.4.5. Project Quality Management

Numerous individuals characterize quality in various ways; however it is essential to see how the stakeholders characterize quality identified with the specific project. Some consider quality to be the end result being in consistence with the requirements of the project. Others concentrate on how well the last item meets the proposed use. There are two approaches to characterize quality and they are complying with requirements and wellness for use.

The fundamental reason for quality management is to guarantee that the last item meets the business requirements. Different measures of value are quantifiable during the project while others can't be measured for quite a long time after the project closes. It is exceptionally significant to remember that the client chooses if the nature of the last item is satisfactory (Houston, 2011).

There are three principle forms in project quality management; planning quality which incorporates recognizing which measures is significant to the project and how to fulfil those standards. The fundamental yield of this process is the quality management plan. The second process is performing quality assurance which includes periodically assessing general project performance to guarantee that the project will fulfil the significant quality standards (Molina *et al.*, 2007). The output of this process is change requests. The last process is performing quality control which includes monitoring particular project outcomes to guarantee that they agree to the applicable quality principles however identifying approaches to enhance general quality and the yield here is quality control measurements (Schwalbe, 2009).

2.4.6. Project Human Resource Management

All project managers ought to have human resource management as it is an essential expertise in their calling. A team will as often as possible comprise of individuals brought together and it is the project manager's commitment to shape them into a group that will cooperate to finish the project. In the project charter, high-level resource needs are identified and needs are further refined during the planning stage. The way toward acquiring the necessary skills for the project team differs depending on the organization. Negotiating for the staff's ideal opportunity to take a shot at the project, when they are required, can be challenging particularly when there are competing priorities (Houston, 2011).

The project human resource management includes the following processes; human resource planning which includes identifying and recording the project roles, responsibilities and reporting relationships and the yield for this process incorporates human resource plan. The second process is acquiring the project team which includes getting the required personnel assigned to and working on the project. The yields for this process incorporate resource calendar books (Hislop, 2003). The third process is building up the project team which includes building individual and group skills to improve project performance and the yield here is the team performance assessments. The fourth process is managing the project team which includes, “tracking team member performance, motivating team members, providing timely feedback, resolving issues and conflicts, and coordinating changes to help enhance project performance”. The yield of this process is change requests (Schwalbe, 2009).

2.4.7. Project Communication Management

Communication is a medium that is more than simply disseminating information. It involves understanding the information received and having ability to disclose it to other individuals. It is broadly realized that experts have their own terminology that is much of the time not comprehended by the outsiders. This additionally applies to the human services industry. There ought to be an individual selected in the team who can comprehend both sides and decipher when required. Having the capacity to help with communication is the one and only advantage informatics can convey to the project team. The project manager ought to see how each identified member would add to the project. The analysis feeds into the communication plan, ensuring that the right information is shared to the right individuals at the correct time utilizing the right communication vehicle. Disregarding the way that the project manager is typically the hub of the projects' communication, distributing information, for example, the status of tasks, newly identified risks or issues and the resolutions of current issues is a part of each colleague's responsibility (Houston, 2011).

The communication management involves three processes and these are; planning communications management which includes deciding the information and communication needs of the stakeholders and the yield of this process is the

communication management plan. The second process is managing communications which includes creating, dispersing, storing, retrieving and disposing project communications in view of the communication management plan. The yield of this process is project communications. The last process is controlling communications which include monitoring and controlling the project communications to warrant that the stakeholder communication requirements are met. The yield of this process is the change requests (Schwalbe, 2010).

2.4.8. Project Risk Management

Risk management is a significant process in a project where identification, analysis and response to risks is carried out throughout the project. Identifying risks early is the obligation of every project stakeholders is critical as the earlier risks are identified the more there is to perform risk analysis and plan the risk response. Communicating about the risks to stakeholders, helps them comprehend the nature of the project and helps in managing their expectations. Proper risk management is a form of protection to decrease the effect of potential unfriendly occasions. This is the zone in which most organizations can enhance project execution. Regularly almost every organization thinks that it is difficult to balance between risk and opportunity. The chance that originates from a new system must be weighed against the risks as various organizations have diverse risk resiliencies (Houston, 2011).

There are six primary processes of project risk management; planning risk management which includes deciding how to approach and plan risk management activities for the project and the essential produce of this process is the risk management plan. The second process is identifying risks which include making sense of which risks are probably going to affect a project and recording the potentials of each. The principal outcome here is the risk register. The third process is performing qualitative risk analysis which includes prioritizing risks based on their probability and impact of occurrence. The main output is project documents updates. The fourth process is performing quantitative risk analysis which includes numerically estimating the impacts of risks on project objectives and the yield is still the project document updates. The fifth process is planning risks responses which

include taking steps to improve chances and reduce threats to meeting project targets. The sixth process is monitoring and controlling risk which includes observing identified and residual risks, identifying new risks, carrying out risk response plans and evaluating the effectiveness of risk strategies for the extent of the life of the project (Schwalbe, 2010).

2.4.9. Project Procurement Management

The term procurement is utilized by the administration to portray getting merchandise or services from an outside source. Other individuals utilize the terms acquiring, contracting or outsourcing. In different organizations, procurement management may likewise be called contract management. The procurement process incorporates more than simply managing contracts; it additionally incorporates planning, proposal development, proposal response evaluation, negotiation through management of the granted contract and proper contract closure (Houston, 2011).

According to Phillips (2013), procurement management incorporates four fundamental processes; planning procurement management which includes figuring out what to get and when and how to do it. The yield of this process incorporates procurement management plan. The second process is conducting procurements which include acquiring seller responses, selecting sellers and awarding contracts and the yield here is change requests. The third process is controlling procurements which include managing relationships with sellers, monitoring contract performance and rolling out improvements as required. The yield here is likewise change requests. The fourth process is closing procurements which include completion and settlement of every contract or agreement including resolution of any open item. The yield of this process is the closed procurements (Phillips, 2013).

2.4.10. Project Stakeholder Management

According to Bourda (2013), as a project manager the most important concept of management is the stakeholder management. It is a familiar, organised and involved movement related through vibrant actions and outcomes yet as a general rule; it is

an unconscious and unplanned aspect of managing projects on a daily basis. It is essential to comprehend the term stakeholder, which is the imperative part of the project management system (Schwalbe, 2010). As Worthington (2015) said, stakeholders are individuals who declare to particular interest group served by the results and performance of a project or program. This knowledge area has been a piece of communication management yet because of its basic being, PMI put an expanding accentuation on it and has lifted it to be all alone (Newton, 2013).

Project Stakeholder Management has four primary processes; identifying stakeholders includes identifying everybody required in the project or affected by it and deciding the most ideal approaches to manage relationships with them. This process has yields including stakeholder register. The second process is planning stakeholder management which includes deciding strategies to effectively draw in stakeholders in project choices and activities in view of their needs, interest and potential effect. The yield here is the stakeholder management plan. The third process is managing stakeholder management which includes communicating and operating with project stakeholders to fulfil their needs and expectations, resolving disputes and cultivating engagement in project decisions and activities. The yields here incorporate change requests. The last process is controlling stakeholder management which includes monitoring stakeholder relationships and changing arrangements and strategies for drawing in stakeholders as required. The yields of this process incorporate the change requests (Schwalbe, 2010).

2.5. An overview of Key Performance Indicators (KPIs)

According to Weber and Thomas (2005), performance management is an essential standard of management. They likewise specify estimation of execution is imperative since it distinguishes current performance and gives sign of progress towards filling the gaps. Carefully chosen key performance indicators identify precisely where to make a move to enhance performance (Weber & Thomas, 2005). On a basic level KPI is an approach to assess the accomplishment of a specific attempt or movement. These markers may incorporate estimates to project finish, number of uncertain issues, current resource assignment, work costs spent, current

development backlog, project schedule and more depending on the type of the project (O'Brochta & Finch, 2011).

KPIs help an organization, office, team or manager respond in a split second to any occasions that may affect the business. These indicators can likewise be utilized to set focuses all through the business to deliver the key objectives. KPIs help business to concentrate on a common objective and guarantee that it is aligned within the organization. That is the reason it is essential that organizations know precisely what to estimate (Walczak, 2014). The following table has been taken from Walczak (2014), who categorizes common KPIs that may be used in different projects based on project management, efficiency and future preparations of projects.

Table 2.2: *Key Performance Indicators (Walczak, 2014)*

Performance Type	Performance Area	Common KPIs for projects	Removed from KPI candidates	KPIs to be added
Project Management	Cost	"Completion rate, target cost, profitability"	Financial cost rate	"Legal costs due to contract conflicts"
	Quality	"Reconstruction rate, defect curing cost"	"Frequency rate of occurrence"	Review of defect areas
	Project Time	Construction process fulfilment rate	Fulfilment rate of major milestones	-
	Safety	"Accident rate, Accident handling cost"	-	-
	Environment	"Cost of complaint handling"	Rate of waste recycling	Environment-friendly certificate
	Risk	"Standardization of risk management plan"	-	-
Project Efficiency	Efficiency (Standardization)	Sales per person	"Fulfilment rate of comprehensive project plan process"	"Human resource input rate by project"
	IT System	"Operation rate of Project Management Info System"	"Fulfilment rate of Service Level Agreement"	-
	Knowledge management	-	"Knowledge level of knowledge sharing. Application of new technology and method"	"In-house training achievement rate"
	Security	-	Burglary damage amount	Security equipment instalment
Preparation for future	Learning and growth	"Learning level of employee skill improvement"	-	-
	"External customer satisfaction"	"Order's residents satisfaction"	-	-
	"Internal customer satisfaction"	"Employee satisfaction"	-	-

2.6. An overview of Critical Success Factors (CFS)

In the assurance to finish an IT project on time and on schedule, managers can without much of a stretch control some key elements important to achievement. There are clear imperative keys to a project management win. These aren't just elements affecting the fruitful result of a project. IT experts additionally rank a project management methodology or process of project management system the need to oversee expectations and a profoundly gifted project manager as significant (Levinson, 2010).

As projects remain assuming a significant part in business forms numerous studies propose projects in common and IT projects specifically, keep on having unsatisfactorily low rates. These inacceptable degrees of accomplishment for IT projects have been a worry amongst project management experts. The research approaches used to investing IT projects success or failure have been the search for critical success factors (Shenhar, 2008).

The following are a couple of cases of CSFs that IT project managers have been looking into; clear definition of success is the very important aspect in projects. Nobody can move forward on the off chance that they don't comprehend what it would seem that. Project success is not just classified as on schedule, on costs plan and reaching the considered necessities additionally understanding the normal esteem suggestion of the project and to move project endeavours to assure that it is achieved (Nash, 2009). Included in some of the critical success factors list are; willingness to make unpopular decisions, end-user training and hand holding after go-live, clearly defined roles and responsibilities, transparent workflows, a process for managing scope changes, risk management, adequate documentation, a good quality assurance process and project governance (Levinson, 2010).

2.7. Summary

The chapter has given a contextual theory on the project management and its concepts. The knowledge areas of project management encompass what the project manager needs to know in order to successfully manage a project. Also stated are the process groups which encompass what a project manager and team have to do to deliver a project successfully; these are logical groupings of processes. Key performance indicators (KPIs) are used as crucial measures of whether an organization is accomplishing their primary strategic goals of sustainable growth and greater financial performance. In projects KPIs have been utilized to measure performance against the set objectives of the organization. It has been established that not only KPIs can help assist in measuring the success of projects but also critical success factors help organizations in terms of achieving their set objectives.

CHAPTER: THREE

OVERVIEW OF THE PROJECT MANAGEMENT FRAMEWORKS

3.1. Introduction

Project management frameworks have been mostly considered efforts to understand project management in a holistic sense. They go beyond the constraints like cost, time and scope to include all aspects that may influence a project. Schwalbe (2010) describes some of the frameworks such as stakeholder's requirements and prospects, project management knowledge areas, tools and techniques and project portfolios. The chapter also provides an insight into the different project management frameworks as outlined in chapter one.

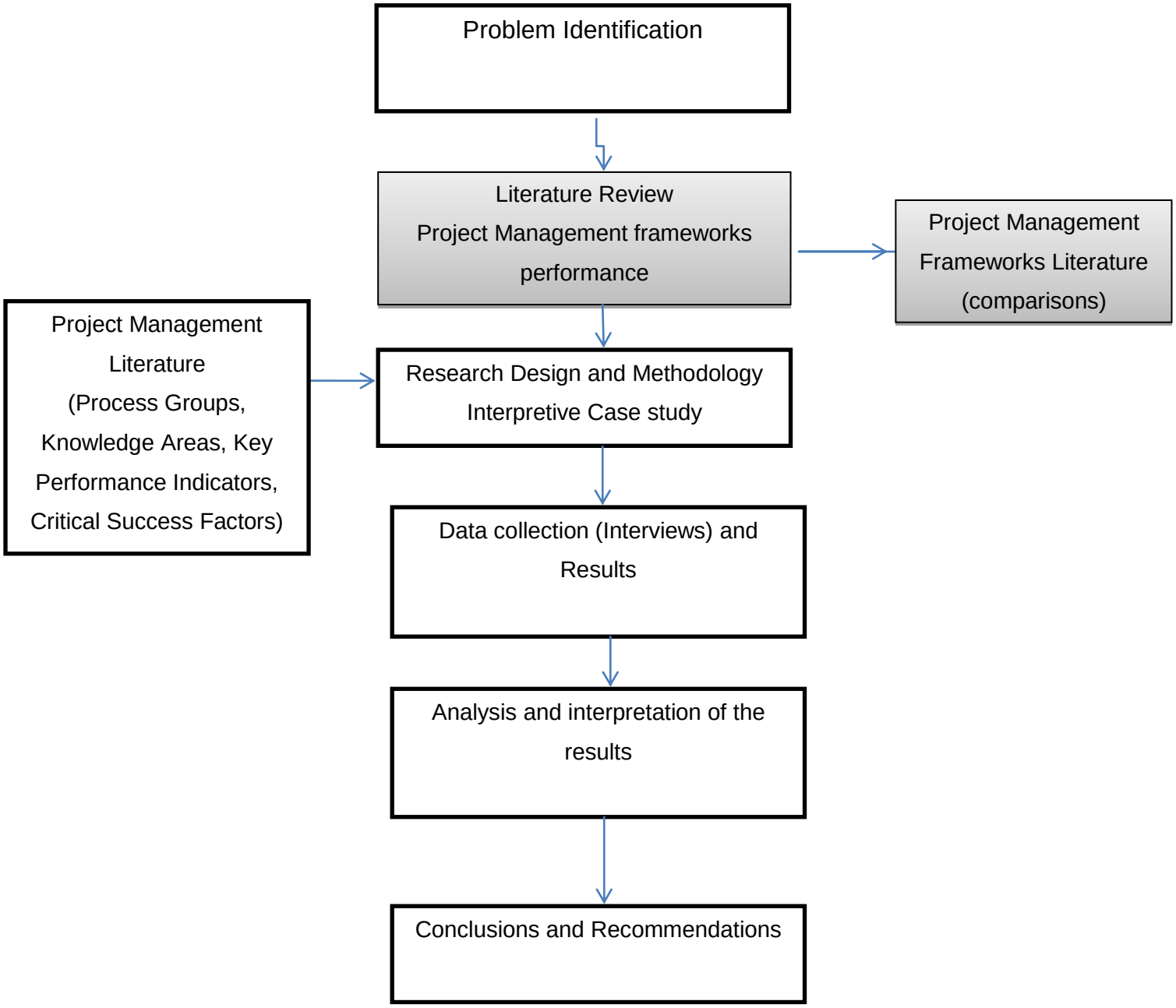

Figure 3.1: Illustration of the processes followed in this study (Chapter 3)

3.2. Vision-to-Projects (V2P)

Numerous sources of literature have agreed that projects empower and encourage the usage of a organizational vision (Kendall & Rollins, 2003). It has additionally been begun by the Project Management Institute's (PMI) Organizational Project Management Maturity Model (OPM3) that projects help organizations to deliver foreseen strategic changes in an evolving world. Moreover Kendall and Rollins (2003) stated that it is “true whether the goal is the development of a new software product or implementation of new systems in an organization”. Despite the fact that OPM3 recognized the way that the vision and strategies of an organization are affected by means of projects, it didn't manage the cost of an understandable approach for continuing from the vision to the activities

As Peterson (2002) has said, “any project undertaken by a company should be driven by business objectives”. A few sources of literature have uncovered that numerous organizations do not have an organized process through which to create projects from the business objectives. Notwithstanding this, there is once in a while an organized formal process for beginning projects from the organizational vision. Linking projects to the vision of the organization has additionally been a challenge, which made an all inclusive perspective of projects almost impossible. It moreover made it hard to evaluate the commitment that the particular project made towards accomplishing the organization’s vision, measuring and dealing with the normal advantage (Walls, 2004). V2P framework was developed by Marnewick and Labuschagne (2006), utilizing the vision of the organization as a beginning point from which to think of the projects needed to implement it.

V2P comprises of the following steps: the initial two stages are to deconstruct the vision into strategies using strategy maps which are in turn deconstructed into business objectives (Kaplan & Norton, 2004a). These business goals, per its related targets and measurements are additionally reviewed as projects and action items using principles from the project integration management knowledge area. Projects are then assembled altogether into programmes related to the business objectives.
The last step includes putting together the programmes into a portfolio that is aligned to the strategies of the organization. This framework is said to be hypothetical and

was developed as a speculation display, utilizing deductive thinking in view of a broad literature overview. These are shown in Figure 3.2 below. The succeeding figure from Marnewick and Labuschagne (2006), displays the flow diagram that explain activities and procedures followed in the deployment of V2P framework.

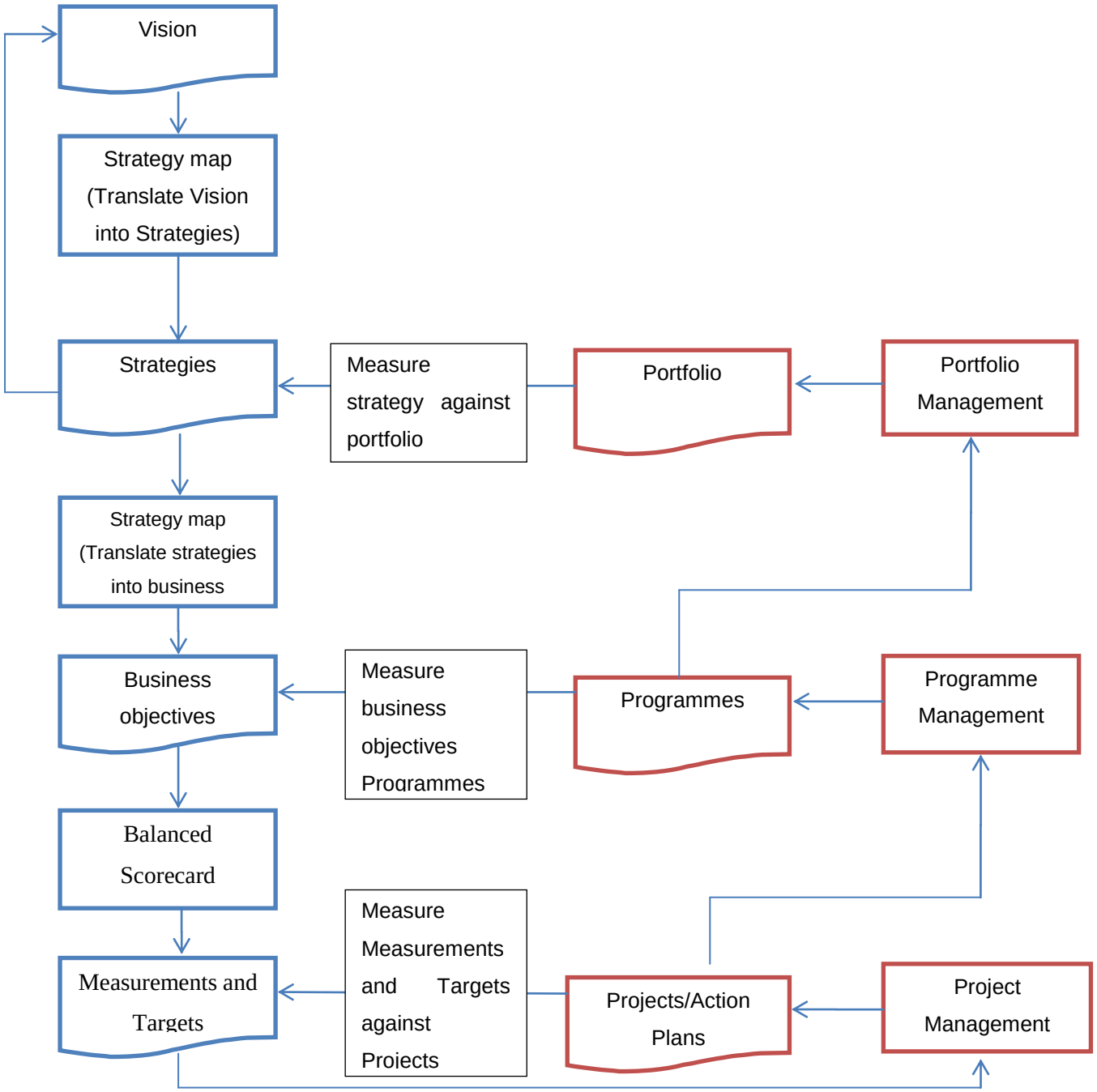

Figure 3.2: *Vision-to-Projects (V2P) framework (Marnewick & Labuschagne, 2006)*

3.3. Project Life Cycle based Framework

The project life cycle based framework influences project management as the widely inclusive process which arranges the underlying life cycle process of project funding approval, acquiring and system development (Pratt, 2011). At a few stages in the project life cycle, each of the important processes may possibly transpire and intersect with each other in light of a scope of elements including control agency requirements (Khang & Moe, 2008). Project approval and funding must be attained prior the fulfillment of the acquisition activities and beforehand any activities commence during the system development phases (Belassi & Tukel, 1996). According to Tserng *et al.* (2009), these life cycle activities while discrete are frequently intertwined because of certain dependecies on each other.

According to Tserng *et al.* (2009), projects are planned and done in a way that follows a sequence starting with a agreed strategy which lead to an idea for a particular action, which is then defined, implemented and evaluated with a view to enhancing the strategy and action. Project life cycle management is an approach to managing projects. Particular phases of projects are dictated by project life cycle management and it outlines specific actions and approaches to be taken within these stages. This framework provides for planning and review processes all through a cycle and allows a structure to guarantee that stakeholders are approached and relevant information is accessible all through the project life so that informed deciions can be made at key stages in the project's life (Tserng *et al.*, 2009). This is shown in Table 3.1 below taken from Tserng *et al.* (2009).

Table 3.1: *Project Life Cycle Phases (Tserng et al., 2009)*

Life Cycle Phases	Success Criteria	Critical Success Factors
Conceptualization	"Applicable needs of the right target group handled, Right implementing agency determined (capable and willing to deliver)"	Clear understanding of project environment by funding and implementing agencies and consultants, Effective consultants with primary stakeholders"
Planning	"Appropriate resources dedicated and prepared to be spent, Key parties to show true project commitment"	"Project planner's know-hows, Key stakeholders Knowledge of development priorities, Available suitable resources to Sustain the project plan"
Implementing	"Proper usage and mobilization of resources, Respectable accountability of resources deployment, Key stakeholders' satisfaction with project progress"	"Commitment to project goals and objectives, Continuing support of stakeholders, Competencies of project management team"
Closure/Completion	"Target beneficiaries to accept and use project outputs, Key stakeholders accept the project completion"	"Capabilities of project management team, Suitable requirements for project closing in the project plan, Operative discussion with key stakeholders"
Overall Project Success	"Visible project impact on the recipients, Project has constructed influential dimensions within the country, Good reputation of the project, Sustained project's conclusions"	"Adequate local capabilities are available, There is strong local ownership of the initiative"

3.4. Monitoring and Evaluation Framework

According to Bullen (2014), an evaluation matrix can likewise be referred to as monitoring and evaluation framework. As it is a table that describes the indicators which are utilized to measure whether the program or project is a success. It can likewise tell whether the program or project is having any kind of effect and for whom, it can identify program or project areas that are on target or parts of a program that should be adjusted or replaced (Rugg & Peersman, 2009).

Monitoring is the full trailing and reporting of priority information about a project or program: its inputs, outputs, activities, outcomes and impacts. Evaluation is the methodical collection of information about the activities, qualities and results of a particular program or project to decide its value or work. If a program/project is thought to be of legitimacy, it is likewise essential to figure out if it is justified regardless of its cast. Evaluation provides reliable information for enhancing programs/projects, identifying lessons learned and enlightening decisions about future resource distribution (Rugg & Peersman, 2009).

According to Sera and Beaudry (2007), in carrying out monitoring and evaluation efforts, the particular areas to consider will depend on the real mediation and its expressed results. Examples of areas of questions will include:

Applicability/relevance – do the aims and objectives coordinate the issues or requirements that are being tended to?

Proficiency/efficiency – Is the project carried in an promising and financially savvy way?

Usefulness/effectiveness – What exactly broadens the mediation to accomplish its targets? What are the strong elements and obstructions experienced amid the usage?

Impact – This clarifies progressively what happened as a consequence of the project. It might incorporate expected and unintended positive and negative impacts.

Sustainability – This characterizes whether there are enduring advantages after the mediation is finished (see Table 3.2 below). This table has been taken from Sera and Beaudry (2007), and provides a clear division of area questions that aid in the process of carrying out monitoring and evaluation.

Table 3.2: *Different levels of Monitoring and Evaluation (Sera & Beaudry, 2007)*

INPUTS "The economic, social and physical resources used for the development intervention. Practical Know-how, Tools, Capitals"
ACTIVITIES "Actions tacken or work perfomed, Training workshops conducted"
OUTPUTS "The merchandises, principal goods and services that effect from advance intervention. Number of individuals trained, Number of workshops conducted"
OUTCOMES "The possible or attained short term and medium term properties or changes of an interventions outputs, Increased skills, New employment opportunities"
IMPACTS "The long term significances of the program, may be positive and negative effects. Better standard of living"

3.5. Iron Triangle/ the Triple Constraints

The Project management iron triangle is viewed as a model of the constraints of project management being the cost, time and scope. It is a graphic aid where the three qualities are shown on the edges of the triangle to show resistance (Haughey, 2013). Every constraint shapes the peaks with quality as the subject. This is ilustrated in Figure 3.3 below captured from Haughey (2013).

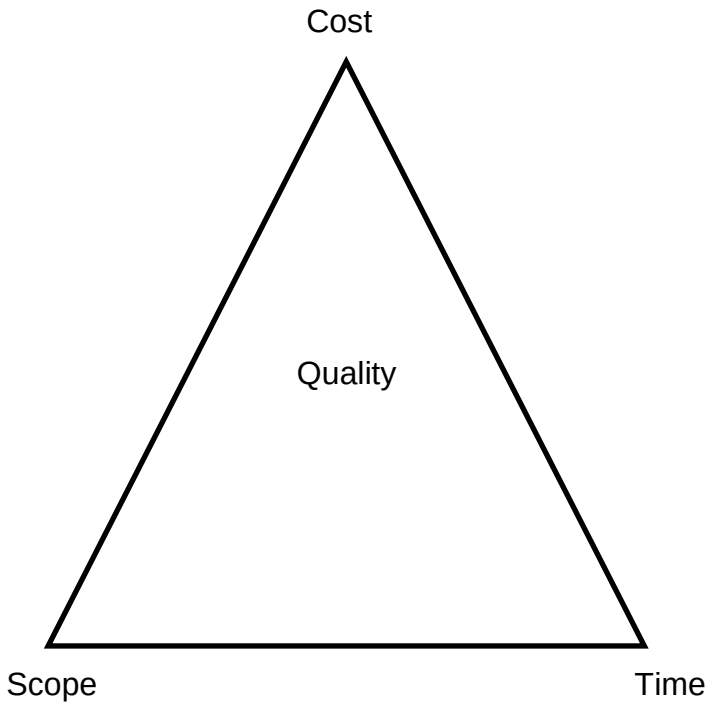

Figure 3.3*: Iron Triangle/Triple Constraints (Haughey, 2013)*

This essentially implies the projects need to be delivered within cost, projects must be delivered on time , projects must meet the agreed scope (no more, no less) and projects have to equally meet client quality requirements (Haughey, 2013). In other books, to create successful project, a project manager must consider scope, time and cost and balance those three regularly competing goals (Schwalbe, 2009).

Cost: This implies all projects require a restricted budget plan, the customer needs to spend a precise amount of money for delivering a new product or service. If they lessen the cost of the project they will either need to decrease its scope or increment its time.

Time/schedule: A notable statement says time is money, which is a commodity that slips away too effortlessly. Projects normally have a due date for delivery.

Scope: Regularly projects fail on this constraint since it is either the scope is not completely defined or comprehended from the earliest starting point. At the point when the project scope is expanded, the cost or time will either need to increase (Seaver, 2014).

3.6. The Square Route

Turner (1996), found that other criteria/framework which could be utilized to measure the success of the project is through the Square Route. This includes three new classes: the technical strength of the resultant system, the benefits to the resultant organization (direct benefits) and the benefits to a wider stakeholder community (indirect benefits). The information system incorporates maintainability, reliability, validity and information quality use. The direct benefits incorporate improved efficiency, improved effectiveness, increased profits, strategic goals, organizational learning and reduced waste.

The indirect benefits incorporate satisfied clients, social and environmetal impact, personal development and economic impact to surrounding community. These three classifications and the Iron Triangle (cost, scope and time) could be spoken to as the Square Route to have the capacity to comprehend project management success criteria (Atkinson, 1997). These are shown vividly in Figure 3.4 below captured from Turner (1996).

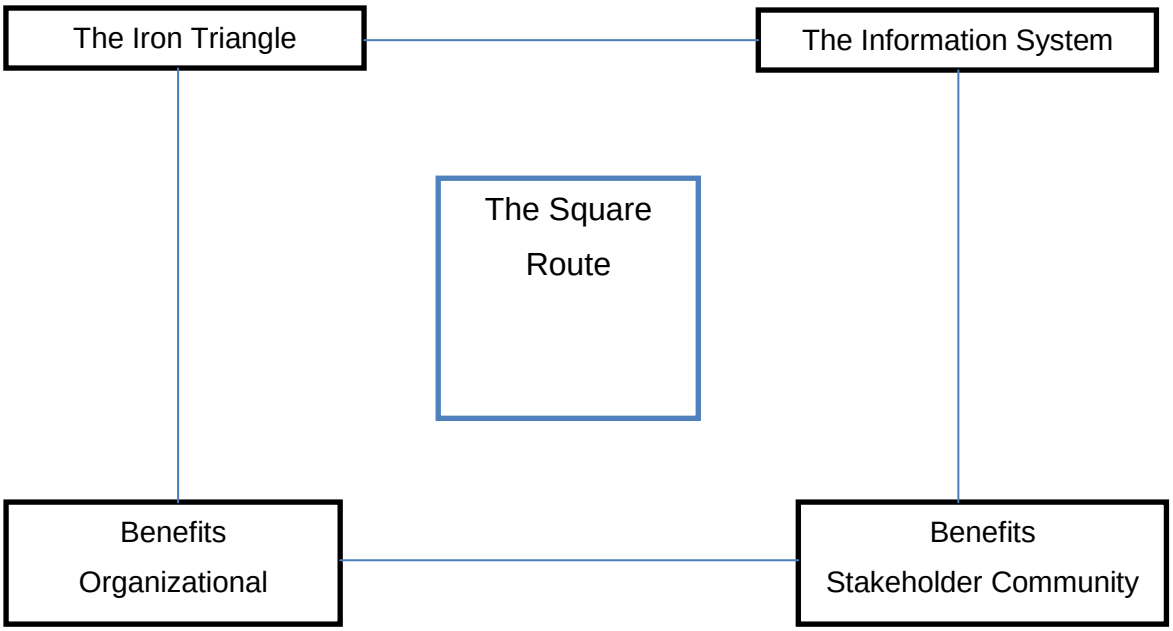

Figure 3.4: *The Square Route (Turner, 1996)*

3.7. Projects in controlled environments (PRINCE2)

It is a well-thought-out project management framework that allows an organization to plan and manage the project. PRINCE2 is intended to deal with any project in the business. It is focused upon best practices of project management. This settles on a mainstream decision among organizations around the world. It coordinates project managers through the entire project life cycle and can be guided to address specific issues of any project management. It envelops four coordinated components: principles, themes, procedures and fitting to the project environment (Bentley, 2010).

The principles are the establishments of the structure. The themes concern attributes of project management that must be continuously tended to all through the project. The procedures portray who is in charge of playing out the subjects at various focuses in the project. In conclusion each project is diverse so the themes and procedures must be custom-made to suit the need of nature. According to Harej and Horvat (2007), there are seven principles of PRINCE2 and they are all inclusive, implying that they can be connected paying little heed to the dialect or culture. They are self-approving in that they have been turned out to be the best methods for overseeing projects. They are likewise enabling in light of the fact that they give the experts capacity to impact the results of the project (Hinde, 2012).

The first principle is that the project must have proceeded with business justification. This implies the business supporting and paying for the project must comprehend the advantages that will be accomplished in return for its investment contrasted and the costs and risks of the project. The second principle is to learn from experience as a matter of fact. PRINCE2 inspires the project management team to take a glimpse at what was done well or severely on past undertakings and ask what should be possible better on activities with a specific end goal to abstain from repeating the past errors.

The third principle is that individuals required in a project are more likely than not characterized parts and duties. Having the right partners required in settling on choices is imperative if the project is to succeed (Harej & Horvat, 2007).

The fourth principle is that the project ought to be overseen by stages. The project is separated into administration stages which give control focus to the project board to survey advance and choose whether business support still exists. The fifth standard is that the project ought to be overseen by exemption. At the point when the project load up choose to continue to the following stage, they designate the power to the project manager by setting resiliences for costs, time, quality,scope, risk and benefits. The sixth pinciple is that a project should dependably concentrate on the items it ought to convey (scope) including the level of value anticipated from them. The last principle is that PRINCE2 must be custom fitted to suit the project environment; no two undertakings are the same. The more prominent the risk, unpredictability, size or significance of the project, the immense the level of checking, reporting and control that will be required (Harej & Horvat, 2007).

3.8. Systems Development Lifecycle (SDLC)

This is a series of six principle stages to make either equipment or programming framework just or a blend of the two to meet or exceed clients' desires. The entire motivation behind this lifecycle is the improvement of the profitability of the organization and the gathering of individuals working in that organization. As systems improvement got greater, there was a need to systemize the procedure of the system development and formulate an arrangement of steps that are required for any system development (Radack, 2002). The SDLC is a typical technique utilized as a part of all practically every organization, as the system development projects got greater and the discipline of software engineering started to set a few guidelines or its own

particularly a considerable measure of strategies have seen light and were assembled by organizations looking for accomplishment as indicated by their own particular estimation of achievement.

SDLC is a procedure taken after by organizations to lead every one of the means important to examine, plan, actualize and keep up their systems. These stages are obviously characterized and particular. They are employed by architects and engineers to become prepared for experiment and deliver Information Systems. It is intended to create amazing systems like assembling mechanical production system. For this situation client necessities are resolved then a system is created in obviously characterized stage inside scheduled time spans and cost estimates. Computer systems are complicated and frequently connection to various conventional systems is possibly provided by various software vendors. The multifaceted nature has expanded because of service-oriented architecture. To deal with some of this unpredictability, various SDLC models or philosophies have been made for instance Waterfall and AGILE (Radack, 2002).

SDLC can be portrayed along a range of AGILE – Iterative – Sequential. AGILE strategies, for example, Extreme Programming and SCRUM concentrate on light weight forms which take into account fast deviations beside the development cycle. Iterative philosophies, for example, Rational Unified Process (RUP) and Dynamic Systems Development Method (DSDM) concentrate on constrained project range and growing and enhancing item by different emphases. Consecutive or Big-Design-Up-Front (BDUF), for instance, Waterfall, concentrates on total and accurate wanting to direct infinite tasks. Different models, for example, Anamorphic Development swing to distillate on a form of enhancement that is directed by project scope and adaptable emphases of future development (CMS, 2008).

In project management a project can be categorized both with a project lifecycle and system development lifecycle in which marginally unique exercises happen. This SDLC began in 1960s to grow vast scale useful business systems. As far back as the conventional lifecycle approaches have been set up, systems development has been progressively succeeded with option methodologies and systems (CMS, 2008).

SDLC is being utilized as a part of numerous organizations because of its successes. This point of interest of SDLC, incorporates being perfect for supporting less experienced project teams and project managers or project team whose organization changes. SDLC has efficient sequence of enhancement stages and restricted measures for assuring the ampleness of credentials and outline audits guarantee the excellence, steadfastness and practicality of the created software. According to CMS (2008), it is anything but difficult to quantify advance of system development . The SDLC helps most organizations to protect resources. This structure contrasted with different systems is effortlessly reasonable because of its preference of having stages. In a project it won't be simple for the project teams to wind up overlooking or changing their parts as they can't avoid any of the stages not at all like in different structures where different phases of the project can be jumped into without considering different stages.

In spite of the fact that SDLC is taken so emphatically in a few organizations, it has shortcomings. These may incorporate inflexibility and awkward because of critical structure and tight or strict controls. Reasonability is decreased when SDLC is utilized on the grounds that there is a little space for utilization of emphasis. In addition SDLC relies on early recognizable proof of prerequisites, yet clients will be unable to obviously characterize what they need ahead of schedule in the project (CMS, 2008).

3.9. Project Management Methodologies

These are structures that are utilized under specific philosophies. Cases of techniques incorporate PRINCE2, Six Sigma, Agile and others though project management structures incorporate the Triple Constraints, the Square Route, Vision-to-Projects. Philosophies encompass supervisory processes for the characters who are responsible for project management. Despite the fact that the systems are not instrument precise, in nowadays' artefact reliant world really the philosophy and the organization's project management software apparatus are regularly interlaced (Lister, 2014). The study is concentrating for the most part on the frameworks; how powerful they can be in production of successful IT projects. Regarding PRINCE2, it can be utilized as a methodology and as a framework to guarantee the success of IT projects.

3.10. Summary

The chapter has given a clear perspective to the different project management frameworks. These frameworks differ from the success factors in that they include the following features; integration of processes, continuous business justification, organizational process assets, start up project activities, managing product delivery and other features. Whie the success factors can differ from project to project. These can be defined as the handful of key areas where an orgnization must perform well on a consistent basis to achieve its mission. Examples can be anything that affects quality, cost, customer satisfaction, market revenues and more. The chapter further describes the principles of the frameworks and how they are used and concepts involved. To yield successful project results, both the project manager and project team have to choose the best framework to suit the requirements of the type of project they are pursuing. The main purpose of the frameworks in a project is to help the project to reach its intended objectives therefore bringing significant benefits including better operational and financial

management, better customer satisfaction, easier communication and knowlegde sharing and improved business possibilities. Though there should be thoughtful goals for the integration of frameworks of reference for project management. The experience of companies shows that integrating common frameworks for project management come as a reaction to deal with specific challenges. Which may entail providing high extent of simultaneous, cross-national, different-sized or competitive developed projects. Therefore project management frameworks and their project lifecycle models have to be associated so that projects become strategic rather than operational business drivers.

CHAPTER: FOUR

RESEARCH DESIGN AND METHODOLOGY

4.1. Introduction

Every research is grounded on major ethical theory around what sets up a significant study. Such researches also look into technique(s) which is(are) reasonably intended for the development of information in a specific research. Keeping in mind the end goal of carrying out any survey or research, it is vital to comprehend what these expectations are. This section of the study presents the philosophical expectations and design strategies supporting the research study. Collective philosophical uncertainties were reexamined and presented; the interpretive paradigm was recognized for the structure of the review. The section also examines the research strategies and the outline of the study which includes data collection and analysis techniques while clarifying the stages required in the study.

A descriptive method in addition to interpretive case study has been used as an research design study and qualitative analysis method which were employed during the carrying out of this study. Discussions and dialogues were conducted in the direction of evaluating the participants and to determine the interviewees' understanding of project management frameworks and success of IT projects. Face-to-face interviews were used to collect data. As a mandate to guarantee the trustworthiness of the study, proper criteria for qualitative research were discussed.

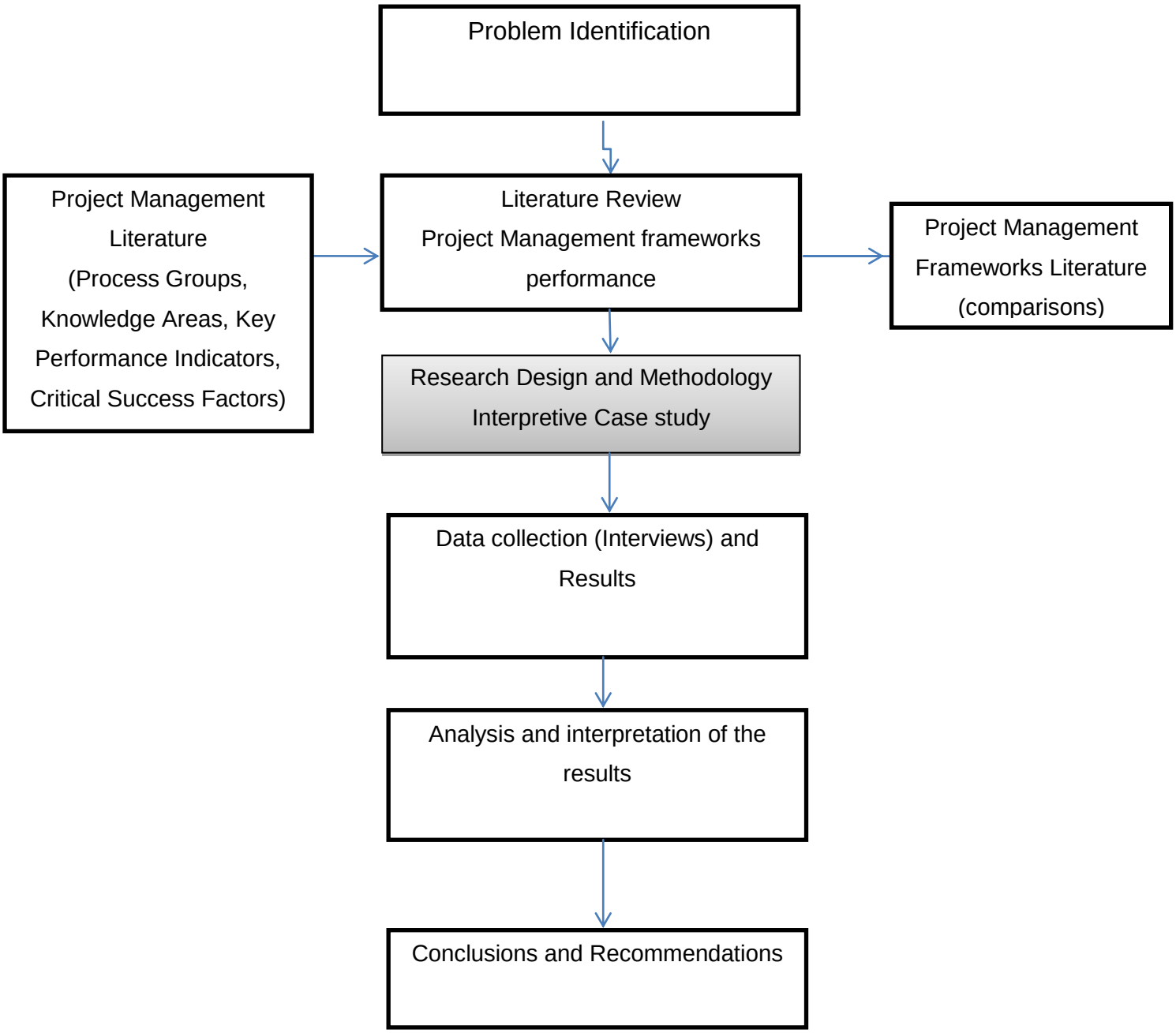

Figure 4.1: Illustration of the processes followed in this study (Chapter 4)

4.2. Research Paradigms

The research process is composed of three noteworthy dimensions: ontology, epistemology and methodology. “Research paradigm is an all-encompassing system of interrelated practice and thinking that define the nature of enquiry along these three dimensions…”. The word paradigm originates from the word paradiegma and it implies design. Thomas *et al.* (2015), described it as a theoretical framework common to a group of researchers which gave an appropriate prototype for investigating difficulties as well as discovering resolutions (Gray & Malins, 2016). As described by Hussain *et al.* (2013), a paradigm is:

“an integrated cluster of substantive concepts, variables and problems attached with corresponding methodological approaches and tools.”

As indicated by this researcher the term paradigm means an exploration culture with a game plan of feelings, qualities and assumptions that a gathering of analysts have in like a way as to the typical being and lead of research. Consequently the term paradigm recommends an illustration, configuration and outline or course of action of exact and academic reflections, qualities and longings (Olsen *et al.*, 1992).

Ontological and epistemological perspectives include anything that is typically meant in place of an individual's viewpoint that ensures significant impact on what is comprehended to be as closest to reality. The two conceivable viewpoints are objectivistic and constructivist. These two particular strategies for seeing the world have consequences in most insightful extents, however none of these viewpoints is taken to be more noteworthy or higher than the other.

They may both be material for a few commitments and lacking or unnecessarily difficult for different commitments (Becker & Niehaves, 2007). Additionally, relying upon the conditions an individual may change the researcher's view. For instance, this study concentrates on making the utilization of nuts and bolts from both perspectives and compares them to each other.

According to Hussein (2015), research paradigms examine ideal models and naturally copy our convictions around the realm we survive in and basic to survive in. Grounded on this conviction, Bryant and Jary (2014) differentiate amongst; (1) positivist; (2) post-positivist and post-modernist probe; (3) combining post-modernism and post-structuralism contained in critical theory. Critical theory holds a supplementary value-based and subjectivist epistemology, somewhere the researcher and the explored question are foreseen to remain intelligently connected through the estimations of agent unavoidably inducing the research. The main goal of positivist and post-positivist question is clarification, forecast and mechanism in contrast with evaluation and emanicipation of the basic hypothesis (Willmott, 1997).

Gephart (1999) categorized research criteria into three hypothetically unique groupings, namely: positivism, interpretivism and critical post-modernism. This trio-overlap alignment is said to be ideal for this study in light of the fact that psychological and sociological theories employed as a portion of the field can be clarified in detail. These groupings are shown in Table 4.1 below taken from Goede (2014).

Table 4.1: *Research Paradigms (Goede, 2014)*

	Paradigms		
	Positivism	**Interpretivism**	**Critical Social Theory**
Research Practice (Methods)	Questionnaires Hypothesis Statistical Analysis	Case Studies Ethnography Narratives	Action Research
Research Methodology	Empirical Methods	Hermeneutics	Intervention Construction Deconstruction Emancipation
Philosophy of Research	Predictive understanding of phenomena	Grounded theory	Social critique, restrictive

In addition, the above theoretical criterions are the general paradigms in comtemporary social, organizational and management research. The primary attributes of the above points of view that incorporate the perspective, the way of learning taken after and the distinctive denoted by which information is made and measured inside every paradigm or perspective are conversed underneath. Nevertheless there is no understanding with respect to whether these research ideal models are basically clashing then again whether they can be fathomed as contributing an alternate part in a comparable review (Goede, 2014).

4.2.1. Positivism

In light of the philosophical thoughts of the French Philosopher Augst Comte, the positivist paradigm is viewed as the investigation of social reality. Comte asserts that the best method for comprehending human conduct is through perception and reason, experience of faculties in light of genuine information, what's more can be picked up by discernment “and examination at the ontological level. Positivists assume that the truth is reasonably given and is quantifiable using properties which are free of the expert and his or her instruments”. In different terms learning is viewed as target and quatifiable. Positivistic scholars embrace logical techniques and systematize the learning era prepared with the assistance of evaluation. This is to heighten accuracy in the portrayal of limitations and the connection between them. Positivism is concerned with revealing reality and displaying it by experimental ways (Henning *et al.*, 2004).

While positivism philosophy mirrors the truth as free of social construction, the positivist position saves that logical information including actualities (Walsham, 1995b). On the off chance that the “research study contains an enduring and perpetual reality, then the analyst can grasp an objectivist perspective, a realist ontology which is a sureness in a target, certifiable and disconnected epistemological position in perspective of a conviction that people's acknowledgments and verbalizations are either substantial or false”, set in stone an assurance in light of a perspective of learning as hard, genuine and possible; they could utilize approach that trusts on reality control and control. Positivism respects manpower lead as unwelcoming, composed and strongminded by outside environment. For the most part the instructive motivation for customary flairs of educating is strengthened by the realists and objectivist perspectives of learning. This is replicated in the instructional procedures in this review since it utilizes instructivist plans alongside constructivist approaches in an adjusting way (Walsham, 1995a).

Hwang (1996) translates positivist intuition and interfaces it with an extensive variety of hypotheses and practices, for example, Comtean-sort positivism which is non-authenticity, behaviorism,empiricism and cognitive science. Despite the fact that positivistic paradigm was supported to impact instructive study for quite a while during the latest half of the twentieth century, its incredibleness was attempted by faultfinders from two unmistakable traditions – interpretive constructionism and fundamental postmodernism. These tests were led because of the nonattendance of subjectivity in translating social reality. Besides, “it was found that objectivity ought to be succeeded by subjectivity amid the time spent on the mandate. Constructionism on the other hand is an essential postmodernism that offer alternative speculative, methodological and sensible approaches to manage the study”, (Gephart, 1999).

Realist point of view speaks to basically the established positivist custom in its unmodified frame. In spite of the fact that an enhanced objectivist viewpoint regarded as post positivism, Phillips (1990) states that the question of the investigation happens on the outbounds and free of the human personality, it can't be respected with whole rightness by the perceptions. As it were thorough, objectivity is around the institutionalisation of the chase for knowledge. This indicates the basic humanist philosophy as said by Cook and Campbell (1979). So the positivist attention on experiment and quantifiable techniques must be succeeded or idealized to some point by a mindfulness in utilizing subjective strategies to collect broarder data separate from naturally considered factors (Gephart, 1999).

4.2.2. Interpretivism

Interpretive analysts assume the realism involves subjective conventions of individuals of the outward globe. Notwithstanding they possibly will embrace an inter-subjective epistemology and the ontological methods of insight that the fact of the matter is socially created. According to Willis (1995), interpretivists are likewise called anti-foundationalists since they consent no exact bearings or particular procedures towards evidence. It has been argued by Walsham (1993), that there are no right or wrong hypotheses in the interpretive custom. Rather they should be intervened rendering to that they are so interesting to the analyst including those that are included in the comparative regions. They attempt to begin their development from the field by a top to bottom investigation of the phenomenon of interest.

It is argued by Gephart (1999), that interpretivists receive information and significance that are demonstrated for understanding, in this manner there is no target learning which is freed of speculation or thinking people. Myers and Liu (2009) have contended that the rule of interpretive specialists is that access to realism if determined or socially manufactured is lone over societal constructions, for instance, language, cognisance and mutual implications. Interpretive paradigm remains strengthened through observation and clarification, along these lines to watch is to accumulate data about occasions although to interprete is to create significance of that data in representating suggestions or through mediating the contest amongst the data and other unique examples (Aikenhead, 1997:217). These challenges towards the comprehension of the occurrences over the allowed individuals' suggestions (Deetz, 1996).

Reeves and Hedberg (2003), communicate that the interpretivist paradigm loads the neccessity to put research in setting. The interpretive paradigm is incorporated with esteeming the natural world from particular experiences of people. They practise the importance against approximation situated techniques, for instance, convention or member observation. These strategies rely on upon an autonomous connection amongst the analyst and topics. Interpretive research does not predefine needy and independent factors but rather underscores on the whole trouble of social acumen constructing as the condition materializes (Kaplan *et al.*, 1994). This expectation that describes the personal motives and implications which appear behind communal activities is known as the interpretive approach.

The centralization of interpretivists is not the advancement of alternative supposition however slightly to survey or evaluate and enhance interpretive assumptions. Three distinct employments of hypothesis in interpretive contextual investigations have been exhibited by Walsham (1995b): "(1) hypothesis directing the plan and accumulation of information; (2) hypothesis

as an iterative procedure of information gathering and investigating; and (3) hypothesis as a result of a contextual investigation. The utilization of hypothesis as an iterative procedure between information gathering and examination" has been connected in this case study.

It has been discovered by Ponterotto (2005) that interpretivism is not a single paradigm but instead a massive gathering of different perfect models. As expressed by Willis *et al.* (2007), the philosophical foundation of interpretive research is hermeneutics and phenomenology. Hermeneutics is a standard division of interpretive rationale with Gadamer and Ricoeur probably being its most important definitely comprehended promoters (Klein & Myers, 1999:67). Hermeneutics can be managed as both a basic hypothesis and a point by point strategy for research (Myers, 2004). As demonstrated by a philosophical procedure to human understanding, the philosophical explanation behind interpretivism is given by hermeneutics. As a system for investigation, it endorses a technique for cognizance, the significance or endeavouring to comprehend prepared data which may be obscure by one means or another.

"*The best key guideline of hermeneutics is that the entire human comprehension is capable by repeating between watching the reliant sentiment parts and the whole that they shape. Current hermeneutics wires matters including the formed substance and additionally everything in the interpretative strategy that grasps verbal and nonverbal procedures for correspondence*"
and furthermore going before qualities that impact correspondence, for instance, assumptions, and pre-understandings (Myers & Klein, 2011:17).
Despite the nature that the study will unfold, it is not generally phenomenological, some of its characteristics are upheld by the phenomonolgy criterions. These principles concentrate on choosing and revealing critical segments of a particular phenomenon as they really might be. Precisely, the examination of phenomena is called phenomenology; that is

the occasions of things or things as they show up we would state or the ways we experience things, thusly the suggestions that things have the extent that we can tell. It is the examination of approaches of perceptions as experienced from the essential individual perspective. In its most plain edge, phenomenology tries to make conditions for the objective research of points usually considered as subjective; care and the substance of mindful understandings, for instance, judgments, acknowledgments and sentiments (Smith, 2008).

A phenomenological study concentrates on characterizing the significance of the existed encounters for various people around a thought or the phenomenon (Creswell, 1998:47). In the human scope, this more often than not changes into gathering profound material and perceptions from research members over inductive subjective research strategies, for example, meetings and perceptions (Lester, 1999). According to Aspers (2004) the main data collection methods within phenomenologies are observation and interviews. Phenomenological methodologies are primarily operational at getting to the cutting edge of the capacities and assessments of people from their own points of view and in this way stimulating basic or regulating suppositions (Lester, 1999).

The research that is being carried out is positioned in the interpretivist paradigm. Characteristics of interpretivism as used in the study are shown in Table 4.2 below and this table was taken from Hay (2011), “categorized into the purpose of the research, the nature of the reality (ontology), nature of knowledge and the relationship between the interviewer and the interviewee into (epistemology) and the methodology used”, (Hay, 2011:167).

Table 4.2: *Characteristics of Interpretivism (Hay, 2011:167)*

Character	**Description**
Determination of Research	Comprehend and take to meaning project manager's perspectives of the use of project management frameworks that could impact the optimal success of IT projects and explore the theories behind PRINCE2.
Ontology	Existence of several realities. "Reality can be investigated, and developed through human cooperation and important activities. Discover how individuals understand their social universes in the common setting by method for every day schedules, discussions and compositions while interfacing with others around them. These compositions could be content and visual pictures. Many social substances exist because of differing human experience, including individuals' learning, perspectives, translations and experience".
Epistemology	"Events are comprehended through the mental procedures of elucidation that is affected by cooperation with social settings. Those dynamic in the research procedure socially build information by encountering the genuine or regular settings. Inquirer and the asked into are interlocked in an intuitive procedure of talking and tuning in, perusing and composing. Mostly personal, collaborative mode of data collection".
Methodology	"Procedures of data gathered by text messages, interviews, and reflective sessions; Research is an artefact of the ethics of the researcher".

Participation, collaboration and engagement are the key words relating to the methodology (Henning *et al.*, 2004). According to Carr and Kemmis (2003), in the interpretive approach the scientist is the member spectator who takes an interest in the exercises and recognizes the implications of activities as they are verbalized inside nitty gritty social settings.

4.3. Research Methodology

The research strategy is an approach of the overview which moves from the principal desires to research plan, and data gathering (Baskerville & Myers, 2009:647). Regardless of the way that there are distinctive differences in the research modes, the most shared strategy of research methodologies is into subjective and quantitative. At some level, subjective and quantitative demonstrate the qualifications about the method for learning. This are the methods by which an individual measures the world and the unavoidable purpose behind the research. On the other level of talk, this terms demonstrate a look at methodologies meaning the mode in which data is accumulated and separated and the kind of comprehensive announcements and shows resultant from the data. In the consistent sciences, quantitative research methods were at initially settled to study regular phenomena.

While then again subjective or qualitative research techniques in the sociologies were set up to allow specialists to study social and social phenomena. Together the qualitative and quantitative research studies are directed in instruction. None of these techniques is fundamentally better than the other one. The legitimacy of which requires to be picked by the condition, affirmation and nature of the research study being referred to. Frankly, often one can substitute to the following depending upon the kind of study.

A couple of experts use changed methods and techniques by exploiting the differentiations among quantitative and subjective systems and colaborate these two methodologies for use in an individual research extend reliant on the nature and procedural establishment of the study (Brysman & Burgess, 1999:45).

Subjective research is consistent with life. It tries to concentrate the normal everyday presence of varying social events of people and gatherings in their traditional zone, it is overwhelmingly vital to focus on informational establishments and strategies. According to Lincoln and Denzin (2003):

"qualitative research involves an interpretive, naturalistic approach to its subject matter; it attempts to make sense of or to interpret phenomena in terms of the meaning people bring to them."

Domegan and Fleming (2007) explain that:

"qualitative research aims to explore and to discover issues about the problem on hand, because very little is known about the problem. There is usually uncertainty about dimensions and characteristics of problem. It uses 'soft' data and gets 'rich' data".

Myers and Liu (2009) state that subjective research is proposed to aid authorities grasp people, social and social settings inside where they reside. These kind of concentrate on the most part to document the difficulties and dissimilarities of universes being reviewed to be found and depicted (Philip, 1998).

In subjective research, various information claims methodologies and data collection processes and analysis are used (Creswell, 2003). Subjective information start incorporate insight and part perception or hands on work, social events and overviews, records and messages, and the expert's impressions and responses (Myers & Liu, 2009). Data is resultant from direct perception of practices, from meetings, from composed perspectives or from open archives (Sprinthall *et al.*, 1991). Outlines made out of individuals, scenarios, evaluations, points of view and conditions or blends of these can comparably be literature of information.

A reasonable fundamental complexity among qualitative and quantitative research is the kind of information build-up, investigation and introduction. While quantitative research presents quantifiable results tended to by numerical or exact information, qualitative research presents information as grey portrayal with words and endeavors to acknowledge phenomena in typical settings. This concludes subjective researchers focus on things in their typical settings, trying to comprehend or to disentangle, marvels the extent that the suggestions people pass on to them (Lincoln & Denzin, 2003).

Quantitative research utilizes questionnaire, surveys and investigations to collect data that is assessed and orchestrated in numbers, which enables the data to be portrayed by the exhibition of quantifiable examination (Hittleman & Simon, 1997). Quantitative scientists computes on a case of subjects and depict the relationship among components making utilization of productive bits of information, for example, associations, relative frequencies or complexities between means their emphasis is to a wide degree on the testing of hypothesis.

It is depicted that there exists three fundamental dissimilarities in qualitative and quantitative research, "*seeing a qualification in the middle of interpretation and understanding as the industriousness of the demand, the*

distinct and generic part of the scientist and information uncovered and knowledge fabricated", (Stake, 1995). Additional principle dissimilarity is that subjective research is "*inductive*" and quantitative research is "*inferential*". In subjective research, a recommendation is not required to start investigating. It makes utilization of "*inductive*" information examination to convey a greater conception of the organization of normally detailed impressions and to clarify the interrelating matters and contributions of scientist and interviewee (Guba & Lincoln, 1994:163). It lets for a procedure to change as opposed to having a total technique during the start of the survey as it is risky if not testing to consider the repercussion of participants due to the contrasted points of view and possibility structures of the analyst and members and their impact on the clarification of fact and the outcome of the review. Regardless of the way that all quantitative research needs a theory before research can start. These are shown in Table 4.3 below captured from Punch (2013).

Table 4.3: *Comparison between quantitative and qualitative approaches (Punch, 2013)*

Orientation	Quantitative	Qualitative
Hypothesis of the realm or world	"A sole realism, i.e., can be measured by an instrument"	"Several realisms"
Research purpose	"Build up connections between measured factors"	"Understanding a social circumstance from participants' points of view"
Research methods and processes	"techniques are recognized prior to beginning study"; "a speculation is expected to start inquire about"; "inferential in nature"	"flexible, changing strategies"; "strategy develops as data are gathered"; "a speculation is not expected to start inquire about"; "inductive in nature"
Researcher's Role	"The analyst is in a perfect world a target onlooker who neither partakes in nor impacts what is being considered".	"The scientist takes an interest and gets to be submerged in the examination/social setting".
Generalisability	"Widespread context-free simplifications"	"Comprehensive context-based simplifications"

4.4. Research Design

Research design can be regarded as the root or comprehensive procedure of an exploration that flings light on how the research is to be facilitated. It displays how the majority of the fundamental portions of the research study, the cases or get-together, actions, solutions or endeavors and others, all contribute in attempting to address the research questions. Research design is regularly looked as a structural layout. The research design can be viewed as realization of technique for thinking in a strategy for the frameworks that streamlines the authenticity of data for a given research issue (Creswell, 2013). Mouton (1996), has described that the research design helps to:

"*plan, structure and execute the research to maximise the validity of the analysis*".

It offers bearings from the first philosophical convictions to research outline and information accumulation. Yin (2013) compliments more that:

"*colloquially a research design is an action plan for getting from here to there, where 'here' may be defined as the initial set of questions to be answered and 'there' is some set of conclusions or answers*" .

4.4.1. The Case study strategy

There are various methods of undertaking research and in this instance a case study was selected. It can either be related to social science or even communally related in clarity of the way that its motivation is to apprehend societies in a communal setting by concluding their activities as a solitary gathering, collection or a solitary occasion being an instance. According to Gillham (2000), a case study is defined as a study to react to correct research questions which search for a scope of differing signs from the case sceneries.

Whereas Yin (2013), defined a case study as an exploratory research that examines an existing occurrence inside its genuine setting, particularly while the restrictions amongst occurrence and setting are not evidently characterized. The case study strategy is specifically gainful in circumstances where relative states of the occasion being considered are not dismissive and where the investigator does not power on the procedures as they uncover. Spencer *et al.* (2003) understand the essential characterizing elements of a contextual investigation "*as being multiplicity of perspectives which are rooted in a specific context".*

In an example, an instance can be the same as a program, occasion or an effort bound scheduled for a certain location. As per MacMillan and Schumacher (2001), a contextual analysis surveys a kept framework or a case after some time in detail, interfacing with a couple wellsprings of information found in the situation. All the combined affirmations are asked to reach and no more perfect reactions to the research questions. Thus the researcher may accomplish a flawless cognizance of why the case occurred as it did and what may get the opportunity to be basic to appear to be more thoroughly in future research. Zhang (2000:57), complements the single contextual investigation's request in the scopes of training and brain research, particularly its capability "*when used to test a specific instructional strategy"*.

Given the interpretive position set up in this exploration and the trademark being of the research questions, the qualitative research method was picked the most sensible approach to connect with in light of the fact that it offers a deliberate way to deal with assemble information, evaluate data and report the results therefore comprehend a specific issue or condition in incredible understanding (Hancock & Algozzine, 2015). All the more particularly, it:

- gives a diversity of participants' viewpoints;
- utilizes interviews as data collection technique; and

- detects impact of frameworks of Project Management within the PRINCE2, SDLC environment and other methodologies.

In dislike, different strategies for research, the contextual investigation does not use specific techniques for data gathering or data analysis (Merriam, 1998). In any case, in the current research, just interviews were utilized as a strategy for gathering of data to bear the cost of a further rich depiction subsequently it permitted the appropriation of qualitative data gathering that gives a comprehensible picture of the unique condition. An interpretive analysis was utilized to break down the qualitative data from the project managers.

Theorists perceive unstructured and top to bottom meetings inside the space of subjective research. Regardless, while unstructured or top to bottom meetings as often as possible join an entire arrangement (Spencer *et al.*, 2003). Their purpose of center can be through addressing and administering methodologies. Merriam (2002), arranges four imperative components of a qualitative research: particularistic, distinct, heuristic and inductive. Particularistic means to one event, process or condition that is the emphasis of a review.

Engaging demonstrates to the rich and wide arrangement of inconspicuous components relating with the phenomena. Each of these two is heuristic since they upgrade comprehension of the phenomena, while inductive implies to the kind of deduction used to control theories or impressions that ascent up out of the information. Qualitative researches don't case to be clear, yet the consideration is on what can be refined from a solitary case (Tellis, 1997). Qualitative analyses have an incentive in upgrading key information in the relevant learning measurements. The central hypothesis of single contextual or qualitative analysis is *“not to prove but to improve”* (Stufflebeam *et al.*, 2000). Actually, this research strive to improve the usage of project

management frameworks in the environments like PRINCE2 and SDLC to yield IT companies the optimal success for their IT projects.

It must be perceived that research procedure and paradigm are self-speaking to anyway they can be set up by specialists to facilitate their research. Thusly, it must be seen that subjective research remains not a substitute for the interpretivist hypothetical position grasped in this review. Subjective research may conceivably be interpretive, restrictive upon the key philosophical longings of the analyst. Subjective research can be positivist, interpretive or basic. It trails from this that the assurance of a particular subjective research system, for example, a relevant investigation or activity research is free of the primary philosophical situation grasped. Given the interpretive position gotten a handle on in this research and the trademark being of the research address, the researcher expect that the relevant research technique is the most reasonable research strategy for this review in view of its purposes of enthusiasm for enlightening in detail the particular assurances and worries of individuals in an honest to goodness condition which would have been lost in quantitative or exploratory techniques. The case study plan is basically all around composed to conditions wherever it is amazingly trying to separate an event's variables as of its particular situation (Yin, 2013).

4.5. Participants

The main subjects in this study are project managers, one who is from IT department with a financial background, second one from an independent industry and the third one from the independent private project. The researcher followed the purposeful sampling which occurs while selecting a sample from which the most can be learned (Suri, 2011:63). This sort of sampling is a non-random method of sampling where the researcher chooses information-rich cases for study in depth (Patton, 2005). It is said to be the most well-known sampling technique in qualitative research in awesome

arrangement around matters of focal significance to the reason for the research. Patton (2005), clarifies the benefit of purposeful sampling as,

"any common patterns that emerge from great variation are of particular interest and value in capturing the core experience and central, shared dimensions of a setting or phenomenon."

4.6. Data Sources

The process of methodically collecting data that signifies the opinion and experience of its participants or other stakeholders is called evaluation. The essential information sources in this review were the Project Manager from the financial background, the Project Manager from an independent industry and the Project Manager from independent private project. The main data collection techniques used in this research study were the literature review and interviews that were transcribed and recorded.

4.6.1. Interviews

Interviews are techniques for collecting data over verbal pursuit utilizing an arrangement of principal questions that are preplanned. According to King and Horrocks (2010), interviews could be exceptionally innovative because the assessor can embrace correct matters of apprehension that might prompt to focused and valuable proposals. The chief favorable circumstances of interview technique for data assortment are (Shneiderman & Plaisant, 2005) that:

- uninterrupted interaction with the participants regularly prompts towards detailed, constructive suggestions;
- they remain great at acquiring definite data;

- couple of partakers are expected to accumulate opulent and definite data.

"*Interviews can be unstructured, structured and semi-structured with individuals or may be focus group interviews depending on the need and design*".

- Unstructured Interviews

The unstructured or shapeless kind of conversations lets the assessor to position more or less yes/no questions and the candidate to transfer his or her own sentiment with flexibility. This needs the assessor as well as the candidate to remain at comfort since it resemble a discourse or conceiving on the subject that is prearranged. The method for the conversation is concluded by together the candidate and assessor yet not programmed. According to Preece *et al.* (2002), it becomes challenging to standardize the conversation through various candidates meanwhile individual interview goes up against its own particular organization.

In any case it is probably going to yield rich information, information and contemplations in a way discourses a clarifying way that the level of addressing can be expansive to suit the condition and that the assessor can test the candidate more truly on right matters as they rise anyway it can be outstandingly dull and hazardous to break down the information.

- Structured Interviews

In structured or arranged interviews, the assessor uses an arrangement of prearranged questions which are brief and evidently worded as a rule, those questions are closed and along these lines require detailed answers as an arrangement of decisions recited out or offered on hardcopy. This sort of

cross-examining is anything but difficult to complete and could be effortlessly standardized as similar questions are tested to all candidates. Preece *et al.* (2002), provides an insight that arranged interviews are the best applicable once the objectives of the research are obviously comprehended and correct inquiries can be perceived.

- Semi-structured Interviews

This procedure for interview is a mix of both organized and unstructured meetings and along these lines use both closed and open inquiries. The last item has the upside of both techniques for meeting. To be ordinary with all members, the assessor has a plan of focus inquiries expected control to such a degree, to the point that the comparable zones are encased with each interviewee. As the meeting advances, the candidate is permitted to give more relevant data if he or she does in that capacity (Drever, 1995).

The current research case study followed the semi-structured interview approach to gather data from selected participants.

- Focus group Interviews

Contrasted with the three classifications of interviews discussed above, focus group interview is less organized. It is a result of the battle in conveying arrangement in a gathering, nevertheless opulent data can happen over communication inside the meeting. For instance, fragile matters that might have been unexploited in singular meetings might be found. In a collection, individuals progress and incite thoughts they would not have considered all alone (Preece *et al.*, 2002).

This kind of meeting is coordinated after a game plan of specific meetings to likewise locate the general method for the remarks from various individuals (Shneiderman & Plaisant, 2005). A demonstrative example is drained from the individuals who are questioned by the analyst by testing basic questions and supplementarily controlling the answers from the gathering. Carlock and Maughan (2008:244), embrace the enrollment of a perfect concentration gathering to run from six to twelve subjects.

4.7. Data Collection and Analysis

Interpretive analysts try to originate their facts through straight communication with the occurrence or subject being concentrated on. An important element of data analysis in qualitative case study analysis is the output for significance through direct translation of what is tested without any other person's information and also whatever is practiced and conveyed by the themes. Qualitative data analysis is defined by Golafshani (2003:597) as,

"working with the data, organising them, breaking them into manageable units, coding them, synthesising them, and searching for patterns".

The purpose of examination of qualitative information is to discover designs, ideas, topics and implications. On the off chance of that case review explore, Taylor *et al.* (2003:247), talks the requirement for searching the information patterns which may light or see enter associations in the database. At the same time, the specialist concentrates in all data first then attempts to take it autonomously and patches up it again more articulately. Categorization encourages the scientist to make correlations and differentiations between cases to imitate on positive illustrations troublesome fibers of the information significantly and make well out of them.

The method of information analysis begins with the categorization and matching patterns, basic topics and implications that rise up out of the data. A procedure in some cases alluded to as open coding (Strauss & Corbin, 1990:101), stands normally utilized whereby the investigator classifies and uncertainly designates the hypothetical groupings into which the occurrence distinguished might be gathered. The objective is to deliver eloquent, multi-dimensional groupings which afford of an underlying structure for exploration. These developing groupings are of incomparable extent as qualitative analysts be probably going to utilize inductive investigation.

For a circumstance like this one, the information gathering and examination can in like manner go as one in an iterative path in that the outcomes of the exploration will help lead the resultant accumulation of information. Information accumulation and investigation light or drive each other with the outcome that the examination transforms into a more lifted sum mix of the data. The iterative cycle is reiterated and course diagram and advancement checked and reconsidered as the technique continues.
In this review, the interviews were recorded and translated. The reactions were dissected and classified and deciphered to make inferences.

4.8. Ethical Considerations

In this qualitative study, the researcher had to deeply work together with the participants so as to enter their personal areas of values, flaws, different learning disabilities and the like to collect data. As Silverman (2005) has said, researchers ought to never forget while doing their research, they are truly testing the confined places of their participants. Consistently, this lifts various moral issues that should be tended to in the midst of and subsequent to directing the search. According to Creswell (2003), the investigator ensures a guarantee to have respect for the privileges, necessities, standards and aspirations of the participants. Miles and Huberman (1994) raises limited

differences that researchers must contemplate during dissecting information. This matters alarm the researchers to know about these and diverse issues some time as of late, inside and after the examination had been conducted. Some of this matters involve the following:

- The consent;
- Confidentiality; and
- Voluntary participation.

The scultural affectability is one of the generally unexpected stresses identifying with moral issues. Silverman (2000:821) opposes that the association amongst the analyst and the participant during a meeting ought to be considered similar to the estimations of the investigator and social components. Therefore, appropriate developments ought to be pursued to submit to the stringent ethical methodology keeping in mind the end goal to bolster member's security, secrecy and namelessness.

4.9. Summary

This section has illustrated the research paradigms, research methodologies and design used as a part of the review, including participants, data collection tools and data collection and analysis methods. The research design for this review was a descriptive and interpretive case study that was analyzed using interpretive analysis. Further it also briefly described the several stages involved in the design and development processes of the research in this study. The next chapter introduces the data that has been collected.

CHAPTER: FIVE

DATA COLLECTION AND RESULTS

5.1. Introduction

As the previous chapter has described the type of research followed in the study, the current chapter goes deeper into the collection of data and results drawn from the data. The researcher held a couple of one-to-one interviews which were also transcribed and recorded to gain an understanding of the phenomenon being studied.

In this research an interpretive data analysis was used by the researcher to analyse data. The study is mostly guided by the existing literature and yet the researcher anticipated to learn from the interviews also. Although some difficultties were met while trying to organize the participants due to them not having extra time to contribute to the research but some data was collected at the end. This comparison of frameworks or study is not classified apositivistic as the researcher was not attempting to demonstrate any speculations that may have been said in the beginning of the study. All the questions asked are analyzed using the interpretive methodology.

During data analysis, connections between classifications are shaped and designated as Axial coding (Thomas, 2006). Key words inside answers from the participants are then framed to form these codes and these will inspire more clarity on the fundamental topic being investigated (Thomas, 2006). Interpretative research procedure is to review how members see the world. It is also about the conceivable constructs in respect of insiders' perspective of the theme being probed (Smith *et al.*, 1997).

This chapter analyses the data that was collected during the interviews. Data collected through interviews is said to be qualitative therefore the analysis of this data is through the pattern, coding, tabulating and making decisions.

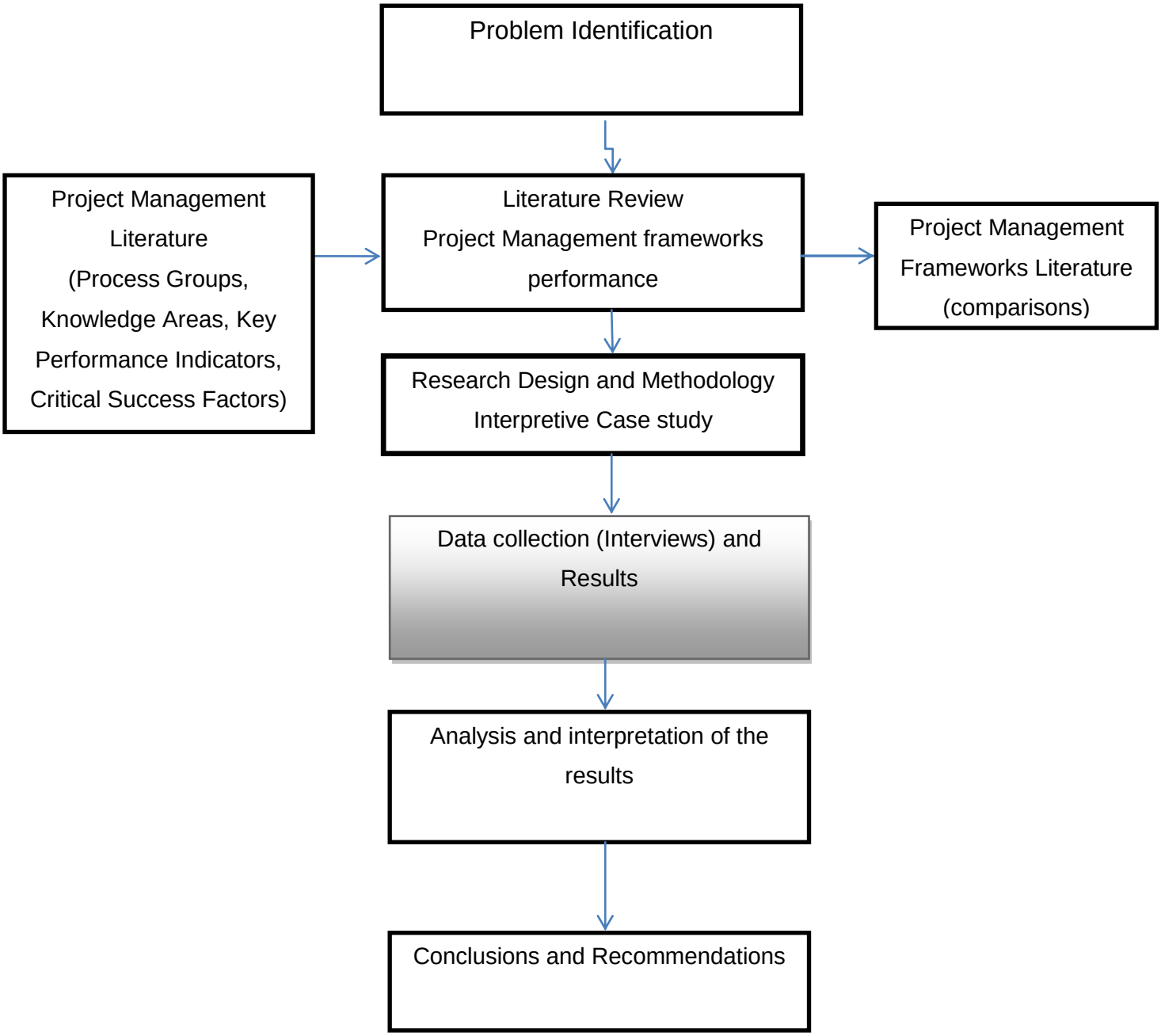

Figure 5.1: Illustration of the processes followed in this study (Chapter 5)

5.2. Source Guide of Questions

The following section provides the source guide of questions. The first four questions are more personal and are asked to gather the personal background information of the project managers being interviewed. These questions therefore provide a base for the interview and were also used as an ice breaker to welcome the participants and to create a comfortable environment for them. This made it easy for the participants to talk freely about their professions and careers experiences.

Table 5.1*: Question Source Guide*

“What in your view are the main challenges facing IT Project Managers? E.g. managing resources, time, quality, budgets, communications, unreasonable clients, lack of empowerment, managing new technologies”.	According to the literature, IT project managers past and present have differed over studies in terms of how they run projects. Project managers today are well-read and can easily adapt to new technologies. It has been stipulated that the experiences of the project managers are different and there are more different challenges to individual projects.
When making decisions how often do you refer to Book of Knowledge?	According to the literature IT project managers have confused PMBOK with PRINCE2 but “PMBOK's quality is in educating the learning base of the project management calling while PRINCE2's is in setting out a standard way to deal with running a project”.
“What in your experience are the most important skills that a Project Manager needs to deliver IT projects successfully?”	The literature has shown that project managers need to possess certain skills to run projects and yield positive results or end producs

What project management methodology does your company follow or use? E.g. Agile, PRINCE2, Scrum, Six Sigma and why do you choose that methodology?	Different organizations use different project management methodologies but the mostly used methodology is the PRINCE2 with its principles and strategies and this is according to the literature.
“According to your understanding, what is the difference between project management framework and project management methodology?”	Some people seem to be using the terms project management methodology and project management framework interchangeably whereas other people say methodology is the umbrella way of running projects and framework as the component or concept of the methodology.
What is your level of experience with project management frameworks? E.g. triple constraint/ the iron triangle, V2P, The square root.	It is said in the literature that the experience in PMF also contributes to the success of the project manager. If the project manager is using the framework he/she knows, it definitely expected of them to produce good results.
Under your current methodology, which frameworks do you use or seem to yield your company optimal success in IT projects?	According to the literature some project managers prefer to use the entire methodology as a framework like in the current case where the participant showed that they use PRINCE2 as a framework when carrying out IT projects.

Please provide examples of IT projects you carry out in your organization.	The literature shows there are certain frameworks that can be used for some IT projects while on the other hand some organizations do not mind using one framework for all the projects. This allows them to correct themselves where they went wrong.
Under what circumstances do you see the frameworks effective in the above mentioned projects?	The literature shows that some frameworks are effective with other projects while others “can be tailored to suit the requirements of the projects”.
For you to consider a framework successful what KPI’s do you depict?	As the literature has shown a framework has to have KPI’s that help the project managers to run their projects successfully.
Which projects in IT must use the Project management framework and how often do you use/apply the framework?	As shown in the literature some projects can be carried out without following any specific framework. It could be a combination of steps or techniques from different frameworks and yet the ultimate goal is to reach the maximum project success.
How does the framework help in the running of the IT projects?	“In the beginning, the aim of the framework is to assist the project manager and his/her team to pursue projects step by step and following the protocol of the framework”.

Of all the frameworks you are aware of, which one do you suggest your company adopts to ensure the maximum success of IT projects?	More frameworks have been used but some of them have not been successful enough for organizations to stick with them. Those that have been successfu are still continuing or even being enhanced to ensure maximum success.
Please elaborate on what can be done to your current framework for success.	Different project managers may see an opportunity to advance or enhance their current frameworks in place. According to other managers this could even lead their projects to the most admirable successes or results.
Does the size of the project affect the project management framework being used?	According to literature review, the size of the project should not affect the current project management framework but other managers show that other frameworks were literally designed for small projects.
Please rank the success factors of any framework that yielded your projects a huge success. E.g. user involvement, clear statement requirement, proper planning, clear vision and objective.	At the end of each and every IT project, the project manager should have lessons learnt but most importantly the project itself should have been a success. Project key success factors are the ones to assist the project manager to measure or make decisions whether the project was successful or not.

5.3. Transcriptions

The following section provides the transcriptions of the questions and responses given by the participants. The transcriptions of the personal questions were done separately because they are part of the analysis but coding was not done on them. The above source questions were successfully coded as shown in Table 5.2 below.

Table 5.2: *Transcriptions*

Code	Theme Question	Participant 1	Participant 2	Participant 3
"Project challenges"	"What in your view are the main challenges facing the IT Project Manager? E.g. managing resources, time, quality, budgets, communications, unreasonable clients, lack of empowerment, managing new technologies".	In public service challenges are the budget constraints.	Lack of knowledge for team members (capability and competence of people).	Lack of understanding for the project manager on the level of business and IT concepts.
"Decision making"	When making decisions how often do you refer to any Body of	Not often as the principles of the framework are almost the	More often as we need to get our people	Most of the time so we can integrate some of the

	Knowledge?	samePRINCE2 has covered most of what other disciplines from the BOK."	trained and maybe enhance our current framework.	principles.
"project manager skills"	"What in your experience are the most important skills that a Project Manager needs to deliver project success?"	Highly organized, have expert power in that whenever you make decisions your team don't doubt (confidence in a team) any decision.	A combination of skills like people skills, technical skills to influence people.	In IT perspective, it must be someone who has knowledge of IT and Business.
"Tried and tested framework"	What project management methodology does your company follow or use? E.g Agile, PRINCE2, Scrum, Six Sigma and why do you choose that methodology?	"As we researched we found out that PRINCE2 was tried and tested framework and a methodology and it has been used for some time and it has been revised and improved. I also found out that its support base is wide.	Systems Development Lifecycle is our current framework.	We are using PRINCE2 as it has given us best results in almost every project we carried out.

“difference between framework and methodology”	According to your understanding, what is the difference between project management framework and project management methodology?	A methodology is a method of doing things, it is how you are going to carry out a certain job. A framework is a plan, is a map. To give you an example if you want to travel from point A to B, you first take out a map and find out the distance you are going to cover, the road itself. Methodology is how you are going to depart from point A to B.”	A framework is a high level guideline and a methodology gives the lower level of detail.	A framework is embedded within a methodology.
“real hands on experience”	What is your level of experience with project management frameworks? E.g triple constraint/ the iron triangle,	My experience is only with PRINCE2. I started working with PRINCE2 from 2008. Almost 20	I have only used SDLC for over 30 years.	I have been using PRINCE2 for almost 10 years now.

	V2P, The square root.	years.		
“successful project results”	Under your current methodology, which frameworks do you use or seem to yield your company optimal success in IT projects?	We use the guidelines under PRINCE2 and if you don’t follow those guidelines then the project is bound to fail. If you follow the guidelines correctly you are most likely to yield successful results at the end of the project.	SDLC principles with additional principles from our tailor made framework.	PRINCE2 principles only when they are followed correctly.
“IT projects”	Please provide me with examples of IT projects you carry out in your organization.	Implementing the Old Pensioner Payroll System, National Manpower Development Secretariat (SSMAS).”	No IT as such but currently building a plant/pipeline in Mozambique (Engineering project).	Integrated Financial Information Management Systems (COMPANY C) upgrade.

“following guidelines”	Under what circumstances do you see the frameworks effective in the above mentioned projects?	“I have not used other frameworks but according to my experience with PRINCE2, we follow similar guidelines and on all these projects we found that if we followed the guidelines we are bound to yield positive results.”	Always follow the principles and like add those from tailor made framework otherwise we will hit walls.	Always follow the guidelines even though somehow we will have to compromise.
“underlying success indicators”	For you to consider a framework successful what KPI’s do you depict?	“Hmm in no particular order but the most important thing is the return on investment. If you have invested in a project you are expected to yield positive results. The other indicator we focus on is meeting user	Meeting user requirements, finishing at the estimated time and costs.	Meeting requirements and getting the best outcome.

		requirements. Meaning they are all features that were tabulated in System Requirements Specifications (SRS), are they all attended to in the front end of the system? There are a few but those seem to be the underlying indictors. I have mentioned before cost of quality.”		
“Framework for which projects”	Which projects in IT must use the Project management framework and how often do you use/apply the framework?	“Of course if you get used to PRINCE2 principles, it gets easy to use in all of our IT projects. We do not have particular projects where we decide not to	All projects although some might not be going through all the phases.	All projects

		use the framework; we could even add more things to do on the framework itself.		
“steps through the map”	How does the framework help in the running of the IT projects?	It enables us to be able to take steps through the project and ensure maximum success in all IT projects that we carry out.	As a map, we go through every stage, therefore not missing any details of what is expected.	It allows us to go through all the necessary step stated to accomplish the expected and results.
“framework for best results”	Of all the frameworks you are aware of, which one do you suggest your company adopts to ensure the maximum success of IT projects?	Like I said, I don’t have experience with other frameworks so I can’t say much about other frameworks. Although I would still stick to PRINCE2 as it has given us the best results ever since we adopted it.	SDLC has yielded the best results so I will highly recommend it as we are benchmarkin g here and there.	PRINCE2 has never let us down in all the projects so I would suggest it especially for controlled environments.
“room for	Please elaborate	In the seven	We simply	We try to

improvement”	on what can be done to your current framework for success.	years that we have adopted PRINCE2 and used it, I haven’t come across anything that I would point out as something that can have room for improvement. Perhaps that’s because we don’t implement IT projects as frequent as other organizations like the private sector. But I believe as times goes and we are involved in projects to come we will then see what we can do to improve our current framework.	play around with the stages to suit the requirements of the project and gather some principles from other frameworks.	integrate some principles from other frameworks for better results and involve the team members from the beginning of the project.
“scope of	Does the size of the project affect	Not really no!!! It depends on the	Not really but in some	Size doesn’t matter as long

project”	the project management framework being used?	scope of the project. You can implement a project using PRINCE2 in its entirety project being small or big but you still follow the guidelines of the framework.	projects some stages are not necessary.	you follow the guidelines of the framework.
“success factors”	Please rank the success factors of any framework that yielded your projects a huge success. E.g. user involvement, clear statement requirement, proper planning, clear vision and objective.	I think you have summed it. Success factors, of course in every IT project implementation, the success lies in engaging users, having a clear statement of what is expected from the project, as a project manager proper planning is crucial.	We produce reports to check individual performance atfer issuing the business case.	Stakeholder involvement and user involvement are important to ensure success of the project.

Table 5.3: *Personal Question Source Guide*

Before we start with the session, I would like to record your gender and also please tell me which year did you become a certified project manager? How old were you?	For demographic purposes the researcher had to capture the personal details of the participant. This was to assist in the case study methodology.
Please tell me your specialty area of Project management if you don't mind.	This was to determine whether the participant was the right candidate to use to gather information in regards to project management frameworks.
What is the principal industry of your organization? E.g. Advertising, finance, education, insurance, telecommunications.	This was to determine if the participant have experience in running the IT projects in their current organization.
According to Organizational Project Management Maturity Model (OPM3), how would you rate the maturity of your organization? E.g. continuously improve, control, measure, standardise.	This was to determine if the organization use OPM3 and to understand how the project manager would rate his organization.

5.4. Summary

The above tables have provided the results of the study. Although the researcher has been restricted due to unavailability of enough participants and by the fact that the data gathered hereof was from three participants, but was still able to pursue the study and got some results. With the interpretive analysis, data is analysed through the pattern matching or coding. In the current study coding was done and pattern matching assisted more in the next chapter. The main idea behind interpretive research used here was to understand the phenomenon under review therefore the researcher has learned how project management frameworks differ and which ones the participants suggested to be the best framework that will yield success in IT projects. The outcomes of this research study are given in the next chapter.

CHAPTER: SIX

DATA ANALYSIS AND INTERPRETATION OF RESULTS

6.1. Introduction

The following part provides the analysis and interpretation of the results of the current study. The researcher is also providing her inside and understanding of the results as tabled herein. In this chapter the results are going to be compared to the literature that is looking at the similarities and differences of the research work conducted.

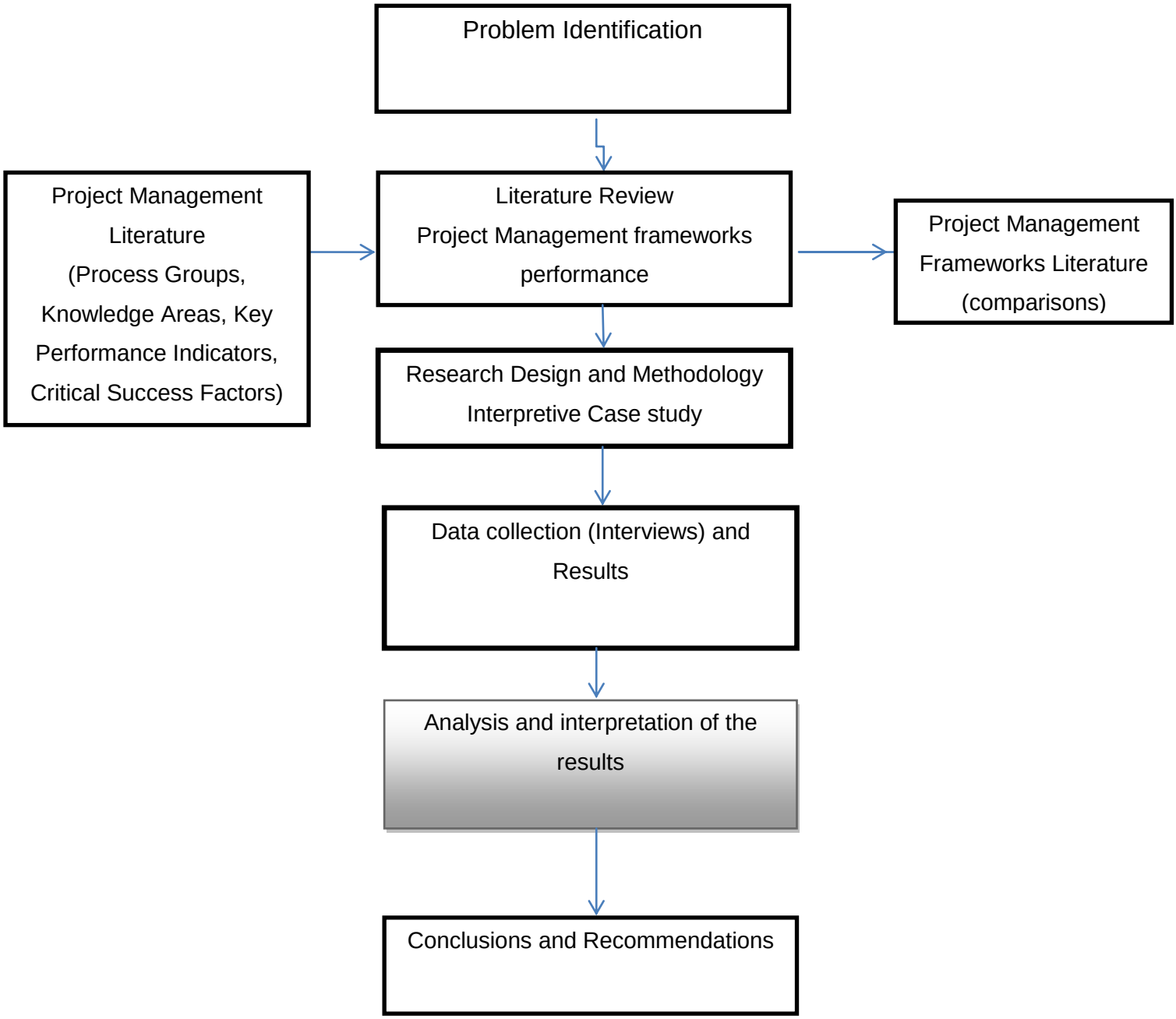

Figure 6.1: Illustration of the processes followed in this study (Chapter 6)

6.2. Data analysis and interpretation

From the visited literature it has been shown that there are different project management frameworks under different project management methodologies. Also from the interview, the participants showed different use of project management frameworks. In this current single case study, it is clear that the first participant employs PRINCE2 as both a methodology and a framework. The second participant employs System Development Lifecycle (SDLC). The third participant also employs PRINCE2. PRINCE2 and SDLC like any other framework provides guidelines that assist the project manager and their team to ensure that the project runs smoothly and produces the expected positive results.

From the data in the previous chapter, participant 1 showed his trust in PRINCE2 because he has had so much experience with the framework unlike other frameworks. According to him the best practice for the project manager to yield sucessful results from a project is to follow the stipulated stages or phases or guidelines for their current project management framework.

Participant 2 showed that SDLC has always worked well for his projects and he can recommend this framework for other organizations. According to him, for project managers to get successful outcomes from their projects, is important to follow the phases and guidelines of their given frameworks.

Participant 3 also agrees mostly with participant 1 as they share the most guidelines in PRINCE2. These could be because these two participants are working in very controlled environments, namely, government departments.

The in this study participants agree with the consulted literature that challenges which most organizations face with IT projects are budget constraints, increasing scope, time delays, absence of correspondence

between the project supervisor and the team and stakeholders, unreasonable clients, difficulty in adapting to new technologies and ill-disciplined project managers.

It is correspondingly significant to know that in project management not only referring to Body of Knowledge (BoK) will support the project overseer but also that the project overseer has to refer back to the guidelines of the framework to weigh whether they are taking correct steps in the project. The project manager has to possess certain skills to ensure the delivery of successful IT projects. Like the other participant said the project manager has to be highly organized. Not only does the project manager have to have confidence in the team but also the team must have confidence in him or her. In all the projects, communication is the best weapon concerning the project chief and all individuals required with the project.

According to the consulted literature most organizations are moving to PRINCE2 and, as participant 1 has mentioned, that his organization has also adopted PRINCE2. In the participants' answers, it has been found that PRINCE2 has got a very wide support base hence they decided to adopt it. According to the consulted literature PRINCE2's quality is outlining of a standard way to deal with running projects. The whole idea that the project manager has to strive for is making sure that he or she gets the maximum success in the projects he is carrying out. It has also been found that from both the literature and the participants, that there is a thin line between methodology and a framework. Some sources say that a methodology is about how to carry out certain activities while a framework is a general plan or a map. Other sources conclude that it is the exact opposite.

As one of the participants in this study mentioned, in his organization they make use of PRINCE2 as a framework.

Participant 2 has also shown the positives of the SDLC and how it is used. It has proven that it is the best framework in his organization. Even the literature has revealed that some organizations are actually yielding the best results out of the use of SDLC.

The literature states that the project manager should have certain experience with project management frameworks in order for them to be able to use it. A project manager with a particular framework experience would certainly help in this regard. The two participants have shown their confidence in PRINCE2 as they seem more experienced in it. The ability to adapt to the frameworks as a new or inexperienced manager can also be necessary and useful. Most project managers who are experienced in project management frameworks always get the maximum success with their IT projects. This could also be the results of disciplined project managers who do follow the guidelines or principles of project management frameworks.

An example of IT project where the PRINCE2 has been used as a guideline or framework in participant 1's department is the implemention of the old pensioner payroll system. In this current study the participants showed that they could not do any wrong by the framework as the entire system would not have been a success. The literature has proved that whichever framework is applied, either the vision-to-projects or the triple constraints, there are still guidelines to be followed in order to ensure the effectiveness of the project management framework.

An example of projects that participant 2 has used is called SDLC. This was used as a framework at his organization which is in the construction of a plant in Mozambique. More details regarding this framework are further explained in the interview.

The literature outlined the key performance indicators as one of the approaches to gauge the achievement of individual projects. Additionally, the participant has mentioned those factors that they use to measure regardless of whether the project was a win or a disappointment. Among these factors, the return on investment (ROI) seem to be on top of the participant list. This is due to the fact that he believes that when one invests in a project they do so with an expection that such a project will yield positive results. Among the factors which could influence such positive outcomes are: the meeting of user requirements and the assurence of customer satisfaction.

According to the participants in this current study a framework can be used for all IT projects while others, like participant 2, stated that projects can also be used. It is worth nothing that the size of a project does not matter in this regard. He specified that because a framework is a guideline, all what project managers have to do is follow the protocol looking at the objectives of individual projects. The literature has shown that should the project manager pursue a project without the principles such a project is bound to fail. Even the participants in the current study added that following the principles of their frameworks assisted them a great deal in ensuring that they run their IT projects successfully. The literature has depicted variables that are thought to be the critical success factors. The examples in this regards are: understanding the normal incentivized offer of the project and the driving up of the project endeavours aimed at guaranteeing success that it is accomplished, transparent workflows and others. Whereas the participant also includes the user involvement, proper planning and clear vision and objective.

The following questions have been analysed in the tables to provide a clear indication of what the participants have said during the data collection.

Under what circumstances do you see the frameworks effective in the IT projects?

On this question, two participants out of three said when training of the framework is it becomes easier for them to work effectively. One participant indicated that it all depends on the capacity of the project chief to communicate properly with their project teams.

Table 6.1: *Coding for question 13*

Code	occurrence
Training provided	2
Ability to communicate	1

For you to consider a framework successful what KPI's do you depict?

On this question, one participant mentioned that they always ensure that there is return on investments (ROI) as their framework is more controlled and therefore conserve costs. The other two participants mentioned that their focus is meeting the user requirements and ensuring clients satisfaction.

Table 6.2: *Coding for question 14*

Code	occurrence
Return on investments	1
Meeting user requirements (Clients' satisfaction)	2

Which projects in IT must use the project management framework and how often do you use the framework?

On this question, two participants showed that the framework is important for all the IT projects as it works as a guiding tool for the team to achieve their

goals. One participant mentioned that although all projects need a framework to manage resources, some projects especially the small projects only need certain phases or stages of the framework.

Table 6.3: *Coding for question 15*

Code	occurrence
All projects	2
All projects depending on size	1

How does the framework help in the running of the IT projects?

On this question, one participant mentioned that their current framework works very well and up to thus far they have not seen a gap that they could try to fill. The other two participants have shown that their frameworks work very well although they still believe that they could do better if they could add on their own principles or guidelines.

Table 6.4: *Coding for question 16*

Code	occurrence
Framework is very successful	1
Framework works well with additional guidelines	2

Of all the frameworks you are aware of, which one do you suggest your company adopts to ensure the maximum success of IT projects?

On this question, two participants have shown that they are using the same framework which is PRINCE2, and they suggest it for very controlled environments like government. One participant also mentioned that their framework has produced very successful results and that it enables them to save on resources as not all projects have to go through all the phases of the

framework. This participant went on to suggest Systems Development Lifecycle as he has seen its results.

Table 6.5: *Coding for question 17*

Code	occurrence
PRINCE2	2
Systems Development Lifecycle	1

Please elaborate on what can be done to your current framework for success?

On this question, one participant showed that if there could be a possibility to add their own defined guidelines or principles from lessons learned. And the other two participant have shown that they would need more training for their project teams. They further stated that knowledge in this regard should be disseminated and transferred to those who need it.

Table 6.6: *Coding for question 18*

Code	occurrence
Add defined principles from lessons learned	1
More trainings and information dissemination	2

6.3. Summary

The current study comprised of comparison of the past and present project management frameworks. It has been found that two companies out of three have adopted PRINCE2 as the best framework to employ especially for very controlled environments. Other frameworks from other methodologies like the SDLC seem to be suitable for certain projects. For example, the triple constraints can be used in all the projects. But there are more components needed to it to measure if the project has been a success. According to the other participants PRINCE2 is a successful framework that has come across some obstacles that include budgetary constraints, time and scope creep. Notably, a certain standard needs to be upheld to ensure the success of the employment of the framework.

CHAPTER: SEVEN

CONCLUSIONS AND RECOMMENDATIONS

7.1. Introduction

Primary objective of this current study was to compare the existing project management frameworks that can be used to effectively measure the success of IT projects in organizations. Keeping in mind the end goal to achieve this, the study formulated a methodology called interpretative case study which was discussed in Chapter 3. This chapter presents the last phase of the current study which is the conclusions.

This chapter is separated into the following accompanying areas: summary of research discoveries of the study (Section 7.2); suggestions for future research (Section 7.3); and finally, the conclusion (Section 7.4).

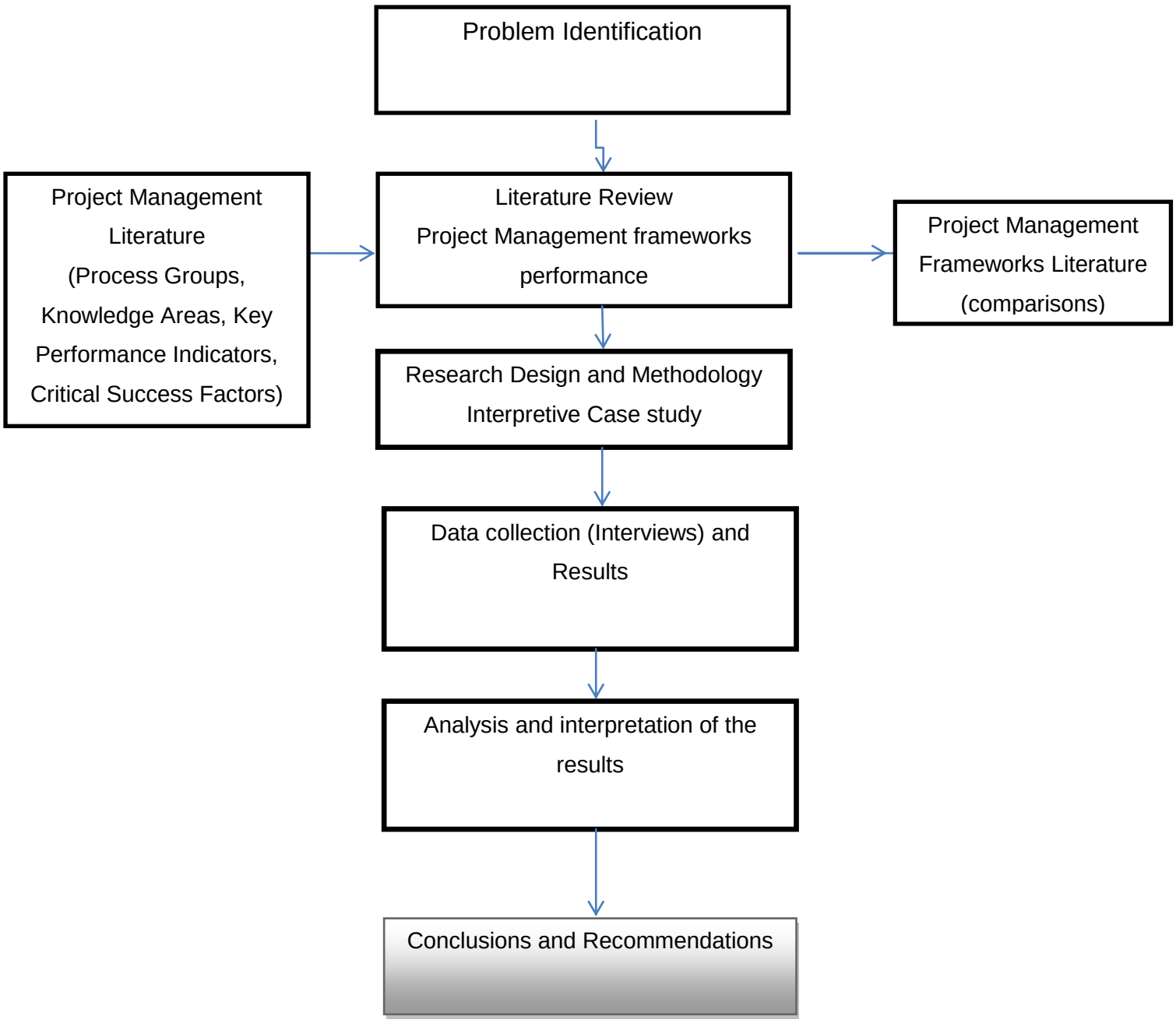

Figure 7.1: Illustration of the processes followed in this study (Chapter 7)

7.2. Summary of the research findings

This segment returns to the research questions, the primary objective and the hypothetical goals by giving information on how these were tended to in this interpretive research study.

The research questions for this study are:

To what extent are the project management frameworks different?
What are the significant factors in the project management frameworks that contribute to an IT project success?
Which framework can be used to optimally measure the success of the IT projects in organizations?

These research questions are supported by the following primary objectives:

To compare existing project management frameworks that can be utilised to effectively measure the success of IT projects in organizations.

The primary objectives are supported by these theoretical objectives:

1. *To gain understanding of Interpretive research paradigm.*
2. *To gain understanding of IT projects and Project management.*
3. *To understand the knowledge area of Project management.*
4. *Tho gain understanding of Project management frameworks and methodologies.*

7.2.1. Theoretical objectives

The following segments present the key discoveries in view of the literature amid interpretive research study.

7.2.1.1. Interpretive research

The correlation of project management frameworks is an essential prerequisite of the essential target and hypothetical goals. Interpretive research system was clarified through a survey of the current writing in Chapter 4 – tending to the primary hypothetical target.

The review found that interpretive research is a research paradigm which can help information systems (IS) specialists to comprehend human thought and activity in social and hierarchical settings; it can possibly deliver profound discernments into information systems phenomena including the management of IS and IS advancement. The management and comprehension of contrasted frameworks is essential with the pursuer in regards to this review.

Interpretive research study speaks to the comprehension of an underlying phenomena and problem domain where the comparison of these frameworks give an answer. Different interpretive approaches are accessible for an interpretive research extend and sometimes these strategies can be consolidated to show a superior research technique. An outline was produced to control the research process and was given at the beginning of every chapter.

7.2.1.2. IT projects and project management

An understanding was gained of IT projects and project management through an examination of existing writing in Chapter 2 – tending to the second hypothetical destinations.

IT project management is the way toward arranging, sorting out and laying out duty regarding the fulfillment of an associations' point by point data innovation (Information Technology) objectives. In this case examples of IT projects can

be software development or hardware maintenance. The study found that project management actually refers to ensuring management, control and determination of a project. It is crucial to recognize that all projects require some level of project management. The bigger and more intricate the project, the more there is a requirement for a formal, standard and organized process. This is the place where the project management frameworks assume a critical part.

7.2.1.3. Knowledge areas of project management

According to the literature review, there are nine knowledge areas: integration, scope, time, cost, quality, human resources, communication, risk and procurement. The study established that on top of the nine knowledge areas there is a tenth one that most project managers overlook and it is called stakeholder management. It has been shown in the study that each knowledge area range is comprised of an arrangement of procedures, each with sources of info, devices and systems, and yields. These procedures together achieve demonstrated project management capacities and drive extend achievement. These knowledge areas likewise expect particular abilities and involvement with a specific end goal to finish project objectives.

7.2.1.4. Project management methodologies and frameworks

The study has enabled the researcher to understand the difference between the methodology and framework. Methodology is how to carry out the project processes and framework is the map or a guideline that enables the project manager to pursue the methodology. Examples of the methodologies include Agile, PRINCE2, Six Sigma while examples of frameworks are the triple constraints, vision-to-projects, SDLC and also PRINCE2 according to the study. The study shows that the above aspects are crucial when carrying out projects.

7.2.1.5. Primary objective: Comparison of project management frameworks

This section discusses key findings concerning the comparison of the project management frameworks in this interpretive research study which addresses the primary objective.

The study was carried out because the researcher had identified a problem of IT projects failing at the high rate. The theoretical issue area gave the accompanying issue articulation through the survey of the literature:

> *IT projects hardly fail for only technical reasons but also repeatedly fail due to absence of understanding of customer needs and poor leadership at both the project and executive levels.*

The participant problem domain provided the following problem statement through an interview:

> *IT projects in our department fail because project leaders do not follow the guidelines as per the framework and most of the time budget restrictions and growing project scope lead us to unsuccessful projects.*

The conceptual problem domain statement provided the principal motivation for the comparison of project management frameworks while the participant problem domain statement demostrated the value of project management frameworks.

7.3. Conclusions on findings

On self-reflection the study has presented some important resolutions; as a project manager or leader, the most important factor to consider when pursuing an IT project is discipline and knowing the roles. This will enable the leader to adapt to the framework as it provides guidelines in the development of the project. A project manager has to go for training to gather specific skills that are needed to manage a project. The problem statement has shown that IT projects are still failing and this can be corrected by carefully employing proper project processes and framework guidelines that will yield better results.

The main idea of this study was to compare project management frameworks that could aid in measuring the success of IT projects and then make suggestions on frameworks that have been tried and tested and have provided successful results. The evaluation of these frameworks may prompt to new predicted and unanticipated advancement progressions which are past the extent of the underlying review. It is the researcher's obligation to step up with regards to when to finish up the review as far as achieving the destinations.

7.4. Recommendations for future research

The current study only concentrates on the comparison of the project management frameworks that may possibly yield the maximum success of IT projects, ending up with the suggestions of which framework is the best performing and also what can be done to enhance the framework. This has presented a lot of possibilities for the researcher to want to pursue the study further. In the future the related research could be to develop and test a new framework that is merely customized to suit the requirements of the IT

projects. Due to the scope of the study, the researcher was not able to go further to the development of a new framework.

Since the study has reflected that PRINCE2 is the best current framework due to its natural characteristics, the researcher could also suggest and implement components to the framework that seem to be missing. In future, related research could also be carried out in more than one company as these focus on different IT projects. This will ease the comparison of the frameworks.

7.5. Closure of the study

The aim of the study was to compare the existing project management frameworks that can measure the success of IT projects in order to yield the best results. This was carried out using available literature on the subject. The consulted literature as well as the collected data were analysed to articulate problem areas. The actual comparisons were done and the results from the participants were archived to contribute towards the learning base.

The current study found that, in view of the outcomes exhibited in Chapter 5, PRINCE2 is the most utilized project management framework for IT projects and for controlled environments.

Bibliography

Aikenhead, G.S. 1997. Toward a First Nations cross-cultural science and technology curriculum. *Science Education*, 81(2):217-238.

Aladwani, A.M. 2001. Change management strategies for successful ERP implementation. *Business Process management journal*, 7(3):266-275.

Aspers, P. 2004. Empirical phenomenology: An approach for qualitative research. *London School of Economics and Political science (Ed.), Social research methods. Qualitative series*(9).

Atkinson, R.W. 1997. Effective Organisations, Re-framing the Thinking for Information Systems Projects Success. *Cassell, London*:13-16.

Baskerville, R.L. & Myers, M.D. 2009. Fashion waves in information systems research and practice. *MIS quarterly*:647-662.

Becker, J. & Niehaves, B. 2007. Epistemological perspectives on IS research: a framework for analysing and systematizing epistemological assumptions. *Information Systems Journal*, 17(2):197-214.

Belassi, W. & Tukel, O.I. 1996. A new framework for determining critical success/failure factors in projects. *International journal of project management*, 14(3):141-151.

Bentley, C. 2010. Prince2: a practical handbook: Routledge.

Bourda, F.M. 2013. Effective Stakeholder Management. *TATA Consultancy Services*:5-6.

Bredillet, C.N. 2005. Reconciling uncertainty and responsibility in the management of project. *Project Management Journal*, 36(3):3-4.

Bryant, C. & Jary, D. 2014. Giddens' theory of structuration: A critical appreciation: Routledge.

Brysman, H. & Burgess, R. 1999. Qualitative Research Methodology A review. *London : Routledge*:45.

Bullen, P.B. 2014. Monitring and Evaluation (M & E) Framework Template. *tools4dev*.

Campbell, B.S. 2012. Integration Management Plan.9.1-9.13.

Carlock, D.M. & Maughan, P.A. 2008. Exploring faculty experiences with e-books: A focus group. *Library hi tech*, 26(2):244-254.

Carr, W. & Kemmis, S. 2003. Becoming critical: education knowledge and action research: Routledge.

Chung, E. 2015. An Introduction to PMBOK Guide: Knowledge Areas, Processes and Process Groups. *edward designer*(5th Edition).

CMS. 2008. Selecting a Development Approach.

Cook, T.D. & Campbell, D.T. 1979. Quasi-experimentation: Design and analysis for field settings: Rand McNally.

Cooke-Davies, T. 2002. The “real” success factors on projects. *International journal of project management*, 20(3):185-190.

Crawford, L. 2006. Developing organizational project management capability: theory and practice. *Project Management Journal*, 37(3):74.

Creswell, J. 2003. Research Design: Qualitative, Quantitative and Mixed Methods Approaches. *Sage Publications, London*.

Creswell, J.W. 1998. Five qualitative traditions of inquiry. *Qualitative inquiry and research design*:47-72.

Creswell, J.W. 2013. Qualitative inquiry and research design: Choosing among five approaches: Sage.

Deetz, S. 1996. Describing differences in approaches to organization science:

Rethinking Burrell and Morgan and their legacy. *Organization Science*, 7:191-207.

Domegan, C. & Fleming, D. 2007. Marketing Research in Ireland; Theory and Practice. *Gill & Macmillan : Dublin*, 3rd Ed.

Drever, E. 1995. Using Semi-Structured Interviews in Small-Scale Research. A Teacher's Guide: ERIC.

Drucker, P. 2011. What is Management? *Definitions, Meaning and Features*.

Evans, J.S., Hudak, A.T., Faux, R. & Smith, A. 2009. Discrete return lidar in natural resources: Recommendations for project planning, data processing, and deliverables. *Remote Sensing*, 1(4):776-794.

FME, T. 2013. *Project Management Process Groups, Project Management Skills* www.free-management-ebooks.com.

Gephart, R. 1999. Paradigms and research methods. (*In*. Research methods forum organised by. p. 11).

Gillham, B. 2000. Case study research methods: Bloomsbury Publishing.

Goede, R. 2014. Information Sytems Research Methodology *From Paradigm To Practice*:1-6.

Golafshani, N. 2003. Understanding reliability and validity in qualitative research. *The qualitative report*, 8(4):597-606.

Gray, C. & Malins, J. 2016. Visualizing research: A guide to the research process in art and design: Routledge.

Guba, E.G. & Lincoln, Y.S. 1994. Competing paradigms in qualitative research. *Handbook of qualitative research*, 2(163-194):105.

Guide, A. 2001. Project Management Body of Knowledge (PMBOK® GUIDE). (*In*. Project Management Institute organised by.

Hancock, D.R. & Algozzine, B. 2015. Doing case study research: A practical guide for beginning researchers: Teachers College Press.

Harej, K. & Horvat, R.V. 2007. Project Management Principles and Virtual Teams for Information Systems Development-Preliminary Proposal. (*In*. Proceedings of the ITI organised by.

Haughey, D. 2013. The Project Management Body of Knowledge (PMBOK). *Project Smart*.

Hay, C. 2011. Interpreting interpretivism interpreting interpretations: The new hermeneutics of public administration. *Public Administration*, 89(1):167-182.

Henning, E., Van Rensburg, W. & Smit, B. 2004. Finding your way in qualitative research: Van Schaik Pretoria.

Hillam, C.E. & Edwards, H.M. 2001. A case study approach to evaluation of information technology/information systems (IT/IS) investment evaluation process within SMEs. *The Electronic Journal of Information Systems Evaluation*, 4 No.2.

Hinde, D. 2012. PRINCE2 study guide: John wiley & sons.

Hislop, D. 2003. Linking human resource management and knowledge management via commitment: A review and research agenda. *Employee relations*, 25(2):182-202.

Hittleman, D.R. & Simon, A.J. 1997. Interpreting educational research: An introduction for consumers of research: ERIC.

Houston, S. 2011. The Project Manager's Guide to Health Information Technology Implementation. *Chicago: HIMSS*:27-39.

Hussain, M.A., Elyas, T. & Nasseef, O.A. 2013. Research paradigms: A slippery slope for fresh researchers. *Life Science Journal*, 10(4):2374-2381.

Hussein, A. 2015. The use of triangulation in social sciences research: Can qualitative and quantitative methods be combined? *Journal of Comparative Social Work*, 4(1).

Hwang, A.-S. 1996. Positivist and constructivist persuasions in instructional development. *Instructional Science*, 24(5):343-356.

Jarocki, T. 2014. One solution for project success: Project and change management in the PMBOK Guide. *Emergence one International, ltd*.

Kaplan, B., Maxwell, J., Anderson, J., Aydin, C. & Jay, S. 1994. Evaluating health care information systems: Methods and applications. *Qualitative Research Methods for Evaluating Computer Information Systems. JG Anderson, CE Ayden and SJ Jay. Thousand Oaks, Sage*.

Kaplan, S.R. & Norton, P.D. 2004a. Strategy maps - converting intangible assets into tangible outcomes. *Boston: Harvard Business School Publishing*.

Kendall, G.I. & Rollins, S.C. 2003. Advanced project portfolio management and the PMO. *Boca Raton, Florida: J. Ross Publishing Inc.*

Kerzner, H.R. 2013. Project management: a systems approach to planning, scheduling, and controlling: John Wiley & Sons.

Khang, D.B. & Moe, T.L. 2008. Success criteria and factors for international development projects: A life-cycle-based framework. *Project Management Journal*, 39(1):72-84.

King, N. & Horrocks, C. 2010. Interviews in qualitative research: Sage.

Klein, H.K. & Myers, D.M. 1999. A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems. *MIS Quarterly, Special Issue on Intensive Research*, 23:1:67-93.

Larson, E.W. & Gray, C.F. 2011. Project management: The managerial process.

Latendresse, P. & Chen, J. 2003. The information age and why IT projects must not fail. *Southwest Decision Sciences Institute Conference*:221-225.

Lester, S. 1999. An introduction to phenomenological research.

Levinson, M. 2010. IT Project Management: 10 Less-Considered Keys to Success.

Lincoln, Y.S. & Denzin, N.K. 2003. Turning points in qualitative research: Tying knots in a handkerchief. Vol. 2: Rowman Altamira.

Lister, G. 2014. Project Management Roots and Understanding the PMBOK Guide. *Pearson*.

Lynne, N. 2004. Project Management Frameworks as a Risk Management tool. http://www.ksinc.com/articles/PMFrameworks.pdf Date of access: 15 July 2015.

MacMillan, J.H. & Schumacher, S. 2001. Research in Education: A conceptual introduction. *New York: Longman*, 5th.

Marnewick, C. & Labuschagne, L. 2006. A structured approach to derive projects from the organizational vision. *Conference proceedings of the PMI Research Conference 2006 - New Directions in Project Management*.

McBride, T., Henderson-Sellers, B. & Zowghi, D. 2004. MONITORING AND CONTROLLING SOFTWARE DEVELOPMENT PROJECTS. (*In*. European, Mediterranean and Middle Eastern Conference on Information Systems organised by: EMCIS.

Merriam, S.B. 1998. Qualitative research and case study applications in education. *San Francisco: Jossey-Bass*.

Merriam, S.B. 2002. Introduction to qualitative research. *Qualitative research in practice: Examples for discussion and analysis*, 1:1-17.

Miles, M.B. & Huberman, A.M. 1994. Qualitative data analysis: An expanded sourcebook: Sage.

Molina, L.M., Lloréns-Montes, J. & Ruiz-Moreno, A. 2007. Relationship between quality management practices and knowledge transfer. *Journal of Operations Management*, 25(3):682-701.

Mouton, J. 1996. Understanding social research: Van Schaik Publishers.

Myers, M. & Liu, F. 2009. What Does the Best IS Research Look Like? An Analysis of the AIS Basket of Top Journals. *PACIS 2009 Proceedings*:61.

Myers, M.D. 2004. Hermeneutics in information systems research. *Social theory and philosophy for information systems*:103-128.

Myers, M.D. & Klein, H.K. 2011. A Set of Principles for Conducting Critical Research in Information Systems. *MIS quarterly*, 35(1):17-36.

Nash, K. 2009. To avoid failure, First define Success. http://www.cio.com/article/2428270/leadership-management/to-avoid-failure--first-define-success.html Date of access: 30 September 2015.

Newton, P. 2013. Project Stakeholder Management. 1. Vol. 1.

O'Brochta, M. & Finch, C. 2011. Key Performance indicators for the PMO. *Metrics for Success*, 2.

Olsen, M.E., Lodwick, D.G. & Dunlap, R.E. 1992. Viewing the world ecologically: Westview Press Boulder, CO.

Patton, M.Q. 2005. Qualitative research: Wiley Online Library.

Peterson, M. 2002. Why are we doing this project? *New York: PriceWaterhouseCoopers*.

Philip, L. 1998. Combining quantitative and qualitative approaches to social research in human geography—an impossible mixture? *Environment and planning A*, 30(2):261-276.

Phillips, D.C. 1990. Postpositivistic science: Myths and realities. *The paradigm dialog*:31-45.

Phillips, J. 2013. PMP, Project Management Professional (Certification Study Guides): McGraw-Hill Osborne Media.

PMI. 2004. A Guide to the Project Management Body of Knowledge. 3. Newtown Square Pennsylvania: Project Management Institute.

Ponterotto, J.G. 2005. Qualitative research in counseling psychology: A primer on research paradigms and philosophy of science. *Journal of counseling psychology*, 52(2):126.

Poon, P. & Wagner, C. 2001. Critical success factors revisited: success and failure cases of information systems for senior executives. *Decision support systems*, 30(4):393-418.

Pratt, E.M. 2011. Applying a Life Cycle Framework to Implementing a Governance Model. *PMI Virtual Library*.

Preece, J., Rogers, Y. & Sharp, H. 2002. Interaction Design: beyond human-computer interaction. *New York: John Wiley & Sons*.

Project Management Institute, I. 2008. A Guide to the Project Management Body of Knowledge. Newtown Square: Project Management Institute, Inc.

Punch, K.F. 2013. Introduction to social research: Quantitative and qualitative approaches: Sage.

Radack, S. 2002. The system development life cycle (sdlc). *Computer Security Division Information Technology Laboratory National Institute of Standards and Technology*.

Reeves, T.C. & Hedberg, J.G. 2003. Interactive learning systems evaluation: Educational Technology.

Rugg, D. & Peersman, G. 2009. Basc Terminilogy and Frameworks for Monitoring and Evaluation UNAIDS. *Monitoring and Evaluation Fundamentals*.

Schwalbe, K. 2009. Information technology project management: Cengage Learning.

Schwalbe, K. 2010. Information Technology Project Management, Revised: Cengage Learning.

Schwalbe, K. 2015. Information technology project management: Cengage Learning.

Seaver, D. 2014. Respect the Iron Triangle. http://www.ittoday.info/Articles/IronTriangle.htm Date of access: 30 December 2015.

Sera, Y. & Beaudry, S. 2007. Monitoring and Evaluation. *Tips for Strengthning Organizational Capacity*.

Shenhar, A. 2008. Unleashing the power of project management. *Industrial Management*, 50(1):14-18.

Shenhar, A., Dvir, D., Milosevic, D., Mulenburg, J., Patanakul, P., Reilly, R., et al. 2005. Toward a NASA-specific project management framework. *Engineering Management Journal*, 17(4):8-16.

Shneiderman, B. & Plaisant, C. 2005. Designing the User Interface: Startegies for Effective Human Computer Interaction. *College Park, MD: Addison-Wesley*, 4th.

Silverman, D. 2000. Analyzing talk and text. *Handbook of qualitative research*, 2(0):821-834.

Silverman, D. 2005. Doing Qualitative Research. *A practical Handbook*, 2(London : Sage).

Smith, D.W. 2008. Phenomenology. *Encyclopedia of Cognitive Science*.

Smith, J.A., Flowers, P. & Osborn, M. 1997. Interpretative phenomenological analysis and the psychology of health and illness. *Material discourses of health and illness*:68-91.

Spencer, L., Ritchie, J., Lewis, J. & Dillon, L. 2003. Quality in qualitative evaluation: a framework for assessing research evidence.

Sprinthall, R.C., Schmutte, G.T. & Sirios, L. 1991. Understanding Educational Research. *New Jersey: Prentice Hall*.

Stake, R.E. 1995. The art of case study research: Sage.

Strauss, A. & Corbin, J. 1990. Open coding. *Basics of qualitative research: Grounded theory procedures and techniques*, 2:101-121.

Stufflebeam, D.L., Madaus, G.F. & Kellaghan, T. 2000. Evaluation models: Viewpoints on educational and human services evaluation. Vol. 49: Springer Science & Business Media.

Suri, H. 2011. Purposeful sampling in qualitative research synthesis. *Qualitative Research Journal*, 11(2):63-75.

Taylor, C.F., Paton, N.W., Garwood, K.L., Kirby, P.D., Stead, D.A., Yin, Z., et al. 2003. A systematic approach to modeling, capturing, and disseminating proteomics experimental data. *Nature biotechnology*, 21(3):247-254.

Team, F. 2015. *Project Integration Management : Project Skills* www.free-management-ebook.com 17 August 2015: 17 August 2015.

Tellis, W.M. 1997. Application of a case study methodology. *The qualitative report*, 3(3):1-19.

Thomas, D.R. 2006. A general inductive approach for analyzing qualitative evaluation data. *American journal of evaluation*, 27(2):237-246.

Thomas, J.R., Silverman, S. & Nelson, J. 2015. Research Methods in Physical Activity, 7E: Human kinetics.

Tserng, H.P., Yin, S.Y., Dzeng, R., Wou, B., Tsai, M. & Chen, W. 2009. A study of ontology-based risk management framework of construction projects through project life cycle. *Automation in Construction*, 18(7):994-1008.

Turner, J. 1996. Editorial: International Project Management Association Global Qualification, Certification and Accreditation. *International journal of project management*, 14(1):1-6.

Turner, J.R. 2014. The handbook of project-based management. Vol. 92: McGraw-hill New York, NY.

Turner, J.R. & Müller, R. 2005. The project manager's leadership style as a success factor on projects: A literature review. http://projekter.aau.dk/projekter/files/225265908/06. The Project Manager s Leadership Style as a Success Factor on projects.pdf Date of access: 15 July 2015.

Villiers, D.d. 2014. Introduction to Project Management. *Information Systems Engineering*.

Walczak, M. 2014. What are Key Performance Indicators (KPIs) and Why You Should Use Them.1 - 2.

Walls, R.M. 2004. Combining decision analysis and portfolio management to improve project selection in the exploration and production firm. *Petroleum Science & Engineering*, 44:55-65.

Walsham, G. 1993. Interpreting information systems in organizations. Vol. 19: Wiley Chichester.

Walsham, G. 1995a. The emergence of interpretivism in IS research. *Information Systems Research*, 6(4):376-394.

Walsham, G. 1995b. The Emergence of Interpretivism in IS Research. *Information Systems Research*, 6:4:376-394.

Weber, A. & Thomas, R. 2005. Measuring and Managing the Maintenance Function.

Willis, J. 1995. A Recursive, Reflective Instructional Design Model Based on Constructivist-Interpretivist Theory. *Educational Technology*, 35(6):5-23.

Willis, J.W., Jost, M. & Nilakanta, R. 2007. Foundations of qualitative research: Interpretive and critical approaches: Sage.

Willmott, H. 1997. Critical management learning. *Management learning: Integrating perspectives in theory and practice*:161-176.

Worthington, D. 2015. Stakeholder Management Approach and Plan. *NSW Health*:9.

Yin, R.K. 2013. Case study research: Design and methods: Sage publications.

Zarina, A., E.M.A, Z., Khalid, Y. & Aris, N.M. 2014. Determining Critical Success Factors of Project Management Practice: A conceptual framework. *Procedia: Social and Behavioral Sciences*, 153 (2014) 61 – 69.

Zhang, Y. 2000. Using the Internet for survey research: A case study. *Journal of the American society for information science*, 51(1):57-68.

APPENDIX A: INTERVIEW WITH COMPANY A

Interview with participant 1

Date: 25 November 2015

Location: Finance

Interviewer:	I would like to thank you for this opportunity.
Interviewer:	Good afternoon Sir
Interviewee:	Afternoon Madam
Interviewer:	how are you doing?
Interviewee:	I am doing very well thank you how are you?
Interviewer:	I am fine….Today we will be Carrying out the interview. I am collecting data concerning the use of project management in IT projects. The first question I want to ask you before we go on and on, I just want your permission to go on with the record.
Interviewee:	My permission is granted.
Interviewer:	Thank you ,and also I am going to record your age but I am not going to take the exact age will just make a range ,your gender and the year you became a project manager or you were aware of project management…So first of all I will start with your gender…It's male… and your age?
Interviewer:	Ok, thank you very much and the year you qualified as a project manager or preparation to getting your project management qualification.
Interviewee:	That was in January 2008
Interviewer:	Which project management were you doing?
Interviewee:	We were doing and we are still doing and have adopted PRINCE2 as our project management methodology.

Interviewer: Ok. Under PRINCE2 are there any specialties you took or special frameworks you were following or methods you were using to carry out PRINCE2?

Interviewee: hmm with our case here we took PRINCE2 with its entirety as a family. We adopt PRINCE2 as a framework and methodology.

Interviewer: so you do not have any like in PMBOK you do have different frameworks like triple constrained like you know the triple constraints are cost, time and quality or the six sigma they also use the square root using the knowledge area strength trying to combine them together to make sure that they get super results at the end of the project. You just use your PRINCE2 as a framework but you do have components under PRINCE2.

Interviewee: hmm to my understanding and given to the explanation that is there, PRINCE2 as it is needs entirety...it is a framework so if you list the names like you say six sigma it is a framework on its own and PRINCE2 it is a framework on its own.

Interviewer: Okay I would like to get a little bit background on what department or what sector you are working on and how many IT projects you focus on are there a lot or have you had an experience whereby you had to apply PRINCE2 on an IT project.

Interviewee: Thank you, hmm our organization here we are in public service so we are in the ministry of finance which deals solely with public finance as to how many projects have come across I can count about three projects we have implemented, IT projects we have implemented the other fourth one we were on our way to implementing but budgets constraints prohibited carrying out stages to their

finality but it is still there it is documented, we went through the analysis, the planning analysis but the documents are still there. I wouldn't say we have shafted them; they are still there waiting for the war ahead, for the green flag to implement the software.

Interviewer: Ok, the fourth project is about the implementation of the software?

Interviewee: The implementation of the software.

Interviewer: Ok for private reasons I won't ask which software but I would like you to give me examples of the three IT projects you have carried out maybe if you give maybe two examples.

Interviewee: We were engaged in a project of implementing the old age pensioner period system which is number one; the second one hmm is the National Manpower Development Secretariat System Implementation it is famously known as SSMAS which is Student Sponsorship Management in Administration System.

Interviewer: Ok, In PRINCE2, I am a student in project management so I know a little bit about the OPM3 so I do not know if you know anything about OPM3.

Interviewee: I have heard about it.

Interviewer: so what I want to ask is according to the OPM3 how you would rate the maturity of the organization its self. Like right now you're working on a certain department under finance being the AMIS how would you rate the maturity of the projects you have carried out in this department?

Interviewee: In general or taking one project at a time?

Interviewer: Well, I think you can generalize it. I want to know whether you get continuous improvement or do you succeed in

projects by controlling and also the majoring and standardization

Interviewee: Thank you, I would say we are continuously improving. One project we implement gives us an idea of how we went through it so much that the subsequent project we improve on the weaknesses we encountered through the previous one so I would say we are continuously improving.

Interviewer: Meaning you use the term “lessons learned”.

Interviewee: Yes, lessons learned from previous projects.

Interviewer: what in your view are the main challenges facing the IT projects and also IT project manages and now let’s go back to an example of a project in IT project involved in being implementing old pensionable period system, what was the main challenge?

Interviewee: It is well known and popular that IT projects turn to fail most of them. I would say the challenges we encounter especially in public service are the budget constraints like I have given you an example about the other system, there are still phases outstanding due to budget constraints so that’s the most problem we encounter in the public services.

Interviewer: I understand this is only in the project itself the constrained clearly if you do not have enough budget you cannot carry out the project so I also want to gather if you as a project manager do you have any challenge or maybe something that prohibits you from going further with the project like maybe your management of resources besides your budget or management of time and the requirements based on quality because I understand you develop a project because there is a

need, there is going to be a user for the project, so do you find yourself reaching the quality the project manager or the user wants.

Interviewee: Thank you, with other aspects that we have mentioned in terms of quality control I have found that we really going to have a problem, if the budget is there, I have discovered we continue. Well, okay here and there might be some time delays but it is always advisable in project management that if there are delays there are controls to manage those delays. You can always re-plan but somehow time delays can be advantageous in that you take your time to lay back and rethink the whole thing again and see where you are not doing good then you go back to the drawing board then retrace your steps and continue, that's the only thing I that I have noticed that in the public service it may come as an advantage time delays, I would think that in the private sector it's a problem but time management we've managed to go ahead with other projects and complete the them. I have talked about quality management, meeting usual requirements, we have been successful in other projects with that; hmm the cost of quality, yes we have encountered problems in that we have systems here that seemed to have been poorly analysed in the initial stages so much that during implementation hhhm it is discovered that they do not totally fully meet the user requirements. So in that aspect the cost of quality comes out in that you'll have to go back and re-budget to come and rectify the mistakes that you've done. So you'll come across issues when you implement the projects, they are not favourable but they can teach the project manager, give

him/her lessons that in the next project that he sees to it that he avoids such scenarios by all means. I don't know whether this answers your question.

Interviewer: I think you've touched a lot and there are more points to the quality issues.

Interviewee: And you've said something about the challenges that the project manager faces.

Interviewer: Yes

Interviewee: Eh I think the project manager has to be a very well organized somebody, if you are not organized; things will very well easily fall apart. That again entails the fact that you have to know where you put or locate your information. Hmm communication – being able to communicate with team members, clients and people from every level of the project and discover that when you do that you are able to give out details that you may miss if you are not communicative. If you don't have people skills you'll lose a lot of details with hands on people.

Interviewer: Here on my questions I made an example like new technologies. As an IT project manager, I understand you come across a lot new things. Do you possibly find them difficult to deal with or are you able to adapt to them or move on as long as it gives you positive results are you able to adapt to it and start using it?

Interviewee: Thank you, you know what we do here, usually when something is new and we have to implement it, we do some research on where the technology is working or has worked. Either locally or internationally, we urge people to make findings about such new technologies. Hmm if it is possible they may contact those people using the technologies, confer with them on the disadvantages and

advantages of such technologies. If it is well tested technology, we adopt that technology.

Interviewer: Do you perhaps get that person to transfer the skills or show you how to use the technology.

Interviewee: What we do is that during the whole cycle of the project implementation of project management, there is a time when reach the evaluation stages and in those there are times when we have to dispatch our team members to go out for site visits to go learn more about the technology we intend to implement in our organization so if its international, then we make sure we budget for that ahead so that when that time comes then we use the budgeted amount for the team to go out and learn about the technology.

Interviewer: I think this summarizes the entire new technologies.

Interviewee: An example during the implementation of the NMDS project, the guys who won the bid are international and on their profile we discovered that they take the urge from other bidders. But to assure that we are seeing that they are not faking their profiles, we had to dispatch some of the team members to their country to learn about their systems as they had a system of the nature of the one we needed.

Interviewer: Moving forward, when making decisions how often do you refer to any Body of Knowledge?

Interviewee: Eeeehh like I said we have discovered that PRINCE2 seems to have covered many aspects of project management. I have read about BOK and I have found out that what they state there are also there in PRINCE2, like completing certain stages and phases when you have to make decisions, you have to refer back and see the

guideline of how they do it. PRINCE has covered most of what other disciplines from the BOK.

Interviewer: So what I also wanted to know, when carrying out other projects and you have to make decisions as a project manager under PRINCE2 you can also refer to PMBOK and get the same facts that are almost the same as in PRINCE2?

Interviewee: Not too different as I have discovered.

Interviewer: As a project manager, what are the most important skills you need to possess to deliver the successful project?

Interviewee: As I said, be highly organized, have expert power in that whenever you make decisions your team don't doubt (confidence in a team) any decision because they are comfortable with you, your skills and knowledge and that you are leading them in the right way, Communication skills.

Interviewer: I want to be a project manager in the future.

Interviewee: Well find yourself involved more in the current IT projects so that you learn.

Interviewer: I have realized that in your department you employ the PRINCE2 methodology. Do you have any specific reason behind choosing the methodology you are currently employing?

Interviewee: As we researched we found out that PRINCE2 was tried and tested framework and a methodology and it has been used for some time and it has been revised and improved. As we read and understood it was used in many project implementations and it has been used more in the government sectors and we felt comfortable to adopt. I also found out that it support base is wide; there are a lot of techno and professionals that have trained in

PRINCE2. If you require training, you find that trainers are available.

Interviewer: I think we have spoken much about this topic so I just want to find out if you find the difference between a methodology and a framework?

Interviewee: I can put it this way, a methodology is a method of doing things, it is how you are going to carry out a certain job. A framework is a plan, is a map. To give you an example if you want to travel from point A to B, you first take out a map and find out the distance you are going to cover, the road itself. Methodology is how you are going to depart from point A to B.

Interviewer: Let me understand something, so PRINCE2 is the methodology.

Interviewee: The methodology defines how you carry out tasks through the phases and the framework is the map, the guideline of which task you are going to do.

Interviewer: Under PRINCE2 do you have a map or a guideline on how to carry out the projects? And can I have an example of that.

Interviewee: Like we are saying, project has stages so the first stage is starting up a project. In this stage you organize your teams/ steering committees, technical committees and teams that are going to be hands on. With this in mind, it is to be documented for people to know who are who and their roles in the team. These are documented in the Project Initiation document which will define the business case, the objectives and the scope of the project. Again it is going to entail different aspects of management; quality control, configuration management, communication

control – how you monitor progress. All these are going to be in the Project Charter (Plan).

Interviewer: I thought under PRINCE2 there will be clear naming of the maps. Like in Six Sigma you have DMAIC as a framework.

Interviewee: In our case we have the PRINCE2 as the framework where we still go through the stages of the project. And we do follow the same strategy as other frameworks like the triple constraint in the PMBOK.

Interviewer: I think now it clearer. What is your level of experience with project management frameworks? E.g. triple constraint/ the iron triangle, V2P, The square root.

Interviewee: My experience is only with PRINCE2. I started working with PRINCE2 from 2008. I have heard and seen other frameworks being used but I do not have real hands on experience with them.

Interviewer: Under your current methodology, which frameworks do you use or seem to yield your company optimal success in IT projects? Or is it the way it is defined in PRINCE2 that this is how to carry out the IT project?

Interviewee: We use the guidelines under PRINCE2 and if you don't follow those guidelines then the project is bound to fail. If you follow the guidelines correctly you are most likely to yield successful results at the end of the project.

Interviewer: Please provide me with examples of IT projects you carry out in your organization. This question is just an elaboration of the mentioned example of IT projects.

Interviewee: Like I have mentioned, these projects can be implementing the Old Pensioner Payroll System, National Manpower Development Secretariat (SSMAS).

Interviewer: Under what circumstances do you see the frameworks he above mentioned projects?

Interviewee: I have not used other frameworks but according to my experience with PRINCE2, we follow similar guidelines and on all these projects we found that if we followed the guidelines we are bound to yield positive results.

Interviewer: For you to consider a framework successful what KPI's do you depict?

Interviewee: Hmm in no particular order but the most important thing is the return on investment. If you have invested in a project you are expected to yield positive results. The other indicator we focus on is meeting user requirements. Meaning they are all features that were tabulated in SRS, are they all attended to in the front end of the system? There are a few but those seem to be the underlying indictors. I have mentioned before cost of quality.

Interviewer: How would you measure your quality?

Interviewee: If the customer has accepted the product then we take that the project was of good quality. This is through User Acceptance Testing. The most important aspect of PM is to see to it that you capture all user requirements; if you miss that I'm most certain that you'll fail then the project wouldn't be a success.

Interviewer: Which projects in IT must use the Project management framework and how often do you use/apply the framework?

Interviewee: Of course if you get used to PRINCE2 principles, it gets easy to use in all of our IT projects. We do not have particular projects where we decide not to use the framework; we could even add more things to do on the framework itself.

Interviewer: How does the framework help in the running of the IT projects?

Interviewee: As it is a map or a guideline, it enables us to be able to take steps through the project and ensure maximum success in all IT projects that we carry out.

Interviewer: Of all the frameworks you are aware of, which one do you suggest your company adopts to ensure the maximum success of IT projects?

Interviewee: Like I said, I don't have experience with other frameworks so I can't say much about other frameworks. Although I would still stick to PRINCE2 as it has given us the best results ever since we adopted it.

Interviewer: Please elaborate on what can be done to your current framework for success.

Interviewee: In the seven years that we have adopted PRINCE2 and used it, I haven't come across anything that I would point out as something that can have room for improvement. Perhaps that's because we don't implement IT projects as frequent as other organizations like the private sector. But I believe as times goes and we are involved in projects to come we will then see what we can do to improve our current framework.

Interviewer: Most importantly, does the size of the project affect the project management framework being used?

Interviewee: Not really no!!! It depends on the scope of the project. You can implement a project using PRINCE2 in its entirety project being small or big but you still follow the guidelines of the framework.

Interviewer: Since I have seen that most the IT projects are being outsourced, I would think the smaller the project the easier it is to manage the framework

Interviewee: But you still are going to follow the same guidelines of the framework. Even when you outsource, hmm the outsourcing aspect of project is really when the actual development is going to be done by the third party but you would still be involved during the phases of the project.

Interviewer: Please rank the success factors of any framework that yielded your projects a huge success. E.g. user involvement, clear statement requirement, proper planning, clear vision and objective.

Interviewee: I think you have summed it. Success factors, of course in every IT project implementation, the success lies in engaging users, having a clear statement of what is expected from the project, as a project manager proper planning is crucial.

Interviewer: Thank you very much for your time and you must know, I have learnt so much about PRINCE2.

Interviewee: Thank you ma'am.

APPENDIX B: INTERVIEW WITH COMPANY B

Interview with participant 2

Day: 23/08/2016

Location: NWU Library

Interviewer: Good afternoon Dr, How are you?

Interviewee: Good afternoon.

Interviewer: I am fine today and I hope all is well with you. Today I am going to go through with the interview questions for my project which is comparing project management frameworks and project management methodologies. The main reason I have decided to carry out this interview is because I have realised that most IT projects are failing and people have tried to put some tactics in how to improve the performance of the frameworks and methodologies in order to ensure success of IT projects but still there are some issues here and there. So today I'm just going through a few questions with you. Please introduce yourself.

Interviewer: Well I know you have been working as a Project manager for quite some time now and clearly you have a very wide experience with the subject because you have also worked outside the continent. So all I want to know right now is when did you get qualified as a project manager.

Interviewer: Aagh it more than 30 years ago.

Interviewer: For you to decide to do project management what was your passion or what drove you to pursue it?

Interviewee: I used to do detail design and programming but then eventually I moved into management and for me the main

reason was I wanted to work with people and I wanted to design and develop new things.

Interviewer: Uhm project management is a broad topic, other people use it in Engineering, IT and so on. So basically what area are you in?

Interviewee: I am more in Engineering, building new plants, facilities.

Interviewer: So bearing in mind that I am focusing mostly on IT projects, how is engineering and IT different in terms of project management principles?

Interviewee: Let me say that the principles of project management, I suppose you can apply whether it is IT, Engineering or whether is building a house or arranging a wedding can be applied in any sort of environment for that matter.

Interviewer: Your industry right now which is Company B is a petrochemical industry. What I just want to know is in which projects you find yourself applying project management frameworks.

Interviewee: In a number of projects all over the world and we apply. We also have developed an in house methodology but it is based on best practices that everybody else uses in the world. We have applied it on a number of projects all over the world.

Interviewer: Uhm I know you have broad knowledge of project management concepts but I just want to ask about the Organizational Project Management Maturity Model (OPM3). How would you rate the maturity of your industry like you take the model and put yourselves? Would you say the organization is continuously improving or do you use like control and measuring concepts?

Interviewee: We try to always improve but the dilemma that you will always set is always bringing new people so I would say

at this level, if we use the maturity model I would say we set the edge more or less at the free but we always improving because there is always a ton of new people coming in, which is a challenge to up the skills of people.

Interviewer: So in this case I'll generalize it and say you are a continuously improving because as new people are coming in you try to take them and put them through the concepts and the frameworks that you use, so that they can learn from them.

Interviewee: Yes that's right.

Interviewer: Well, most IT project managers are facing a lot of challenges and time, scope and quality seem to be most high factors that are affecting the success and performance of the frameworks. But what could you say are the main challenges project managers are facing?

Interviewee: To me the challenges remain, it doesn't matter what systems you are using as long people have knowledge using the system. And it remains the bigger challenge or issue. You can say the capability of the people and the competence of the people.

Interviewer: Because I have looked at other people like I had a previous interview with another project manager, he seems to have a challenge in terms of, they agree on something as a team but they do not stick to it.

Interviewee: That's the people issue. I would say that about 80% of people but 20% you can actively add to the system.

Interviewer: The other concept would be unreasonable clients.

Interviewee: That could be the issue of what you should do as a group of them upfront and let them sign off on the requirements.

Interviewer: And in terms of the new technologies, like we have people right now who are already in the industry but they

do not know these new technologies that are emerging, how do you manage the information about them?

Interviewee: It always remains a challenge but you need to interact with other bodies' e.g. overseas, local ones so you need to incentivise the people to adopt and to learn new things. It remains a challenge but it can be done.

Interviewer: Talking about the other bodies, which Body of Knowledge do you normally use?

Interviewee: There is PMBOK and PMI, they are located in UK but they have offices all over the world and you have for instances Project Management Association of Australia, so we liaise with them and we do get training with them.

Interviewer: In your experience, what are the most important skills that a project manager has to possess? Or for you to say this is a perfect project manager, what are the skills that they have to have?

Interviewee: For me not only one skill, he needs to have a combination of skills. One is people skills, technical skills to be able to influence people. Those for me are the critical skills and he needs to be a good communicator.

Interviewer: Communication is the most important component of project management because you are not only working with tools or equipment; you are also working with people.

Interviewee: Most of the time you get things done by people.

Interviewer: And if you don't communicate well with people you might end up having what was not expected or what you did not agree on with the clients.

Interviewee: Yes.

Interviewer: It also, as I have learned through my project there is a difference between project management framework and methodology.

Interviewee: Framework is to a high level guideline of what you need to do whereas a methodology gives you the lower level of detail.

Interviewer: In this case you say a framework is an umbrella then under you can have methodologies.

Interviewee: Yes. To more detail, it could give you templates or detail way/ procedures and policies.

Interviewer: Talking about the difference between these concepts, which methodology and framework are you using in your industry?

Interviewee: What we doing is we using a methodology that is based on phases. It is a Lifecycle framework that works on phases and you have dates where decision making is done to continue with project or not. And then you have the high level framework that's more processes. We call this Swimlines where you give high level indication to the project team of what is expected or not so you have the detail lifecycle model then you have this swimlines with processes that provides the project team with sequence of events that needs to take place.

Interviewer: This lifecycle model, do you take this for each and every project that you carry out?

Interviewee: Most of the time especially in new ones, in some you might find that you do not start at the beginning but somewhere so every single project you need to evaluate whether you need to do a feasibility study or can you start with the development of the details so its project depending.

Interviewer: Meaning in the lifecycle if you have got five stages, it is possible that you can have a project that is not even going to start somewhere. It is going to start in the middle of the lifecycle.

Interviewee: It could be depending on the project. So let's make an example of a house. When you are building a new house you start at the beginning, whereas you have an existing house and you want to add a room you are not going to start at the beginning.

Interviewer: That makes sense. Because I have realised that people think totally different. Some believe a project has to go through every single stage whereas this could waste project resources. Which other methodologies or frameworks are aware of? E.g. Agile

Interviewee: No we don't use Agile in engineering environment. We have one for smaller projects, where you have fewer phases in a project and your requirements are less. For big projects we have two systems: one for smaller projects and one for bigger projects. And the big thing is we still go through phases but the requirements are less. For an instance your project execution plan for big project might be thousands of pages and small projects you limit to 10-15 pages. You still do risk reviews but you don't spend days during one whereas in a big project you can take weeks.

Interviewer: What is your level of experience with the framework that you employ at your work?

Interviewee: It has been over 30 years working with the lifecycle model.

Interviewer: There are other examples of frameworks like V2P, Triple constraints. A lot of people confuse these. How do you deal with these as they are the base of each and every framework?

Interviewee: What we normally do for scope, we have framing meetings where we say this is in scope and this is out of scope, and in the project charter the sponsor tells what he wants, he gives the project manager the mandate but at the same time he tells you what exactly he wants. So there is no confusion and you make clear that you have number of sessions where you make clear that you understand the scope of work. And then you need to look at how much it is going to cost, to take you and the quality expected. We have studies to determine the quality. And the quality is not only a function of how long you want this project to run. Say you want to operate it for 20 years or 30 then you spend money so that you measure equipment that it will last for that period.

Interviewer: There are other methodologies like PRINCE2, I see most IT companies following it. What is your experience with it?

Interviewee: I don't have much experience with it, I have read about it. So I can't say whether it is good or bad.

Interviewer: Which examples of projects could you give me; I just want to understand what kind you are carrying out although not too much details.

Interviewee: For instance we are building a pipeline in Mozambique so it's a few million dollar project.

Interviewer: Are you following the same methodology and framework?

Interviewee: Yes we are following the same principle which is the Systems Development Lifecycle.

Interviewer: In this methodology, I believe it's very important to keep the same principles throughout the project because then it makes it easier for you.

Interviewee: You are more concerned in executing the project and everybody understands the methodology.

Interviewer: And then you learn from the past experience.

Interviewee: We have lessons learned after every single session to bring them forward.

Interviewer: At the end of the project, how would you say this has been a success? Which key performance indicators do you depict?

Interviewee: We normally look at whether you are within the cost, did you estimate it, are you within the time that you assigned and can you use the end product. We look at these few things.

Interviewer: For you to measure a success of a project, you have to also consider the satisfaction of the client.

Interviewee: Yes. That considered by the product. For instance we build plants so if it doesn't deliver the product then it is not successful. It is only successful if it is within costs, time frame and you delivered these within specifications.

Interviewer: There are some circumstances where you are in the middle of the project and you see that the methodology or framework is not doing well. How do you normally handle that?

Interviewee: There will be issues so we do quality checks independently, peer reviews with independent people on the system so you don't wait until end of the phase. You do it throughout the phases and yes there are issues but

you fix them before you come to the point where you have to make a decision.

Interviewer: Which methodology or framework would you recommend for other people?

Interviewee: As I said before, we are always benchmarking from other companies and refer to other companies and then we make changes to our current system. So it is not a question of throwing the methodology or framework out totally. We adopt it and we learn from other people. So we interact with other people and companies and we try to adapt their systems. We always try to improve.

Interviewer: So there is a point whereby in the middle of your principle then you find you need something then you can go to other concepts?

Interviewee: You more of change the stages like you'll do with some of the details you might change some of the procedures or templates you are using.

Interviewer: You are always ready for change?

Interviewee: Yes definitely.

Interviewer: Does the size of project matter?

Interviewee: What we classify as a small project is up to 200 000 000 and over it becomes a big project. So yes the size depends.

Interviewer: And you still apply the same principles?

Interviewee: Yes the principle is the same but the level of detail differs.

Interviewer: How do you rank the success of your projects? Like user involvement?

Interviewee: We produce reports where we look at the individual member performance, remember we have to have a business case , so you then after a few months of operation you need to see if you are achieving what you

said at the beginning of the business case. You need to issue reports stating that you are at the level as per the justification of the approval of the project.

Interviewer: So for you to be able to go through every stage of the project there is a document that you produce?

Interviewee: Yes, you need to issue reports to senior management and it gets audited.

Interviewer: Thank you very much for your time. We have reached the end of the interview.

Interviewee: Thank you and good luck with your project.

APPENDIX C: INTERVIEW WITH COMPANY C

Interview with participant 3

Day: 13/09/2016

Location: Finance Building

Interviewer: Good day sir, I am carrying out this interview to help me with a project I am doing at school, which is comparing the project management frameworks in IT projects. As IT manager, what are your experiences with project management frameworks and also the methodologies as the go hand in hand? Or a background?

Interviewee: Thank you for this opportunity. I think what you mean by methodology is like the standard you can adopt, say on our environment carrying out specific projects that I want to carry out this project using a certain methodology as a guideline or guiding tool through the project lifecycle.

Interviewer: The main important thing is to see whether you see a framework and a methodology different or just as one and the same thing. We understand that a framework is like a plan and a methodology is entailing all concepts.

Interviewee: Yes I agree with you.

Interviewer: Examples of frameworks in this case would be PRINCE2, Agile and others. Just like methodologies will be PMBOK, PRINCE2 and others. All I just want to find out is how well you are experienced with any of the above list. As you are working with your current project are you using?

Interviewee: Yeah, before I worked with company C, I was working with the payroll systems. These projects were using PRINCE2. With a simple reason that as government, we are in a very controlled environment because the

approach taken by PRINCE2 in this controlled government constraints will be the one that is appropriate. But in COMPANY C, it has a specific methodology called EPICOR Signature. We are about to use it in our upgrade that is to resume after October 2016. So we will be using this methodology for the Epicor module but for general project administration we are going to use AGILE. But I haven't used it myself, so yes I am very familiar with PRINCE2. But in a nutshell, I think they are more or less the same; there will be differences here and there. The only difference you encounter is when you get the way they are structured. Some will be free-fall and some will be iterative. So at what point can you reflect and give feedback backwards and move to the next some you just go and do recheck so it's a matter of preference.

Interviewer: When did you start working with projects or when were you aware of these frameworks?

Interviewee: I think when I started working here, which is 10 years ago, from 2006 and from that time I have been dealing with systems and systems development and upgrades. But here dealing with different vendors, each one of them would require different methodology but they are more or less the same.

Interviewer: Which area are you basically based in or what is the nature of your projects?

Interviewee: Our projects are mostly IT based because we are dealing with government systems especially here because of the financials.

Interviewer: We have spoken more about COMPANY C, do you have any knowledge of OPM3? In this case looking at your

past IT projects, how would you rate the maturity of those projects?

Interviewee: The projects that we have taken so far, are implementing the courts solution, out of the shelf systems. Of which you are told that when it is perfect system, it works this way and implement it in a period of a year or 2 and it delivers exactly that and with hiccups and enhancements here and there. But you get a complete product at the end which we will continue to use maybe for 5 years then you upgrade thereafter.

Interviewer: In this case you consider yourself as continuously improving. Let us say you carry out project and then you realise you didn't get what you wanted; you go back and review what you have done in order to get the exact product that you agreed on.

Interviewee: Because mostly in government we are under this PFM Reform Projects (Public Funds Management) which normally take reform each and every 5 years. You have to look at the way you deal with the public finances in terms of management and the systems assisting to manage those public funds. Currently we are now in the PFM reform program which will end in 2018, so as a component of that program, we anticipate upgrading this Epicor (COMPANY C). So we are going to use this methodology of Epicor Signature and Agile.

Interviewer: Generally what would you say are the main challenges facing IT project managers?

Interviewee: The main challenge is having a project manager that understands the business side as well as the IT side. Because in the past years you find you may have a project manager who is of more business but who lack a

bit of knowledge on the IT perspective so can provide systems that can work well on the business side but can be sitting on the poor infrastructure. On the other hand you can have a project manager who is more on the IT side but do not understand the business side. So you will have a product which is sitting on the very good platforms, sophisticated IT security and all sorts but not delivering as expected on the business side. So you need a project manager that can understand both sides.

Interviewer: On the IT side, it must be somebody who is able to adapt to emerging technology.

Interviewee: But the here we are government; we are not an IT company. Even if the technology can go that fast, to adjust with it you get those enhancements but with costs. So if government at the minimum resource in terms of cost you still have to get the better systems or end products. So we don't necessarily compete but we need the basic IT infrastructure to handle the government business because it doesn't need those sophisticated things as they are dealing with public funds and there are many things to consider as government like social developments, agriculture and others. In terms of IT it's just a platform that should help the government. So you need a smart project manager who can at the bare or minimum costs get the best out of it (value of money).

Interviewer: I know also IT project managers, refer to BoK, and so I just want to find out if you ever in the projects that you carried out in the past refer to any or you tailor make your principles.

Interviewee: Absolutely. We still refer and try to integrate many of the methodologies being used, so we also go back and refer so that we get ideas and maybe implement some.

Interviewer: Tell me you said you use PRINCE2, which body of knowledge do you refer to?

Interviewee: We also use PMBOK because there are similarities that you can draw between the two. PMBOK you may see that it is a mother-like of all those methodologies. So even if you are carrying out PRINCE2, you can always refer to PMBOK and get some concepts and move forward with them.

Interviewer: What is the difference between framework and methodology? Here all I want to understand is do you consider the principle you are using in your current project a framework or methodology?

Interviewee: Like we said framework is embedded within methodology but in a nutshell you considering it as a methodology if you are looking for the entire project but if you are looking for specific deliverables that would build up the entire product at the end of the day you look at the frameworks that can build into the entire methodology to achieve the whole end product in totality.

Interviewer: How many years have you been using PRINCE2?

Interviewee: Say for the last 10 years, and I have always used PRINCE2. I haven't used any other methodology.

Interviewer: Because you are only experienced in PRINCE2, would you recommend it to other IT pm and why?

Interviewee: Well because, like I said government it is a very controlled environment. You don't do things the way one wishes even if you carry a project, you still have to be

under the legislative that is governing you, within superior's guidance, within the instructions so PRINCE2 will help you to control; all controls that will be put to do this project within this controls or constraints. You will be able to use PRINCE2 because government is a highly controlled environment in terms of security, information dissemination and all those kind.

Interviewer: I have also heard project managers complaining about their teams. How well do you find it for the team to adopt the standard the project manager wants them to be and how fast do you see them adapting?

Interviewee: Well I think the first thing is to get a clear Project Charter, well defined. Each and every single row so that when you compose the team, every participant fully understand his or her roles or mandates from day 1 and then from that when you get into project Gantt Chart at least every resource is knowing its corner to take to tackle the project and then as a project manager you just show off the light ahead and you guide the team throughout. Then you get feedbacks, you set the milestones, you get reports. I think that's how the team can adapt. Nonetheless you still have to train people on how to use all this things.

Interviewer: Also in project management we know there are key performance indicators. So in your current framework what KPI's do you depict? How normally do you measure the success of your framework?

Interviewee: I think they go hand in hand with risk matrix. At the starting of the project you have to anticipate the risk appetite that if I do this, this will happen; so that you apply the remedies and that Risk Matrix can help you to come up with flags that when you have reached a certain

milestone you will see by this results which I think they are indicators that you are referring to. So I think well the indicators vary from one institution to another, some of them will be the partial fulfilments of those assigned tasks. Some will be the partial deliverables or the modules of the entire project that is anticipated. I think some people say even time frames the project was estimated to complete and stated resources or products.

Interviewer: Of which in a case like this quality will be one of those.

Interviewee: Yes.

Interviewer: Examples of IT projects?

Interviewee: COMPANY C upgrade is one of them.

Interviewer: Does the size of the project affect the framework?

Interviewee: Well government projects are at times very big that even the timing will affect, it will be a big project with a big end product to be delivered but with some limited resources and limited time frames. Resources in this case would be money, people and more. So some of the projects will take a year or two to deliver the end product but at the end of the day some will be project delivered into partial deliverables, so that even when you accept the whole project you give the provisional acceptance at times due to complexity of some of the outputs.

Interviewer: Lastly, let us talk about the success factors. I think every framework has its own success factors. In this case how would you stipulate success factors of your framework?

Interviewee: Definitely stakeholder involvement, user's involvement but mostly in government the political will, because some of these projects that we are carrying we need the support from the top management even the Cabinet because at the end of the day even our budgets are

approved by them so we need that commitment or guidance from them and involvement and all the users, the stakeholders being indirect consumers and other people. They all affect the success of the project and the framework itself.

Interviewer: Thank you very much for your time.

Interviewee: It’s a pleasure.

APPENDIX D: CONSENT FORM FOR COMPANY A

CONSENT FORM

Title

A comparison of frameworks that measure the success of Information Technology projects.

DETAILS OF THE RESEARCHER:

ME Chele
Student
School of Information Technology
NWU VTC
Vanderbijlpark

	Initial
1. I confirm that I have understood the information provided for the above study and have had the opportunity to ask questions.	✓
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason.	✓
3. I agree to take part in the above study and I understand that information provided will be confidential.	✓
4. I agree to the interview being recorded.	✓
5. I agree to the use of quotes in publications.	✓

MOELETSI MOKHATLA — Participant

18-NOV-2015 — Date

Signature

APPENDIX E: CONSENT FORM FOR COMPANY B

CONSENT FORM

Title

A comparison of frameworks that measure the success of Information Technology projects.

DETAILS OF THE RESEARCHER:

ME Chele
Student
School of Information Technology
NWU VTC
Vanderbijlpark

	Initial
1. I confirm that I have understood the information provided for the above study and have had the opportunity to ask questions.	
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason.	
3. I agree to take part in the above study and I understand that information provided will be confidential.	
4. I agree to the interview being recorded.	
5. I agree to the use of quotes in publications.	

Participant _____ Date _____ Signature

APPENDIX F: CONSENT FORM FOR COMPANY C

CONSENT FORM

Title

A comparison of frameworks that measure the success of Information Technology projects.

DETAILS OF THE RESEARCHER:

ME Chele
Student
School of Information Technology
NWU VTC
Vanderbijlpark

	Initial
1. I confirm that I have understood the information provided for the above study and have had the opportunity to ask questions.	✓
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason.	✓
3. I agree to take part in the above study and I understand that information provided will be confidential.	✓
4. I agree to the interview being recorded.	✓
5. I agree to the use of quotes in publications.	✓

Botsebo Sesinyi (Mr.) — Participant

15/09/2016 — Date

B. S. — Signature