

Towards understanding as-lived experiences in Information Systems projects: An Actor-network Theory perspective

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By

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To my parents
Mussah Grevious Kazembe Matipa
and
Cecilia Matipa.

University of Cape Town

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Abstract

Projects have fast become a popular vehicle for realising business objectives. In the Information Systems (IS) field, the scenario is no different and most endeavours are implemented in the form of projects. Sadly, it is reported that two out three projects fail. Efforts to rescue the situation have so far yielded unsatisfactory results. Through the first decade of the 21st century the Project Management (PM) community appears to have changed tact and have since made a number of calls to rethink and deepen understanding of PM practice. This call has led to the emergence of a number of theories *in, for* and *about* PM practice that rivals best practice approaches. This research study is considered to be a contribution toward this rethink.

This research project began with a literature review of IS project management theories which aimed to explore and describe the as-lived experience of practitioners in an IS project network. The study builds on this body of knowledge by providing a narrative of as-lived experiences of IS project participants.

The study involved a cross-sectional study of two IS projects cases from two countries in sub-Saharan Africa, namely, Malawi and South Africa. Information was collected and analysed qualitatively using Actor-network Theory. Unstructured interviews were the main data gathering technique supplemented with secondary data and observations. Most interviews were audio recorded. All interviews were transcribed before analysis.

An analysis of the two case studies reveals that an IS project start-up is neither simple nor straightforward; Instead it is a lengthy winding process. The study also reveals that IS project objectives are not *cast in stone*; they are instead refined and reshaped by the interactions that take place among actors in the project network. Personal interests were found to drive the actors' passion and commitment for project success. Project success seems to result when Stakeholder and participant interests are interwoven with the project need. The study also widens the perspective with which the involvement of operational system users can be considered. This study makes a modest contribution towards the understanding of project phenomena using an actor network theory lens.

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Chapter 1: Introduction

The adoption of project work methods across different sectors and industries is steadily increasing (Linde & Linderoth, 2006; Winter, Smith, Morris & Cicmil, 2006a). This trend is likely to continue (Hobday, 2005; Hyvâri, 2006; Nocker, 2006). The increase in adoption of project driven approaches across sectors has persuaded institutions such as the Project Management Institute (PMI) to promote certification and issue standards to guide the Project Management (PM) practice (Cicmil, 2001; Hodgson, 2002; Kreiner, 1995; Packendorff, 1995, Winter et al, 2006a). PM (inclusive of programme management and project portfolio management) is now a popular approach adopted for strategy implementation, business transformation, continuous improvement and product creation in many organisations (Hobday, 2005; Nocker, 2006).

From the discussion in the previous paragraph it may be deduced that projects are perceived to be a popular vehicle for delivering organisations' objectives. However, in the Information Systems (IS) field projects do not seem to satisfactorily deliver objectives and a significant number of projects are cited as failures (Koppensteiner & Udo, 2003; Nienaber & Cloete, 2003). The Standish Group Chaos reports over the past twelve years have, however, shown a slight improvement in IS project outputs (Hass, 2007). For instance, in 1994, 16 % of IS projects were cited as successful and 31% failed, while in 2006, twelve years later, 35% were termed successful and 19% failed (Hass, 2007). The IS project failures are worrying to most IS project practitioners and interesting to researchers (Standing, Guilfoyle, Lin & Love, 2006; Veraart, 2002). However, reasons for the failures and for the slight improvement registered in the IS project success rates, as per the Standish group chaos reports, have not been fully explained.

One of the reasons given to explain the failures in IS projects is the lack of understanding of as-lived project processes (Linde & Linderoth, 2006; Standing et al., 2006). Although projects are widely adopted across industries, the as-lived experiences in a project network are neither fully understood nor appreciated across industries and fields. Understanding a project process is one of the challenges facing project practitioners (Linde & Linderoth, 2006; Nocker, 2006). In the IS field, the scenario is not different. This lack of understanding and appreciation of a project process is hypothesised to impact on project objectives negatively i.e. the project does not meet its objectives and is, therefore, termed a failure (Nocker, 2006). This is where the background of the research emerges from and justifies and explains this proposed study.

Understanding a project process is important to the IS field, just as it is to other application fields. Most, if not all, IS endeavours are undertaken in the form of projects. These endeavours include strategic information technology (IT) planning, software development, as well as IT infrastructure planning and implementation (Hendricks, 2005).

1.1 Background and problem definition

It has been cited that over 50% of IS projects have failed to deliver quality outcomes as per specification, schedule and/or budget (Great Britain Office of Government Commerce, 2005; Koppensteiner & Udo, 2003; Nienaber & Cloete, 2003; The Standish Group, 2004). This high rate of IS project failure has sparked four differing viewpoints (Shenhar, Dvir, Levy & Maltz, 2001):

1. Emphasises on finding critical success factors and capitalising on them to attain success in a project (Birkely & Ødegård, 2006; Flood, 2006; Karlsen, Andersen, White & Fortune, 2002);
2. Success is not as low, rather different individuals define success differently. This group advocates redefining success to encompass different dimensions (Collin & Baccarini, 2004; Shenhar et al., 2001);
3. There has to be a serious rethinking and overhauling of the current traditional Project Management (PM) approach and practices (Winter et al., 2006a); and
4. Failure is inevitable: nothing can be done about it, rather live with it (Cale & Curley, 1987; McManus & Wood-Harper, 2003; Mahaney & Lederer, 2006).

The “rethinking PM practices and approaches” viewpoint attributes project failure to the current traditional PM practices which are termed a “hard systems approach” (Winter et al., 2006a). This might be due to the fact that success rates have not reached satisfactory levels yet, despite other viewpoints assisting practitioners to understand some underpinnings of project success (Standing et al., 2006; Koppensteiner & Udo, 2003; Nienaber & Cloete, 2003; Veraart, 2002). This viewpoint, therefore, calls for researchers and practitioners to rethink PM in order to come up with theories *in, for, and about* the PM practice so as to improve project success (Winter et al., 2006a).

The “rethinking PM practices and approaches” viewpoint emphasises that the hard systems PM approaches and practices are not adequate to improve IS project success (Crawford, Costello, Pollack & Bentley, 2003; Leybourne, 2007; Pollack, 2007; Winch, 2004; Yeo, 1993). The hard systems PM approaches and practices worldview portrays the image that a project process is

rational, universal, instrumental and deterministic (Checkland, 1989; Cicmil & Hogson, 2006; Morris, 2002; Winch, 2004; Yeo, 1993). The idea might be true for simple projects, but might not be true for complex projects, such as most IS projects (Morris, 2002; Winch, 2004; Yeo, 1993). Apart from not being able to deal with complex projects, the worldview fails to deal with different stakeholder perspectives and interactions existent in a project network (Crawford et al., 2003).

As an alternative to the traditional PM approaches and practices, there is a new thinking which advocates a “Soft systems thinking approach” to PM, claiming that it improves project success (Winch, 2004; Neal, 1995; Yeo, 1993). The soft systems thinking worldview promotes taking on board interests of different stakeholders in a project network, however, it ignores the “hard” side of the project realities (Pollack, 2007; Crawford et al., 2003; Yeo, 1993). Despite these claims, there is no empirical evidence that the soft systems thinking approach in managing IS project improves success (Tatnall & Gilding, 1999).

Both the traditional and the soft systems thinking approaches prescribe a binary approach to managing IS projects, i.e. either adopting a hard systems thinking approach or a soft systems thinking approach. Either of these approaches takes a deterministic as well as a simplistic view of project activities (Tatnall & Gilding, 1999). Although soft systems thinking and methodology take cognisance of the “soft issues” in a project network, both the traditional and the soft systems thinking approaches do not place emphasis on the complexities of an IS project network (Checkland, 1989).

To appreciate the complexities of a project network, it is important to explore and describe the project process leading a project towards attaining its objectives (Linde & Linderorth, 2006; Nocker, 2006). A project network is comprised of different actors, both human and non-human (Tatnall & Gilding, 1999) that express themselves and reshape the project objectives (Linde & Linderorth, 2006). Bearing this in mind, it is not sufficient to prescribe either the traditional approach - that concentrates on the technical side of the project - or soft systems thinking approach- that concentrates on the human side of the project as a means towards attaining a project's objectives (Charvat, 2003; Leybourne, 2007; Tatnall & Gilding, 1999). Investigating processes of a project network in its totality is a feasible starting point towards understanding how a project may be able to attain its objectives.

With the understanding that a project network is comprised of various actors (human and non-human), Actor-network Theory (ANT) would be a recommended tool (Linde & Linderoth, 2006) to help explore and describe the experiences in a project network. ANT is concerned with studying the mechanics of power occurring through the construction and maintenance of networks of human and non-human actors (Latour, 2005). ANT denies that purely technical (traditional PM approach) or purely social (soft systems thinking approach) relations are possible (Callon, 1997; Latour 2005). It rather offers a “notion of heterogeneity to describe projects” (Tatnall & Gilding, 1999, pp. 957). This heterogeneity makes it possible to produce a socio-technical account of projects in which neither social nor technical positions are privileged (Latour, 2005; Law & Callon, 1988). ANT was developed to analyse situations where separation of these social from technical elements is difficult (Callon, 1997).

The choice to use ANT in this research is, therefore, influenced by three factors:

1. ANT is well established in IS research where it has been used mostly to understand technology adoption inferences,
2. ANT is stable and continues to be validated as a research approach in the IS field, and
3. It overcomes technical determinism which is rife in the PM practice.

This research study involved finding the multiple stakeholders in IS projects, following them and understanding what interests and keeps them committed to a project network. The study also sought to understand how the stakeholder interests are expressed and how interactions among the different stakeholders reshape project objectives and outcomes. ANT was a well suited theory for this research study since ANT assists in following actants and understanding what they do and what interests them (Latour, 1999; Latour, 2005). ANT was instrumental in enabling the researcher to understand the as-lived experiences in an IS project and describe them. The theory provided the researcher with a lens for both data collection and analysis and, thereafter, a new way of understanding IS projects.

1.2 Gaps in the literature

There are a few studies conducted in the First World that investigated as-lived experience of selected human actors in a project network using ANT. Some investigated IT-dependent change projects (e.g. Linde & Linderoth, 2006; Linderoth & Pellegino, 2005), while others investigated the role of a Project Manager in a project network (e.g. Nocker, 2006; Parkin, 1996). The

researcher has not found any study documented that has contributed ontological understanding of an IT/IS project network using ANT through a narration of the as-lived experience. That is with an aim of understanding how project objectives may be attained or may change over the project lifespan. In addition, neither IT-dependent change projects study, nor Project Manager as-lived experience in an IS project network study has been conducted in an African environment thus far.

Although no study documenting IS project as-lived experience has been found yet, researchers have gone ahead investigating recipes for IS project success. This may mean that the investigations might have dealt with the symptoms while the root causes to the problem has remained hidden. The recipes for success that are provided may be argued to be fire-fighting techniques that might fall short of addressing the real underlying problems. This may partly explain the low success rates of IS projects.

This study was aimed at bridging two of the identified gaps:

1. Exploring and describing the as-lived experience of an IS project in an African environment to provide practitioners and researchers with a starting point to understanding IS project process deep enough to craft efficient recipes for project success, and
2. Facilitating an in-depth understanding of a project as it progresses towards its objectives through the description of the as-lived experience in the thesis.

1.3 Objectives and research questions

The objective of this study is to explore and describe the essence of an IS project process in order to gain an in-depth understanding of an IS project network and such issues as, project actors, interactions, influences and politics in the project network. The research study has enabled the researcher appreciate and share how an IS project may progress towards attaining its objectives. The objective is divided into three sub-objectives, exploring and describing (1) as-lived experience in an IS project process, (2) how IS project objectives may be reshaped by the various actors and (3) the understanding and meaning attached to an IS project success and/or failure. The objective has been achieved by investigating the following research question:

How does an Information Systems Project Management Process integrate a project need, the technology opportunity, the team, sponsor, users, manager, stakeholders and the Project management body of knowledge in a project network?

For the research question to be fully explored it was broken down into constituent research questions as follows:

1. How is a project network initiated, established and strengthened?
2. What are actors in an IS project network?
3. How do actors relate to each other?
4. How are problematisation, interessement, enrolment and mobilisation effected in the project network?
5. How do problematisation, interessement, enrolment and mobilisation impact on the objectives of an IS project? and
6. How do IS project practitioners understand and define IS project success and/or failure?

To thoroughly investigate the research questions and obtain relevant answers, a cross-sectional, exploratory and interpretive research was undertaken using qualitative methods of both data collection and analysis. ANT was used to both inform data collection and as a lens for data analysis.

1.4 Relevance of the study

The study may be relevant to both IS project practitioners as well as researchers. The study may assist project practitioners and researchers understand project process in a more true to life manner, which may, in turn, encourage some better ways of managing IS projects towards success. The study might be relevant to PM institutions as well, especially when they would be updating their PM guides. There is not enough empirical studies from which analogies and mid-range theories are developed. This research study aims to make such a contribution.

The study has further validated ANT as a lens to better understand socio-technical endeavours in the IS field, thereby offering the IS research community an alternative approach to tackling IS project research. Since the study was carried out in a Sub-Saharan African environment, it has brought out context specific issues such as an unemployment situation and constitutional matters that might offer a basis for comparison for IS projects carried out in the Sub-Saharan Africa with those carried out elsewhere. This may also offer an understanding of IS projects in an African context allowing practitioners to appreciate challenges faced by actors in this environment.

1.5 Limitations of the study

The study was part of the requirement for a completion of a master's degree course in IS. The research timing and duration is, therefore, restricted by the course duration. A thorough and in-depth exploration, understanding and description of a project network required that the researcher be fully immersed in the study (Latour, 2005) and, as such, this study only concentrated on two case studies: one in Cape Town, South Africa and another in Lilongwe, Malawi. The study did not, therefore, have a large sample due to its method of research, i.e. case studies. By their nature, case study research studies do not have big research samples because the results are not generalised based on statistical strength rather they are generalised based on empirical description to theory (Lee & Baskerville, 2003).

The research study was ground-breaking on the subject matter - investigating and describing as-lived experiences in an IS project. It was, consequently, somewhat cumbersome to follow all actors as well as to understand their various interests, hence the small sample used. The limitations do not, however, render the results of the study invalid, rather they strengthen them because the two cases were thoroughly studied and analysed.

1.6 Overview of the thesis

The rest of this thesis is organised as follows: Chapter 2 provides a brief overview of literature on Project Management, documenting literature related to projects in general, IS projects in particular, and project success. ANT in relation to its importance to this study is discussed in Chapter 3, detailing its three concepts: inscription, translation and irreversibility. A detailed research methodology is outlined in Chapter 4. This describes all the steps and procedures taken during the data collection and analysis stages of the research study. The Tobacco Grower Registration System project is described in Chapter 5 listing key actors in the project network. Chapter 6 provides an analysis of the TGRS project described in Chapter 5. The Fuel Codes System project is described in Chapter 7 while its analysis is presented in Chapter 8. Chapter 9 discusses the findings that emerged from the analyses in Chapters 6 and 8, providing any interpretations as well as contributions the findings may make. The chapter also discusses the research questions which the findings and contributions seem to answer. The thesis concludes with Chapter 10 where the high level implications of the study are highlighted. Conclusions, recommendations and further research ideas are also presented in the chapter. A summary of the thesis is also presented in the same chapter thereby concluding the thesis.

Tables, figures and boxes have been labelled following the chapter numbers in which they exist for simplicity. In the thesis, UML has been referred to as a systems development methodology; however, it was used as a symbology in the projects although the informants kept on calling it a methodology. It has therefore been referred to as a methodology and in some cases a symbology in systems development.

University of Cape Town

Chapter 2: Project success and current PM practices

2.1 Introduction

The low success rates in IS projects are worrisome to most IS project practitioners and researchers and have sparked differing viewpoints (Standing et al., 2006; Veraart, 2002; Shenhar et al., 2001). The differing viewpoints are directed at either improving project success or contesting and justifying that the project success is not as low as has been portrayed. In either viewpoint it is clear that both researchers and practitioners are not comfortable with the success statistics presented. It is, however, generally accepted that the concept of project success or failure is subjective and contested (Hendricks, 2005) although the mainstream textbooks and PM guides continue advocating the traditional view and definition of project success.

The aim of this chapter is to discuss literature in relation to project success, current PM practices and their influence on project outcomes. Section 2.2 provides an overview of what a project is while Section 2.3 discusses literature on project success, focusing on success dimensions and critical success factors. An overview of Project Management is provided in Section 2.4. The section also discusses PRINCE2, a methodology claimed to be the only true PM methodology available to IS practitioners (Charvat, 2003; Wideman, 2003). Section 2.5 provides a critical look at current PM practices alongside the PMBoK Guide's Project Management nine knowledge areas. Social and technical determinism is discussed in Section 2.6. The section also discusses socio-technical approaches and social construction of technology. The chapter closes with a summary in Section 2.7.

2.2 An overview of what a project is

A project is defined in different ways depending on the purpose the definition is intended to serve. Schwalbe (2006, p33), and PMI (2004, p5), who publish the widely used PM guide, define a project as "a temporary endeavour undertaken to create a unique product, service or result". Kerzner (2003, p2), on the other hand, defines a project as "a series of activities and tasks that:

- have a specific objective to be completed within certain specification
- have defined start and end dates
- have funding limits (if applicable)
- consume human and nonhuman resources (i.e. people, money, equipment)
- are multifunctional (i.e. cut across several functional lines)."

According to most definitions, a project is perceived as a *time-limited* process with attributes that need to be organised, managed and controlled to attain project success i.e. delivering a quality outcome on schedule and within budget (Charvat, 2003; Kerzner, 2003; Schwalbe, 2006). The discourse emanating from the above definitions seems to have swayed the thinking of the PM practice.

The two definitions displayed above suggest that a project has a *clear and definite outcome* that is to be delivered on a specified date using specified resources. In reality, especially for IS projects, that is often not the case (Winter et al., 2006a). The outcome may not be clearly defined and determined before commencement (Pollack, 2007). This is due to the fact that often requirements are not clear at the initial stage of the project or exogenous factors may influence some aspects of the project, thereby reshaping its outcome all together (Crawford et al., 2003; Kerzner, 2003; Linde & Linderorth, 2006). It is not feasible, therefore, to budget for both resources and time in advance.

Even though the definitions emphasise the necessity of *specifying an objective* prior to commencement, it has been shown that such a practice may not lead to desired project results (Linde & Linderorth, 2006; Neal, 1995). A desired outcome may be arrived at iteratively as the project progresses. This is because requirements may become more vivid as the project progresses and as different actors become interested in the benefits perceived to be offered by the project network (Neal, 1995; Tatnall & Gilding, 1999). The desired outcome, therefore, may not come out as originally outlined. The outcome or project objective may change or become reshaped depending on the negotiations with and interactions among various actors in the project network (Blackburn, 2002; Linde & Linderorth, 2006; Pollack, 2007).

The definition of a project also indicates that the specified outcome has to be on time, and delivered with pre-determined *resources*. If it is accepted that requirements might change as the project progresses, then it should also be accepted that the resources necessary to achieve a desired objective might change as well (Pollack, 2007; Schwalbe, 2006).

According to the definitions above, the outcome has to be derived by using *quality assurance techniques* in order to ensure that the outcome is of acceptable quality (Winter et al., 2006a). It can be expected that project actors would have different opinions on the subject matter because the judgment for quality is subjective. The quality assurance technique notion might restrain reasoning

capabilities of the project team. This might restrict the team from being innovative in the quest for delivering a successful product since the project team is required to rigorously follow a specified quality assurance technique (Pollack, 2007). Therefore, it can be argued that the notion of quality assurance techniques may lead to project of substandard quality (Linde & Linderoth, 2006).

A project is portrayed as a simple and straightforward venture with definite stages: initiation, planning, execution, monitoring and control and closure (See Figure 2.1). It is assumed that all projects have such a structure.

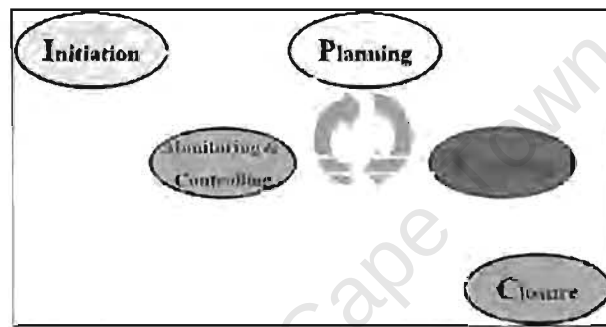


Figure 2.1: Phases of a project (Source: Schwalbe, 2006; Marchewka, 2003)

The definitions of a project as provided above are task-centric and do not address the human actor interactions within the project network, neither do they take on board interactions between human and non-human actors. With this omission, project practitioners and researchers may easily ignore the role of human actors in a project as well as influences that interactions among actors may have on the project objectives and the project process as a whole (Charvat, 2003; Leybourne, 2007; Linde & Linderoth, 2006; Tarnall & Gilding, 1999).

2.3 An overview of Project Management

Many organisations across industries and disciplines adopt project work. Project Management is, therefore, at the centre of any project work (Cicmil, 2001; Hodgson, 2002; Kreiner, 1995; Packendorff, 1995; Winter et al., 2006b). Project Management, just as projects, is defined in several ways. Some define it as the application of knowledge, methods, skills, tools and techniques to project activities to meet project requirements (Schwalbe, 2006; Wideman, 2002). Others define PM as the planning, organising, directing and controlling of company resources for a relatively

short-term objective that has been established to complete specific goals and objectives (Kerzner, 2003).

In the PM discourse there are different guiding techniques provided by PM professional institutions such as PMI in America and IPMA (International Project Management Association) in Europe (Linde & Linderoth, 2006). PMI provides a Project Management Body of Knowledge (PMBOK) Guide, a *de facto* standard in PM (Wideman, 2002). The PMBoK Guide is, in most cases, mistaken for a methodology. A guide simply provides a direction on how to handle situations, while as a methodology is supposed to contain the how tos to project practitioners (Charvat, 2003; Wideman, 2002).

2.3.1 A brief history of Project Management

PM is as old as history itself. However, it has evolved through the years since the days of the Great Wall of China and the Egyptian pyramid construction. The present form of PM can be traced back to 1950s, after the Second World War through to the Cold War era. During these eras, the Gantt charts, Pert Charts and the Critical Path Methodology (CPM) and several other tools were developed (Stretton, 2007). The tools and in turn Project Management, were developed to fire fight inefficiencies in the schedule, resources and quality of project outcomes. Due to this there has not been a chance to study projects for the purposes of documenting what takes place within them so as to devise a better and comprehensive way of managing projects. PM has, therefore, always been a fire fighting business through the years. This might explain why to-date researchers are struggling to find a breakthrough in solving the unending project failure incidences.

2.3.2 A brief discussion of Project Management methodologies

There are a few PM methodologies available to the PM practice. According to literature the methodologies include the Rational Unified Process (RUP), **PR**ojects **IN** Controlled Environments, version 2 (PRINCE2), the waterfall approach, Solutions-based Project Management Methodology, Ten Step and Project Management body of knowledge (PMBOK) (Wideman, 2002; Charvat, 2003). However, RUP and waterfall are arguably software development methodologies. PMBOK is arguably a guide to Project Management and not a PM methodology. PRINCE2 is the only true Project Management methodology (Charvat, 2003; Wideman, 2002). PRINCE2 and RUP map very well into the PMBoK standards (Siegelau, 2004).

PMBok and PRINCE2 as a guide and a methodology respectively are briefly discussed in the ensuing sub-sections.

2.3.2.1 *PMBok guide and its knowledge areas*

The PMBoK Guide places emphasis on the use of several tools and techniques in managing projects. In general, the emphasis is on managing different knowledge areas for a project to yield success. As presented in the PMBoK guide, the knowledge areas together with their various tasks and deliverables can be seen in Table 2.2. The knowledge areas provide practitioners with what literature calls key competencies (PMI, 2004; Schwalbe, 2006).

There are nine PM knowledge areas. Figure 2.2 depicts the knowledge areas presumed necessary for project success. Four of the nine knowledge areas are core, while the rest are facilitating. The core knowledge areas are (1) Scope management (2) Time Management (3) Cost management and (4) Quality management. The facilitating knowledge areas include (1) Human resource management (2) Communication management (3) Risk management and (4) Procurement management. The ninth knowledge area is Integration Management and it integrates all the eight knowledge areas in the project (Marchewka, 2003; PMI, 2004, 2005; Schwalbe, 2006).

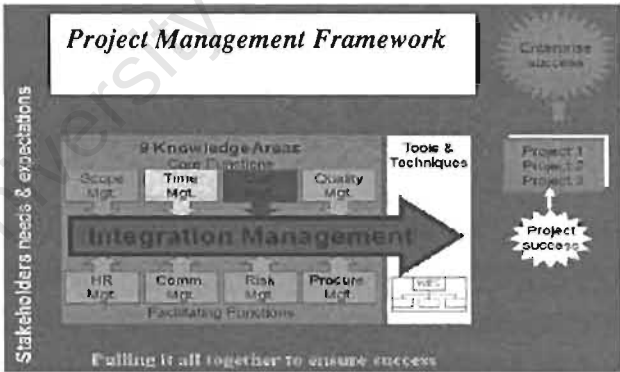


Figure 2.2: The PM Framework, showing knowledge areas (Source: Shawalbe, 2006 p 9)

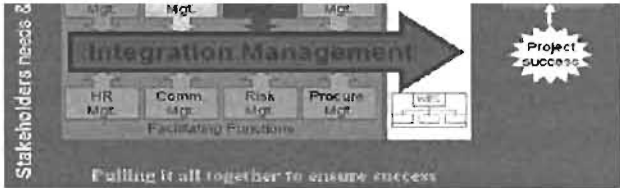


Figure 2.2: The PM Framework, showing knowledge areas (Source: Shawalbe, 2006 p 9)

The knowledge areas alongside tasks carried out while managing each knowledge area and expected deliverable(s) are listed in Table 2.1.

Table 2.1: A summary of the knowledge areas, tasks and deliverables (Source: PMI, 2004).

Knowledge area	Tasks and deliverables
Project scope management	Scope planning Scope definition Work breakdown structure creation Scope verification Scope control Business case development
Project time management	Activity definition Activity sequencing Activity resource estimation Activity duration estimation Schedule development Schedule control
Project cost management	Cost estimation Cost budgeting Cost control
Project quality management	Quality planning Performing quality assurance Performing quality control Performing quality audits
Project Human Resource management	Plan for human resource Acquire Project team Develop Project team Manage Project team Motivate the project team
Project Communications management	Communications planning Information distribution Performance reporting Stakeholders' management Reports preparation and presentation
Project Risk management	Risk management planning Risk identification Qualitative risk analyses Quantitative risk analyses Risk response planning Risk monitoring and control
Project Procurement management	Resource purchases and acquisitions Plan contracting Sellers response requests Sellers selection Contract administration Contract closure
Project Integration management	Develop project charter Develop project scope statement Develop Project Management plan Direct and manage project execution Monitor and control project work Integrated change control Close the project

Project integration management coordinates all the eight knowledge areas discussed in the preceding paragraphs throughout the project's life cycle. In essence, this encourages PM not to look at the project in isolation, but rather at the big picture of the entire project organisation.

Integration management involves making choices as to where to concentrate resources and efforts on any given time in the life of the project.

2.3.2.2 *PRojects IN Controlled Environments, version 2*

PRINCE2 is an acronym standing for **PR**ojects **IN** Controlled **E**nvironments, version 2. It is a highly structured and process-based PM methodology which was originally a *de facto* standard for the United Kingdom (UK) government IS projects. The methodology has since been standardised to be followed in managing all types of projects including non-IS projects (Great Britain. OGC, 2002; Huijbers, Lemmens, Senders, Simons, Spaan, van Tilburg et al, 2004; Larsen, Pedersen & Andersen, 2006; Nogeste, 2005; Wideman, 2002). The methodology is believed to be flexible, adaptable and scalable. It combines best practices from various industries, departments and backgrounds and as that it is suitable for managing all types of projects (Great Britain OGC, 2005; Griffiths et al., 2000; Larsen et al., 2006).

The underlying principle of PRINCE2 is that a project should have an organised start, middle and end as well as visible controls in order for a project to succeed (Griffiths et al, 2000; Wideman, 2002).

PRINCE2 has a number of features and concepts considered fundamental for bringing together the structured PM imperatives for the success of a project. These features and concepts include:

1. Strict focus on business justification;
2. Emphasis on organisational structure;
3. Emphasis on dividing the project into manageable and controllable stages;
4. Emphasis on delivering a quality outcome;
5. Emphasis on product-based planning approach;
6. Emphasis on documenting lessons learned during the project period ;and
7. Emphasis on risk management.

Strict focus on business justification

PRINCE2 recommends that a project should not be started without a satisfactory business case. A business case is a document that justifies a need for a project, outlines cost (both monetary and other resources) and timeline estimates for the project (see Appendix F for a business case template). A business case also outlines anticipated risks and procedures on how to manage these risks. This document is dynamic; hence it is revisited at every decision point as the project

progresses. If a business case becomes invalid, it is either revised or the project is discontinued (Great Britain OGC, 2005; Griffiths et al., 2000; Wideman, 2002; Spence, 2006).

Emphasis on organisational structure

A clear project organisational structure is mandatory in PRINCE2. The structure makes reporting lines clear to the project team. When reporting lines are clear, it becomes easy to control and manage the project so that it can easily meet its objectives. It also defines the roles of the Project Sponsor and the Project Board (PB) in order to anchor the evolving project definition to the business needs of the sponsoring organisation (Great Britain, OGC, 2005; Morris & Jamieson, 2003).

PRINCE2 ensures that tolerance levels are predefined to provide a Project Manager with automatic management control for deviations from the agreed upon project plans. The Project Manager, who works under delegated authority from the PB, manages the day-to-day activities of a project throughout project's life span (Griffiths et al., 2000; Larsen et al., 2006; Wideman, 2002).

Emphasis on dividing the project into manageable and controllable stages

According to PRINCE2, being able to control a project is key to the success of a project. The methodology, therefore, places emphasis on dividing projects into small, manageable and controllable stages, consequently making it easy to control and manage the entire project as well as to review its progress (Huijbers et al., 2004; Jenkins, 2005; Spence, 2006). PRINCE2 requires that activities to be carried out at each stage are specified and that actors responsible for lined-up activities are assigned (Great Britain, OGC 2005; Griffiths et al, 2000; Jenkins, 2005; Larsen et al, 2006; Wideman, 2002).

Emphasis on delivering a quality outcome

In PRINCE2, quality criteria is pre-determined and agreed upon by all stakeholders during project planning to ensure that project outcomes meet customers' expectations of quality products. Quality is tracked by the use and maintenance of a quality log, quality reviews and a project quality plan. Quality reviews are carried out at every decision point by comparing the quality log and the quality plan (Huijbers et al., 2004; Spence, 2006).

Emphasis on product-based planning approach

In PRINCE2 planning is crucial to the delivery of quality deliverables on schedule using budgeted resources. All processes, including 'closing a project' are planned before they are executed. The methodology believes that 'failing to plan is planning to fail'. Various planning documents are compiled. The PB and the Project Manager keep referring to these documents as the project progresses (Great Britain, OGC, 2005; Huijbers et al., 2004).

Emphasis on documenting lessons learned during the project period

Every project leaves the project team with different experiences. Therefore, it is necessary for the team to document these experiences to enable other people in the organisation to learn from them (the experiences) These experiences are captured in a Lessons Learned Log and are compiled into a Lessons Learned Report at the end of the project (Huijbers et al., 2004; Spence, 2006).

Emphasis on risk management

"A risk is an event that, if it occurs, may have a positive or negative effect on a project" (Schwalbe, 2006, pp. 49). PRINCE2 recommends a number of steps to be carried out in order to identify, measure and manage risks so as to minimise possible negative impact on the project (Spence, 2006).

2.4 Project Success

A report published by the Standish Group in 1994 indicated that only 16% of IS projects were successful. In 2006, 12 years later, another report by the same group indicated that only 35% of IS projects were successful (Hass, 2007). These rates are not satisfactory and have sparked different opinions (Shenhar et al., 2001; Standing et al., 2006; Veraart, 2002). The differing viewpoints are significant in the body of knowledge on project success.

The body of knowledge on project success has developed into two schools of thought (see Figure 2.3) which seem to agree that failure in IS projects is prevalent. One school of thought holds that IS project failure is inevitable; therefore, nothing can be done about it (Cale & Curley, 1987; Mahaney & Lederer, 2006; McManus & Wood-Harper, 2003). The other school of thought posits that there is a need to find ways and means of redressing the project failures (Standing et al., 2006; Veraart, 2002; White & Fortune, 2002).

As can be seen in Figure 2.3, the school of thought advocating finding solutions to project failure is further split into three groups based on what they believe to be the causes of failure and consequently the possible solution to the problem. The first group believes that the problem lies more on how success is measured and reported. They argue that project success means different things to different project stakeholders: therefore, the failure rates cited may not reflect the reality on the ground (Shenhar et al., 2001; White & Fortune, 2002). This group proposes that a solution to improve the success rate statistics is by having several *dimensions* of project success (see Table 2.2) -coupled with measures for each dimension (Collin & Baccarini, 2004; Shenhar et al., 2001).

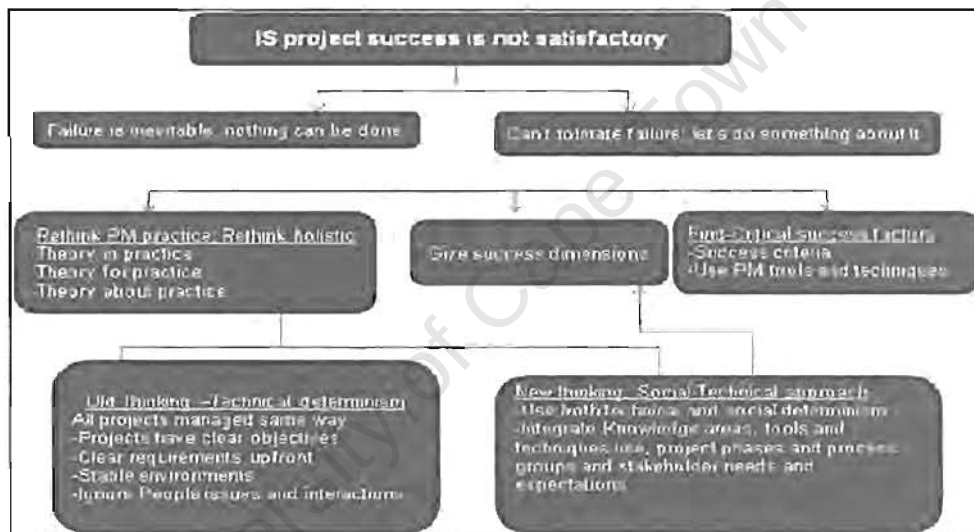


Figure 2.3: A summary of research findings into project success

The second group believes that failure may be reduced if practitioners direct their efforts in managing projects by capitalising on project *critical success factors* (Flood, 2006; Karlsen et al., 2006). The third group suggests an overhaul of the PM practice arguing that the current PM practices negatively impacts on project success (Charval, 2003; Crawford et al., 2003; Leybourne, 2007; Neal, 1995; Winter, Andersen, Elvin, & Levene, 2006b). The third group's suggestion is based on the fact that although much as the first two groups' efforts have assisted practitioners to understand the underpinnings of PM, success rates have not reached satisfactory levels yet (Koppensteiner & Udo, 2003; Nienaber & Cloete, 2003; Standing et al., 2006; Veraart, 2002). This third group, therefore, calls for researchers and practitioners to rethink PM in order to come up with theories *about*, *for*, and *in* practice for Project Management so as to improve project success

(Winter et al., 2006b). This research study is one of the rethink efforts. A discussion of the viewpoints, the schools of thought and the groups on project success has been provided in turn in the ensuing sub-sections.

2.4.1 Project success dimensions

Most current textbooks on project success indicate that a project is successful if it satisfies the triple constraint (delivering the specified scope, on-time and on-budget) (The Standish Group, 2004). From the definition of a project provided in Section 2.2, it can be concluded that it (the project) has multiple stakeholders whose thoughts and emotions express themselves in the project organisation and environment. Therefore, it may not be correct to insinuate that all the stakeholders would consider a project as successful if it delivers according to the triple constraint. Customers, for instance, might consider a project successful if it offers what they want at the time of delivery, which may not necessarily be what was specified at the beginning of the project (Neal, 1995). On the other hand, those in charge of finances might consider a project successful if it delivers the outcome within budget (Shenhar et al., 2001). Technicians might consider a project successful if it demonstrates technical functionality, while a Chief Executive Officer (CEO) might consider a project success either if it increases the market share or produces a new and competitive product line (Collins & Baccarini, 2004). It can be argued, therefore, that project success cannot be confined to the project meeting the triple constraint, rather success should have dimensions and related measures (Collins & Baccarini, 2004; Shenhar et al., 2001). However, Icmeli-Tukel and Rom (2001) and Atkinson (1999) argue that the success measures to be used when determining the project outcome (success or failure) have to be agreed upon by the stakeholders at the beginning of a project.

Typically, the suggested dimensions and measures are categorised into four: (1) Project efficiency; (2) Impact of the project on the customer; (3) Impact of the project on business success; and (4) Ability of the project to prepare customer for the future (Collins & Baccarini, 2004; Shenhar et al., 2001). Table 2.2 outlines the four success dimensions alongside their measures.

Table 2.2: Dimensions and measures of project success (Source: Shenhar et al., 2001)

Success Dimension	Success Measure
Project efficiency	• Meeting project schedule and budget goals.
Impact of project on the customer	• Meeting project's functional performance • Meeting technical specification • Fulfilling customer needs • Solving customer problems • Customer use of the project outcome • Customer overall satisfaction with the outcome
Impact of project on business success	• Project influencing commercial success • Project creating a large market share
Ability of project to prepare customer for the future	• Creation of new product line • Developing of new technology • Creation of new markets

The proponents of success being defined according to dimensions argue that if project success were measured by the indicated measures, more projects would be termed successful; hence a statistically higher reflection of project success rate than what is currently reported (Collins & Baccarini, 2004; Shenhar et al., 2001). Looking at textbooks and certification course material on projects and Project Management (Charvat, 2003; Kerzner, 2003; Marchewka, 2003; PMI, 2004; Schwalbe, 2006), it is clear that success dimensions as a way of measuring project success has not yet reached the mainstream PM bodies and institutions. The emphasis in the textbooks is still on measuring project success based on the triple constraint goals (Pollack, 2007).

2.4.2 Critical project success factors

Research studies directed at identifying project critical success factors as a means of improving project success contributed several different lists. Project success factors are aimed at equipping PM practitioners with factors on which they (practitioners) need to concentrate their efforts in managing projects towards success (Collins & Baccarini, 2004). A recent research study by Karlsen, Andersen, Birkely and Ødegård (2006) lists fourteen critical project success factors in order of importance as follows:-

- 1 Top management support;
- 2 End user involvement;
- 3 Clear project goal;
- 4 Good communication and feedback from involved parties;
- 5 Clear responsibilities; Leadership and managerial skills of the project manager;
- 6 Availability of appropriate technology and expertise ;

- 7 Commitment to planning and control;
- 8 Ability to handle unexpected crises and deviations from plan;
- 9 Realistic planning; Stakeholder agreement on project direction and quality;
- 10 Agreement on how to measure project success;
- 11 Conductive organisational climate;
- 12 Diverse and synergistic project team;
- 13 Organisational adaptability; and
- 14 Project exclusivity, importance and public exposure.

Research on critical project success factors has been going on for years and the findings seem to have found their way from the research community to the practitioners. In addition to the success factors, PM institutions have prescribed guidelines for managing projects towards success. Project Management guidelines seem to be the basic starting point for PM competencies that are allegedly blueprints for project success although success is not that visible despite the guidelines being widely adopted (Mpazanje, Brown & Sewchurran, 2008). However, project success across industries is still unsatisfactory (Flood, 2006).

2.4.3 Overhaul and rethink the PM practice

Based on the different views, it can be seen that current traditional PM approaches and practices are allegedly not adequate to improve IS project success hence the call for an overhaul. The traditional PM views advocate a techno-centric worldview as an ideal way of managing projects towards success (Leybourne, 2007; Pollack, 2007; Winter et al., 2006a; Winch, 2004; Crawford et al., 2003; Tatnall & Gilding, 1999; Yeo, 1993). This techno-centric worldview portrays the image of a PM process as being rational, universal, instrumental and deterministic (Checkland, 1989; Cicmil & Hogson, 2006; Morris, 2002; Winch, 2004; Yeo, 1993). This might be true for simple projects, but not for complex ones such as most IS projects (Morris, 2002; Winch, 2004; Yeo, 1993). Apart from not being able to deal with complex projects successfully, this worldview does not place any emphasis on dealing with different stakeholder perspectives and interactions in a project network (Crawford et al., 2003).

As an alternative to the traditional PM approaches, there is a new wave of literature advocating a “social deterministic” approach to PM, claiming that it improves project success (Winch, 2004; Yeo, 1993). The social-centric worldview promotes taking on board interests of different stakeholders in a project network, however, it ignores the ‘hard’ side of the project realities (Crawford et al., 2003; Pollack, 2007; Yeo, 1993).

Both the traditional and the social deterministic approaches prescribe a binary approach to managing IS projects i.e. either in adopting the hard systems thinking approach or the social deterministic approach. Either of these approaches takes a deterministic as well as a simplistic view of project activities (Linde & Linderoth, 2006; Tatnall & Gilding, 1999). Presenting practitioners with these one-sided views may lead to a partial understanding and appreciation of the bigger picture of a project network (Nocker, 2006) but may not at all lead to the desired improvements. To fully understand and appreciate an IS project process and network, it might be important to overhaul the traditional PM practices and explore and describe the project process that emerge as practitioners strive towards attaining objectives. The description that this thesis provides may be a guide towards the necessary rethink of the PM practice.

A project network is comprised of different actors, both human and non-human (Tatnall & Gilding, 1999), whose interactions may reshape project objectives (Linde & Linderoth, 2006; Nocker, 2006). It might, therefore, not suffice to prescribe either the traditional approach which is techno-centric or the socio-centric social deterministic approach as a means of managing IS projects towards success (Charvat, 2003; Leybourne, 2007; Tatnall & Gilding, 1999). Influences and shortcomings of techno- and socio-centrism are discussed in Section 2.5.

Projects in general, and IS projects in particular, are a temporary organisation network that involving both technical and social aspects. It is, therefore, important to discuss what social and technical determinism entails. As discussed in the previous sections, it is acknowledged that research into IS projects has concentrated on the technical side as a means of understanding the heavily documented failures in IS projects. A new wave of thinking is now leaning towards concentrating on the social aspects of IS projects as determinants of IS project outcomes. Although the efforts taken thus far are acknowledged, the two centricisms may result in a poor understanding of an IS project process due to their binary approaches (Latour, 1999).

2.5 Social and technical determinism

In the primary instance, any information system is viewed as a technical system with social consequences. Problems emanating from information systems, inclusive of IS projects were, therefore, looked at as technical problems whose solutions would be found if sophisticated technologies (e.g. too deterministic tools, techniques, methods, models and principles) were employed (Nijland, 2004). As the IS field progresses through time and space, not all information

systems are believed to be technical systems with social consequences, rather they are, more than before, regarded as 'social systems that are technically implemented' (Nijland, 2004, p. 36).

Many researchers consider an information system as a social construction since its existence depends on social institutions like language, the legitimacy and control of power, social influences and other norms of behaviour (Hirschheim & Klein, 1989; Burns & Lotriet, 2007). IS projects are equally perceived as those which in essence claim that all technological solutions are social solutions. Although the new wave of thinking acknowledges the social complexities in IS projects, mainstream literature on the subject continues to portray them as a one-dimensional, technologically complex issue (Cicmil, Williams, Thomas & Hodgson, 2006; Nijland, 2004).

This section discusses the difference between the social and the technical dimensions of information systems. The discussion brings in theories such as technical determinism, social shaping, social determinism and socio-technical and social construction of technology. The theories are briefly discussed using Knights and Murray's 1994 views on their underlying assumptions and how they relate.

2.5.1 Technological and social determinism

The most prevalent concern in IS project outcomes and research is about which methodologies, tools and techniques yield success. This concern is based on technological determinism (Linderoth & Pellegrino, 2005). This usually measures the correlation between the use of the methodologies, tools, techniques, models principles and project organisational structures on the one hand, and project outcomes on the other. Such a mentality leads practitioners attributing solely to technology whatever outcome an IS project might bring. These sentiments imply that project organisation structure, management performance, and consequently, project performance and whatever behaviours are displayed in the project are by and large determined by technology applications (Nijland, 2004).

Technological determinism claims that technology makes enterprises more effective, flexible and adaptable, consequently making them less hierarchical and more democratic. Technological determinism is criticised for its naivety in according agency to technology only whilst ignoring issues of power (Knights & Murray, 1994).

In contrast to technical determinism, social determinism stresses the human element in the technology itself. This asserts that “physical objects constituting technology are meaningless outside of human activity and the knowledge associated with them”. (Nijland, 2004, p. 38). According to social determinism, IS Projects are not neutral and are to an extent political. For instance, some accounting principles may not be adopted due to social pressures surrounding the profession and not necessarily because the techniques (technology) are challenging (Carpenter & Feroz, 2001). Social determinism claims that all technological influences encountered in IS projects are guided by the powers that may be, that serve some kind of interests (Nijland, 2004).

2.5.2 Socio-technical approach and social construction of technology

A socio-technical approach balances technical and social determinism. The approach perceives outcomes and processes of IS projects as depending on both social and technical factors surrounding the project network. ‘Within IS research, a socio-technical approach is an attempt to understand the notion of ‘information systems’ not only as technology, but to include the idea of social practices as well’ (Nijland, 2004, p. 39).

Although the socio-technical approaches acknowledge both a social and technical side in IS projects, they are viewed from a realist paradigm i.e. they look at both views (social and technical) independently. They fail to bring on board negotiations and interactions that take place among different actors in a project.

The social construction of technology approach to IS projects privileges neither the social (e.g. social determinism) nor the technical (technical determinism) approached. It allows for equal co-existence of both human and non-human actors resulting in recognition and appreciation of heterogeneous networks (Law, 1992). The social construction of technology attributes success or failure of technological endeavours to both technological aspects and the interactions from human actors in their social context acting on the technology. Furthermore, IS projects’ objectives continue to be (re)shaped as the interaction among actants, both human and non-human progresses (Bijker, Hughes & Pinch, 1987).

Emphasising the importance of social construction of technology approach, Latour (1999, p.198) indicates that:

Society is constructed, but not socially constructed. Humans, for millions of years, have extended their social relations to other actants with which, with whom, they have swapped many properties, and with which, with whom, they formed collectives.

Latour (1999) emphasises the need for more consideration for the influence of non-human actors (technical) in human action, because 'humans are no longer by themselves' (1999 p.190). When the human and the non-human actors interact, the result is a property of neither the technical nor the social, but rather of the association of the two (Latour, 1999).

To illustrate that the result is not inherent of characteristics from a single type of the associating actors, Latour uses two conflicting expressions: 'Guns kill people' and 'Guns do not kill people, but people kill people'. The argument here is that neither the sole properties of the gun, nor inherent bad qualities in the personalities of people are responsible for the action of killing; rather it is the association of the gun and the person which together become responsible the action of killing (Latour, 1999).

Another example given by Latour to illustrate the duality of existing networks such as project organisations is that of a social action or intention being delegated to technical artefacts. For instance, instead of traffic officers asking drivers to slow down to avoid endangering pedestrians, speed bumps are delegated to do the job. Drivers slow down upon seeing speed bumps, however, not to avoid endangering pedestrians but rather with a different translation of the speed bump: to protect the suspensions of their vehicles (Latour, 1999). Delegated actions, such as the one from a traffic officer to a speed bump, are present in all non-human actors around. Latour (1999, p.189) alludes to that when he declares, 'I live in the midst of technical delegates; I am folded into non-humans'. Thus, the ontological belief is that reality is neither technologically determined nor socially constructed; rather it is a collection of resultant associations among human and non-human actors in a heterogeneous network.

This discussion forms the basis for an argument that perhaps the fight against IS project failures started on a weak footing: practitioners and researchers have not invested in understanding and describing the project process with an understanding that a project network is heterogeneous. It is comprised of different actors both human and non-human and it is, therefore, important to privilege neither technical nor social, but rather to accommodate and acknowledge the heterogeneity in IS project networks (Latour, 2005; Tatnall & Gilding, 1999). The investigation of

the processes of a project network in its totality is a feasible starting point towards an understanding how a project may attain its objectives.

With the understanding that a project network is comprised of various actors (human and non-human), ANT would be a recommended tool to help explore and describe the as-lived experiences in a project network (Linde & Linderoth, 2006). The results from such a study would, hopefully, better assist in prescribing feasible PM approaches. ANT is concerned with studying the mechanics of power occurring through the construction and maintenance of networks of human and non-human actors (Latour, 2005). ANT denies that purely technical (traditional PM approach) or purely social (social determinism approach) relations are possible (Callon, 1997; Latour, 2005). Rather, it offers a 'notion of heterogeneity to describe projects' (Tatnall & Gilding, 1999, p. 957). The heterogeneity makes it possible to produce a socio-technical account of projects in which neither social nor technical positions are privileged (Latour, 2005; Law & Callon, 1988). ANT was developed to analyse situations where separation of the social from the technical elements may be difficult (Callon, 1997).

Using the lens of ANT will allow practitioners to understand that project outcomes are not dependent on a single actor's efforts. Rather, outcomes are a product of interactions and expectations of several actors (both human and non-human) that have different influences, (Blackburn, 2002; Linde & Linderoth, 2006). It can be argued, therefore, that the search for a solution to the problem of IS project failures has to start from understanding, a project process alongside its challenges and social space in order to move an IS project towards attaining its goals (Nocker, 2006). ANT is discussed and described further in Chapter 3.

2.6 Summary of the literature review

Although IS project success is subjective and contested, the tone in the arguments for and against project success is that generally, project success is unsatisfactory. Research on project success is divided into two initial schools of thought: (1) Failure is inevitable; therefore people need to learn to live with it. (2) There is a need to improve project success rates. This second school of thought is further split into three groups:

1. The high project failure rates are statistically prevalent because project success has no universal definition. This group argues that project success rates can be statistically improved if different dimensions of success are recognised;

2. The IS project success rates can be improved if PM directs effort towards critical project success factors. This group argues that capitalising on critical success factors may yield project success; and
3. Overhauling current PM practices and rethinking the practice. This group argues that the current PM practices encourage practitioners to adopt a technical deterministic approach in managing projects. This approach has not yielded enough success. It is, therefore, advocating a social-technical approach. This approach is equally simplistic although it balances both technical determinism and social determinism. It fails, however, to take on board interactions and negotiations by different actors in the project.

This research study is part of this rethinking being called for. The much documented IS project failures may be as a result of a poor understanding of the project process. The practice started prescribing technical deterministic approaches to managing projects as a fire fighting measure to combat failure before understanding and describing the project process fully. It is, therefore, difficult to prescribe a correct and workable solution to the failures until a project process is fully understood, appreciated and described. The project process and network may be understood by using social construction of technology theory which is very much in line with ANT. The summary brings the researcher to a research question alongside those simpler to investigate research questions listed in Chapter 1, Section 1.3

Chapter 3: The research approach - Actor-network theory

3.1 Introduction

This chapter describes a research approach based on ANT. ANT was pioneered by Bruno Latour, Michel Callon and John Law (Callon, 1986; Callon & Latour, 1981; Latour, 1987; Law, 1991). While many approaches to research in technological areas exclude the social, ANT proposes a socio-technical account in which neither the social nor the technical elements are privileged. ANT bridges the social-technical divide by denying that purely technical or purely social relations exist in isolation. It, therefore, advocates that the world is rich in hybrid entities in which both human and non-human actants interact and transact (Latour, 1993).

The rest of the chapter is organised as follows: Section 3.2 briefly describes three interpretive research approaches, namely grounded theory, structuration theory and finally Actor-network Theory. This description brings to light why ANT is the lens of choice in this study. Section 3.3 defines and describes ANT in detail while the three concepts of ANT: inscription, translation and irreversibility are discussed in Section 3.4, followed by a list and discussion of four moments of translation in Section 3.5. Section 3.6 lists some research studies that have used ANT to some extent, while Section 3.7 discusses some of the criticisms levied on ANT and finally, Section 3.8 summarises the chapter.

3.2 Approaches to conducting interpretive research studies

There are two common approaches for conducting interpretive research studies. These are Structuration Theory and Actor-network Theory (Walsham, 1995). There is a third approach that, although not exclusive to interpretive research, can be applied within the interpretivist framework referred to as Grounded Theory (Bryant, 2002). Grounded Theory is not a theory; rather it is a research approach that generates a theory from data by building on concepts which explain the phenomena under study. The resulting theory is expected to explain as well as describe the phenomena under study (Strauss & Corbin, 1990). Grounded Theory is not appropriate for this study since it is not well suited for tracing actors and their networks.

Structuration Theory focuses on individual actors or societal totality (Giddens, 1984; Johnston, 2001). The theory displays a social structure and actors as a duality, rather than as independent and

conflicting entities. This implies that the social structure constrains and/or enables the actions of human agents who draw on the existing structures to produce and reproduce the social structure (Giddens, 1984). Structuration Theory is not ideal for this study either because a project can be considered a network that is formed, established and finally disintegrated.

ANT, like Structuration Theory, acknowledges the relationships between actors and society. It, however, differs from Structuration Theory in that it places an equal emphasis on both the human and non-human actors in a network. It privileges neither the social nor the technical positions (Callon, 1986; Cordella, 2005; Cordella & Shaikh, 2006; Dunning-Lewis & Townson, 2004; Johnston, 2001; Latour, 1987; Tatnall & Gilding, 1999;). ANT is interested in the analysis of the interplay among various actors in a state where the symbolic boundary between human and non-human actors is in constant flux across a wide spectrum of activities (Walsham, 1997).

By not distinguishing between subject/object, culture/nature, or society/technology, ANT challenges some common epistemological convictions (William-Jones & Graham, 2003). The human and non-human actors (e.g. tools, techniques, artifacts, methodologies, methods, processes, institutions and corporations) are treated equally for analysis purposes. They are “actors” and can act and/or be acted upon (Tatnall & Gilding, 1999; William-Jones & Graham, 2003). It can thus be stated that ANT deals with the socio-techno divide by denying purely technical and purely social relations influencing an IS project objective (Tatnall & Gilding, 1999).

This study opted for ANT for both its ontological and the epistemological aims since it is most appropriate for realising the objective of this research. The theory fits well with the interrelated collection of actors such as PM body of knowledge guides, tools, techniques, artifacts, methodologies, sponsors, project managers, team members, stakeholders and users within the project organisation/network. ANT was, therefore, adopted to allow for a better understanding of the choice of the method of investigation in this study.

The chapter, therefore, describes in detail what ANT is and how it has been applied in IS research studies. This provides the reader with a background of how the theory is applicable in this research. The chapter is particularly relevant to IS researchers in that it provides them with some insight on how to use ANT in IS project research studies.

3.3 Actor-network Theory

Actor-network theory, also known as the sociology of translations, was pioneered in an attempt to explain and interpret social and technological developments. The theory was later extended, and developed again, by the original founders and other researchers (e.g. Latour, 1999; Law, 1991; Law, 1994; Law & Hassard, 1999). ANT attempts to facilitate an understanding of the construction and transformation of networks made of heterogeneous elements relating to each other. The heterogeneous elements referred to as actors or actants could be human or non-human such as organisations, agents, machines, artefacts and methodologies (Nijland, 2004).

In sociological terms an actor is any “discrete individual, corporate or collective social units” (Wasserman & Faust 1994, pp17). In ANT terms, an actor is *whatever* acts, makes action shift or is acted upon by another (Latour, 1992). An actor directs and redirects action while at the same time pushing for its own interests. A basic assumption of ANT is that actors do not define themselves, but are defined solely on the basis of the relations to other actors in the network (Tatnall & Gilding, 1999). Anything can be an actor as long as it initiates action or action is acted upon it. Results of interactions in a heterogeneous network can equally be regarded as an actor (Nijland, 2004).

An actor can itself also represent an actor-network. In studying actor-networks, therefore, it is imperative to scope the network so that a decision is made as to which set of actors should be studied as a unit and in what size, and which ones should be studied as individual actors. An actor that represents a network, but is dealt with as a single unit in the network, is said to have black-box effects. That is, from the outside it seems as a single unit while inside there is a network that strengthens it. Law (1992) refers to the black-boxes as punctualised actors. Dealing with back-boxes minimises opposition and/or alternatives in an actor-network (Monteiro, 2000).

There are five strategies that a punctualised actor may use to enrol other actors to have the black-box created. These strategies are summarised by Latour (1987, p. 108-121) as

1. “to appeal to the other’s explicit interests (I want what you want)”;
2. “to get the others to follow our interests (You want what I want)”;
3. “to suggest a short detour (I will take care of your interests, if you follow me)”;

4. “to reshuffle interests and goals by tactics such as inventing new goals and inventing new groups (We all want this)”; and
5. “by becoming indispensable to the others (You need me to get what you want)”.

A network is “a group of unspecified relationships among entities of which the nature itself is undetermined” (Callon, 1993, p. 3). An actor-network comes into being when human and non-human actors interact and produce some result of some kind (Callon & Latour, 1981). When an Actor-network moves through time and space without changing its properties, it is considered to be irreversible, implying that the network has been strengthened (Walsham, 1997). The concept of irreversibility will be discussed later in the chapter.

An actor-network is the action tied together with all its interacting elements, thereby forming a network (Mähring, Holmström, Keil & Montealegre, 2004). Day-to-day activities are affected by a number of factors. For instance, a tailor may be influenced by their tailoring training, experience, the target market, the type, age and speed of the sewing machine being used and probably the accessories that have to go with the product being sewn. All of these may affect the way the tailor acts. Anything done is influenced by interactions of a wide range of elements. The action and the influencing factors should be considered as one package and entity (Mähring et al., 2004). This describes what an actor-network accomplishes.

ANT facilitates understanding of how actor-networks emerge, get maintained and compete with each other. Using ANT researchers easily learn how actors in networks form alliances and enrol other actors into such alliances (Mähring et al., 2004; Nijland, 2004). ANT is concerned with the sociology of science, the principle of generalised symmetry, where neither the technical nor the social are privileged (Latour, 1987).

ANT considers both human and non-human elements of entities as actors or actants and that these elements are formed by different associations and alliances in heterogeneous networks (Callon, 1986; Latour, 1987; Nijland, 2004). The theory, as already discussed in Chapter 2, avoids technical determinism as well as social reductionism (Monteiro, 2000). ANT utilises three methodological principles to avoid prioritising one set of heterogeneous actors (Law, 1999; Nijland, 2004). These principles are: (1) generalised agnosticism, (2) generalised symmetry and (3) free association.

1. Generalised agnosticism proposes that whoever is trying to understand the heterogeneous networks should avoid either censoring or judging actors in any way until they (the actors) prove for themselves what they are capable or incapable of achieving;

2. Generalised symmetry recommends that a single register or repertoire has to be used when describing the heterogeneous elements of an actor-network; and
3. Free association proposes no prejudices from previous differences among heterogeneous elements are allowed.

Analytically, a perspective of ANT is that even people are what they are because of their various interactions with the environment in which they exist. They do not exist in a vacuum. They are influenced by historical, political, social as well as technical elements in their lives and environments. Lecturers, for example, deliver lectures because of their earlier involvement in education, their other heterogeneous relations with teaching resources (e.g. books, computers, the internet, classrooms, desks, telephones/cell phones), their knowledge, their lecturers and their colleagues (Nijland, 2004).

In PM, an actor-network ties together technical and non-technical elements of IS projects i.e. a tailor's sewing is influenced not only by the sewing machine's capacity, but also by the tailoring training, the experience the tailor has acquired as well as the target market. ANT is interested in the heterogeneous nature of actor-networks such as IS projects (Mähring et al., 2004).

ANT is semiotic in nature and it grants all entities of heterogeneous networks the same explanatory status without having to privilege one group from the other (Mähring et al., 2004). ANT may be applied to "settings, machines, bodies, and programming languages as well as text" since semiotics is not limited to one particular homogeneous entity in the network (Akrich & Latour, 1992, p. 259). Due to the facts outlined above, ANT is well suited for both the essence and epistemology of this study since the study deals with temporary organisations in the form of IS projects, reminiscent of entities having heterogeneous elements (Vaagaasar, 2006).

This study is focused on understanding the as-lived experience of an IS project. ANT is an effective tool for understanding the influences by both the social and the technical environments which continuously interact with each other in IS projects. In IS projects the environment may include such factors as artefacts; methodologies such as RUP, PRINCE2; PM guides such as the PMBoK and the APMBok (Association of Project Management Body of Knowledge); the project itself and all other technical issues the project might provoke as it progresses. Between the social and the technical also comes the political environment that happens to influence the political support for the project, administrative inertia and the project's organisational objectives and values (Mpazanje et al., 2008; Ross & Staw, 1993; Staw & Ross, 1987).

A researcher using an ANT approach in an investigation would concentrate on issues of actor-network formation, tracing the human and non-human actors and alliances they build in the actor-network (Tatnall, 2000; Tatnall & Gilding, 1999). This study concentrated on the negotiations that allowed the project actor-networks to be initiated, the inscriptions that took place, and the translation moments that projects passed through and the methods used for each moment. The study also undertook to make sense of the enrolment processes of both human and non-human allies in the project actor-network. Considerations of technology characteristics were made, but only as resulting from association and interaction of allies in the project actor-networks studied.

3.4 Actor-network Theory concepts

ANT has three main concepts which are of particular importance to this study. These concepts are (1) inscription, (2) translation and (3) irreversibility. These concepts are discussed in the ensuing sub-sections.

3.4.1 Inscription

The concept of inscription which is emphasised by the works of Akrich (1992) and Akrich and Latour (1992) is defined in reference to the way technical artefacts are assumed to embody patterns of use (Akrich 1992). To define the concept of inscription, the following quote from Akrich (1992, p.208) may assist.

Designers thus define actors with specific tastes, competencies, motives, aspirations, political prejudices, and the rest, and they assume that morality, technology, science, and economy will evolve in particular ways. A large part of the work of innovators is that of "inscribing" this vision of (or prediction about) the world in the technical content of the new object. I will call the end product of this work a "script" or a "scenario." The technical realization of the innovator's beliefs about the relationship between an object and its surrounding actors is thus an attempt to predetermine the settings that users are asked to imagine... (Akrich, 1992, p. 208).

According to Mähring et al. (2004), inscriptions are informed by four aspects:

1. Identification of explicit anticipations/scenarios/objectives from which inscriptions start;
2. How these anticipations are inscribed to interest actants;
3. Focal actors who undertake the inscriptions; and
4. The strength of the inscriptions and their capability to form irreversible networks.

The concept of inscription suggests that an action is inscribed, grafted or hard-wired into an artefact. On the one hand, an artefact from a designer's perspective, might determine its own use.

On the other hand, the artefact is used flexibly as the user sees fit. Mpazanje et al. (2008) observed that the PMBoK guide was not followed religiously, rather it was adapted to suit the circumstances the project team was in. For instance, an artefact such as PRINCE2 brings to a project team templates determining its own use, however, a Project Manager may modify or do away with some of the templates to suit her purpose. Or a cooker designed with hobs determines its own use; however, some user may use the hobs for toasting bread, deviating from its intended use. The concept of inscription is used to describe the former i.e. how an artefact incorporates its intended use in its development and use of the resulting technology (Mähring et al., 2004).

In a project network, both human and non-human elements equally inscribe actions. Human elements in a IS project include the Project Manager, projected users of the project outcome and stakeholders of the project such as team members and project owners. Non-human actors may include PM methodologies, hardware, software, interfaces and Internet service providers (ISPs) (Vaagaasar, 2006).

Methodologies, whatever form they may take, are scripts which inscribe programs of action onto their users (Mähring et al., 2004). When programs of action are inscribed into a piece of technology or any artefact, the technology or the artefact becomes an actor since it imposes its inscribed program of action on its users (Mähring et al., 2004). Therefore, it can be said that artefacts such as PMBoK, RUP, PRINCE2 or any home grown methodology meant to be followed when progressing with projects are actors. A desired outcome of a project and documents such as the project charter, business case and project scope document also inscribe programs of action onto projected users (Akrich, 1992). They are, therefore, also considered actors in the project network.

3.4.2 Translation

Every actor-network seeks social order and stability. Social order and stability is brought about through continuous negotiations in order to have different interests in the actor-network aligned (Mähring et al., 2004). To *translate* is to re-interpret, re-present or appropriate, interests of other elements of the actor-network with one's own interests. Translation, therefore, implies that one and the same interest, expectation or anticipation is presented in different ways to different stakeholders such that it mobilises a more universal support (Vaagaasar, 2006; Mähring et al., 2004). The principle of translation is summarised by Vaagaasar (2006) in the following quote:

The principle of translation means that an actor can be assumed both to adopt an idea as it was intended, to translate it into something else than what was intended, or just to reject the idea. (Vaagaasar, 2006, p.34).

Interests of different actors may be conflicting; when this happens, the interests may be reinterpreted so that they become acceptable to, and legitimised, by more actors than before (Callon, 1991; Latour, 1998). For example, at a university, interests of the university administration may be to increase through-put and they may, therefore, be keen to ensure that students stay in the system the shortest time possible in their programme of study. In contrast to this, the interests of a departmental head may be to graduate only academically deserving students regardless of how long they may stay in the system. To harmonise the differing interests, the panel selecting students to be enrolled at the institution may have to admit only bright students. These students would be able to both score highly and graduate within the specified duration. In this way both the departmental head and the university administration shall have had their interests taken care of. Translation would, thus, have taken its course.

As interests become acceptable to more and more actors, new directions for the project objective emerge (Vaagaasar, 2006). Translation, therefore, refers to "the methods by which an actor enrolls others" (Callon, 1985, p. xvii). When interests are aligned, the actor-network formed becomes stable and durable. Translation creates relationships forming an extended actor-network. In essence, translation is aimed at bringing together complex entities to form a single entity that forms a taken-for-granted fact (Clarke 2001 as cited in Nijland, 2004).

A translation usually starts with scripts (media of inscriptions) "embodied in texts, machines, bodily skills which become their support, their more or less faithful executive" (Callon, 1991, p. 143). In PM these scripts include project mandate, business case, a PM methodology, a systems development methodology (if the project concerns systems development) and project objectives.

In an IS project, concerned with developing a system, the system design can be considered a translation where interests of users as well as of other stakeholders are inscribed into systems requirements and needs which would be satisfied by the solution-a system (Mähring et al., 2004). In the first place, the user/systems requirements inscribe programs of action into a systems designer/developer. The developer comes up with a system which in turn inscribes programmes of action into the system. The system inscribes its programs of action onto its users. Therefore, the users, the developers, designers and the system itself all become actors since they all inscribe programmes of action in a kind of loop (Latour, 1991).

Considering all the explanations on what translation is, it is apparent that translation is a creation of an actor-network (Callon, 1986). ANT helps in describing how actors involve other actors to form alliances and use non-human actors to strengthen such alliances to secure their (originating actors') interests. The process is known as *stages or moments of translations* (Law, 1992). There are four moments of translations: (1) *problematization*, (2) *interessement*, (3) *enrolment*, and (4) *mobilisation* (Linde & Linderroth, 2006; Tatnall & Gilding, 1999). The four moments of translation are discussed later in sub-section 3.4.

3.4.3 Irreversibility

Inscriptions can be followed or avoided. This signifies the strength of particular inscriptions. When the inscriptions are strong, the actor-networks in which the inscriptions exist become irreversible. The decision to avoid or follow an inscription, therefore, depends on its strength (Mähring et al., 2004). Irreversibility simply refers to the difficulty in making changes once an actor-network is established and strengthened. There may be a need for several alternative inscriptions before an actor-network becomes irreversible much like how it takes several alternative attempts before a business process or a work routine is accepted by employees and established in the business unit or organisation (Latour, 1991; Mähring et al., 2004).

The concept of irreversibility signifies how difficult it might be for an actor-network to go back to the state it was when the first inscription and translation were made. Irreversibility has, therefore, a spectrum i.e. a range and degrees. Irreversibility also depends on how translations have been shaped and reshaped in the process of forming the actor-network (Callon, 1987). In simple terms, irreversibility is resistance to change and the degree of irreversibility measures how much resistance to change is available as well as how strongly the heterogeneous elements of an actor-network connect to each other (Callon, 1987; Mähring et al., 2004).

3.5 Moments of translation

Moments of translation are comprised of four stages: (1) *problematization*, (2) *interessement*, (3) *enrolment*, and (4) *mobilisation* (Linde & Linderroth, 2006; Tatnall & Gilding, 1999). However, it is not a must that every translation passes through all the four. The process is iterative and may disintegrate or strengthen at any point in time since various interactions through time and space are in the hands of actors each of whom may react to situations in a different way (Callon, 1985; Latour, 2005).

3.5.1 Problematisation

In ANT a focal actor initiates the actor-network through *problematisation*. A focal actor is an initiating actor that intentionally starts, for instance, a change process of the status quo by defining interests that others may or may not share. In a project for example, the owner of the project tables the project idea and how they think the project would assist in solving some problem. The focal actor, attempts to create an alliance among relevant actants with a shared objective by formulating a question whose answer is of common interest to the identified actants (Linde & Linderoth, 2006).

The formulation of the question becomes the obligatory passage point (OPP) through which all of the actors involved are allowed to recognise that their involvement in the network is beneficial (Linde & Linderoth, 2006; Callon, 1986). The question formulation provides a vision broad enough to be translated by a wider spectrum of actors as a solution to a range of their problems. This first step is called “inter-definition of actors” (Callon, 1986). The second step involves the definition of the OPP in relation to the focal actor becoming an indispensable resource to the other actors and defining the latter’s problems, solutions, interests, identities and roles (Tatnall & Burgess, 2002; Tatnall & Gilding, 1999). Consequently, the focal or initiating actors establish themselves as an OPP for a tabled problem solution (Callon, 1986; Mähring et al., 2004).

3.5.2 Interessement

Interessement refers to actions which actors adopt in attempting to impose and stabilise the identity of the actants identified during problematisation (Callon, 1986.; Linde & Linderoth, 2006; Tatnall & Gilding, 1999). Interessement employs a variety of strategies and mechanisms in convincing actants to join the network.

The problem/question formulated to steer interest in actors to join the actor-network is translated into clear and convincing statements. The statements persuade potential actants to recognise some benefits they would reap through their involvement (Blackburn, 2002). In this stage the big task is to convince actants that by going ahead with the focal actors’ interests, their (actants’) interests are also taken care of. When need be, actants are incentivised for easy transition into the actor-network being formulated (Mähring et al., 2004). Interessement is said to be successful when problematisation and the alliance formed so far are validated and that the alliances are locked in

place in the actor-network. Should intersement succeed, actors are then enrolled (Callon, 1986; Latour, 1986).

3.5.3 Enrolment

In the enrolment stage, interrelated roles are defined and attributed to actors. An alliance of actors is thus created to pursue the objectives of the focal actor after the rest of the actors are convinced of the benefits they may reap from their involvement in the actor-network (Linde & Linderoth, 2006). Enrolment can only be achieved if an actor interposes itself between the target entity and the pre-existing associations with other entities that contribute to the actor's identity (Singleton & Michael, 1993).

Roles in the network are co-ordinated through multilateral negotiations and trials of strengths that enable actors to succeed or fall off along the way (Callon, 1996). Multilateral negotiations entail both the "capturing" of one actor and the "yielding" of the other to its defined role. When this happens, and the actor-network is stable, then enrolment is said to have taken place (Nijland, 2004; Singleton & Michael, 1993).

3.5.4 Mobilisation

In the mobilisation stage the network is represented by spokes agents authorised to speak legitimately for the rest of the actors; this "silences" actors who may want to speak. The strategy, therefore, ensures that the network is established and a successful translation is achieved (Linde & Linderoth, 2006). At this stage, spokes agents are given a set of guidelines and methods to follow in speaking on behalf of the actor-network. This is done to restrict the spokes-agents from speaking their own mind or even betraying the focal actors' interests and views (Mähring et al., 2004).

In this stage, the actor-network may be stabilised, if durable and tightly linked relationships are built which may later become institutionalised (Mähring et al., 2004). Once the network is established and strengthened, actors may be treated as "black boxes" (Latour, 2005). The degree of mobilisation determines whether or not a project would succeed towards attaining its goals (Stanforth, 2006).

3.6 Actor-network theory studies in the Information Systems field

ANT has gained ground in the IS field, and is being used in a wide range of research areas. ANT is mostly used as a lens for understanding the social interactions associated with IT (Walsham, 1997), and it is also used to interpret and understand political processes of IT implementation (e.g. Holmström & Stalder, 2001; Monteiro & Hepsø, 2000; Walsham & Sahay, 1999).

ANT is also used in technology adoption studies investigating success and failure of technology innovations and adoptions (Nijland, 2004). This is a deviation from the well-known adoption models such as Technology Acceptance Model (Davis, 1986), its predecessor, the Theory of Reasoned Action (Fishbein, 1967) and the theory of diffusion of innovation (Rogers, 1995). Table 3.1 summarises some of the research studies in which ANT was used.

Table 3.1: A sample of studies which have used ANT in one way or the other

Reference	Brief description
Tatnall, A. & Burgess, S. (2002, June 17 – 19). A conference paper.	An investigation of an Implementation of a B-B Portal for Regional SMEs in Melbourne, Australia
Stanforth, C. M. (2006).	An analysis of an E-Government implementation in developing countries ANT
Nijland, (2004). A PhD Thesis.	Understanding how organisations use IT evaluation methods
Vaagaasar, (2006). A PhD Thesis.	Using ANT to understand a technology development project that developed an emergency communication system for a railroad to be operated via a GSM-net
Callon, M. (1986). In M. Callon, and J. Law (Eds.).	ANT was used to explain the development of the electric vehicle by the Electricité de France
Latour, B. (1996	An analysis of a development of a revolutionary public transportation system referred to as Aramis
Monteiro, E. & Hanseth, O. (1995). In W. J. Orlikowski, G. Walsham, M. R. Jones & J. DeGross (Eds.).	Understanding the role of standards in EDI systems and information infrastructure
Silva, L. & Backhouse, J. (1997). In A. S. Lee, J. Liebenau & DeGross, J. I. (Eds.).	Used the concepts of ANT to explain the failure to institutionalise the London Ambulance Service information system

Some research studies which are not necessarily related to technology adoption or technology innovations have also been carried out using concepts that ANT advocates. A few of these research studies include Blackburn, 2002; Linde & Linderroth, 2006; Linderroth & Pellegrino, 2005; Nocker, 2006; and Parkin, 1996. However, other than the one by Vaagaasar (2006), the researcher has not found any study yet that has investigated or sought to understand the as lived experience of an IS

project using either ANT or any such theories. Based on the literature review by the researcher the research study in this thesis is so far the first.

3.7 Critiques on Actor-network theory and its limitations

There are a couple of criticisms levied at ANT, some of which are its failure to recognise and acknowledge social structures, lack of political analysis and poor capacity for explanations (Walsham, 1997). As already alluded to, the analytical view that human and non-human actors are on an equal footing does not auger well with some people. They feel they have been reduced to equal objects which in their view have neither agency nor usual qualities such as emotions which are important in human activity (Mutch, 2002).

Some critics are also not comfortable ascribing inscription capabilities to non-human actors. However, the criticism may be attributed to a poor understanding of ANT. ANT does not claim equality of human beings and non-human artefacts. Rather, it states that the heterogeneous elements could have equal influence in shaping action, therefore, they need to be treated *a priori* symmetrical. The symmetry is not in terms of reasoning capability; rather it is about influence on shaping action (Monteiro, 2000).

Walsham (1997), an advocate of Structuration Theory, criticises ANT for ignoring macro-social structures and concentrating on micro-social structures only. This is not entirely true because ANT does not ignore macro structures. ANT rests on the principle of generalised symmetry, meaning the tools used for micro-level structures should be applicable to macro-level structures as well, hence Latour sees no neglect (Latour, 1999; Latour, 2005).

Walsham (1997) criticises ANT's moral stance, arguing that it lacks insight concerning political viewpoints. He argues that additional political and ethical theories might be needed to understand case findings where ANT was used in data gathering and analysis. The observation might be true, however, ANT, it is argued is much more of a method for describing rather than explaining. According to its founding members, ANT was never intended "to explain the actor's behaviours and reasons, but only to find the procedures which render actors able to negotiate their ways through one another's world-building activity" (Latour, 1999, p. 20). It was meant to be a very crude method of learning from the actors without imposing any *a priori* capacities on them.

This study is aimed at understanding and describing as-lived experiences of IS projects. Explanations as to why things happen the way they do is left for future studies which might couple ANT with other capable theories. On the other hand, political viewpoints might be taken care of when dealing with the social of ANT, however, generalised symmetry plays a role in this as well and networks are formed from heterogeneous elements (Latour, 1991). These may even include political viewpoints.

3.8 Summary of the chapter

ANT, also known as sociology of translation, provides the research community with an approach that includes the technological and the social where the existence of purely technical or purely social relations is never believed. More convincing is a world full of heterogeneous entities containing both human and non-human elements (Latour, 1993). The theory has three main concepts, namely, inscription, translation and irreversibility. These concepts are used in tracing actor-networks. The theory is mature in the IS research community. It has been used to investigate and understand several phenomena in different research areas in the IS field. Important to the concept of translation are its four moments, namely problematisation, interessement, enrolment and mobilisation. These moments assist in shaping the outcomes of heterogeneous networks; a group to which IS projects seem to belong.

ANT is not without criticisms, just as are most other theories. ANT is criticised for its failure to recognise and acknowledge social structures, lack of political analysis and poor capacity for explanations (Walsham, 1997). It is also criticised for *a priori* equating human to non-human elements of networks. However, this research study has found ways of circumventing the criticisms. Some of the criticisms originate from a yearning for an all-encompassing theory, something that is a bit unrealistic to achieve. Other criticisms seem to originate from a misconception of what ANT has set out to achieve, e.g. it has not set out to explain behaviour.

Chapter 4: Research methodology

4.1 Introduction

This chapter outlines the research methodology employed in this study. A research methodology provides an overview of the step by step encounter in a research study, narrating the experiences of the researcher. Every research study is based on beliefs and assumptions about its nature, what it takes for that research to be valid, and what research methods are to be employed in order to achieve the objectives as well as the validity (Nijland, 2004).

A piece of advice from the proponents of ANT is to trace and follow the actors and allow them to form a framework which scopes the research study (Callon, 1986; Callon, 1991; Latour, 1996). As advised by Latour (1996), actors should announce a saturation point as what happens in an investigation in a murder mystery novel: Interviews are held with each of the identified actors, these initial interviews may reveal other directions and actors which the detective may follow thereafter. Some directions may direct the detective to other actors which might again point him to other actors and directions. This continues until a point where no direction is further pointed to and no actor is pointed at (Tatnall & Burgess, 2002). This research study was limited in time: the advice was, therefore, followed in part. In order to avoid having a difficult-to-manage case study, a decision was taken as to when to stop following the actors and pursuing the detection, especially when enough data was felt to have been gathered.

Based on the nature of the study and its philosophical foundation, an interpretive approach and a case study strategy were considered to be appropriate for this research. Two IS project cases drawn from two different cities in sub-Saharan Africa: Lilongwe, Malawi and Cape Town, South Africa were studied. Both cases were IS projects and involved the implementation of new information systems in an organisation. These cases were drawn from different contexts to demonstrate similarities in as-lived experiences in IS project processes across the board and to create a wide understanding of project practices in IS projects. ANT was used to understand the project processes.

Both cases involved an outsourcee and an outsourcer. The study was interested in investigating neither technology innovation nor adoption, nor did it discuss change dynamics brought about by technology implementation like most other research studies using ANT have done. Throughout the

thesis, the cases and the organisations involved are identified by anonyms for ethical reasons. Names identifying human actors are pseudonyms and not real names.

In this account of the research study, the two cases are fully described in Chapter 5. The first case is referred to as the *Tobacco Grower Registration System Project* while the second case described is referred to as the *Fuel Codes Systems Project*. The research objectives and the research questions are already outlined in Chapter 1: Section 1.3. This chapter proceeds with Section 4.2 outlining the philosophical assumptions adhered to in the research study. The research method is discussed in Section 4.3 and the research ethics and confidentiality adhered to are described in Section 4.4. Section 4.5 discusses the trustworthiness of the research results while the researcher's personal reflections, background, experiences and how she has grown along the way are discussed in Section 4.6. Hopefully this gives a reader more insight into the way this research was conducted for a better understanding of the results presented herein. Section 4.7 concludes the chapter with a summary.

4.2 Philosophical assumptions

The research objective and the research question (recall Chapter 1: Section 1.3) are based on some ontological, epistemological and methodological assumptions. The assumptions followed some philosophical questions which need to be answered so as to understand how human beings know what they know. Guba and Lincoln (1989, p. 83) indicate that the following questions have to be asked before conducting a research study:

1. The ontological questions: What is there that can be known? What is the nature of the truth?
2. The epistemological questions: What is the relationship between the knower and the known (or the knowable)? What kind of knowledge can be obtained and what are the limits of knowledge? and
3. The methodological questions: What are the ways of finding out knowledge? How can we go about finding out things?

Ontology explains beliefs about "physical and social reality, existence or being". Ontology deals with the "essence of the phenomenon" under investigation. It brings into perspective beliefs about "human *rationality*" and "social relations" (Orlikowski & Baroudi, 1991). For instance, if the phenomenon and its empirical world are assumed to be objective, they are also assumed to be independent of human beings' intervention. In contrast, if they are assumed to be subjective, then

they are assumed to exist only through the actions of human beings who create the phenomenon and the empirical world (Nijland, 2004). Often the researcher's ontological assumption emerges from literature review as well as from personal views about what constitutes a valid research study. Through these beliefs, what is there to be known shall have been found and the nature of the truth shall have been assumed as well.

Epistemology deals with the beliefs about the origin, nature and limits of "human knowledge". There has to be a search for the best set of criteria to be fulfilled in order to construct and evaluate knowledge claims. Common epistemological stances are perspectives that are positivist, critical and interpretive (Nijland, 2004). These stances are discussed in Section 4.3.2.

Methodology deals with research methods, approaches and techniques appropriate for gathering as well as analysing valid empirical evidence, i.e. it deals with the systems, rules and conduct of inquiry (Guba & Lincoln, 1989). Research approaches commonly used in IS research include laboratory experiments, field experiments, surveys, various types of case studies, action research and simulations (Galliers, 1991).

The choices with regard to these ontological, epistemological and methodological issues are numerous. A set of choices researchers make is the basic paradigm defined as "the most fundamental set of assumptions adopted by a professional community (such as the IS research community) which allow them to share similar perceptions and engage in common practices" (Hirschheim & Klein, 1989, p. 1201).

Making the underlying assumptions about a paradigm employed in a research explicit makes readers aware of the assumptions and beliefs a researcher may bring into the research. This explicitness also makes readers understand and appreciate the whole research process as well as the results that follow.

4.3 Research method

Details pertaining to the research method, paradigm, and strategy employed in this research study are described in the sub-sections that follow. Some methodological concerns are then expressed along with a brief timeline for the study.

4.3.1 Research purpose

The research purpose of this study was both exploratory and descriptive. The study was exploratory in that it sought to explore and understand the project process, actors (human and non-human) as well as interactions and associations among the various actors in an IS project network. The study also sought to explore how the actors, their associations and interactions influence attainment of project objectives. It also sought to explore how project practitioners define and measure project outcomes: success, failure or otherwise. The study was descriptive since it outlined and described an account of an IS project process and activities that take place among various actors (human and non-human).

4.3.2 Research paradigm

Research in the IS field can be categorised into three commonly used and dominant paradigms: According to Nijland (2004) and Orlikowski & Baroudi (1991),

1. Positivistic, which is at times referred to as conventional or scientific;
2. Critical; and
3. Interpretive, which is also likened to constructivist paradigm.

The three paradigms are common and dominant due to different understanding of what a research study is, as well as beliefs on what constitutes validity and value in a research study. It follows, therefore, that different researchers adopt different research paradigms and methods which they may consider appropriate for a particular research study (Myers, 1997; Orlikowski & Baroudi, 1991).

Each paradigm, while generating understanding and appreciation on the subject under investigation, has its own strengths and weaknesses. Opting for one set does not necessarily imply that the rest are wrong or weak, but rather that ontological, epistemological and the methodological questions surrounding the research study are best answered by applying the particular set employed. Moreover, a study may adopt multiple paradigms. A mixture of paradigms in a single research study brings new and creative solutions and insights (Benbasat & Weber, 1996; Hirschheim & Klein, 1989; Robey, 1996).

Positivistic research assumes that the world is made up of a vast array of objects which have objectives and measurable properties. Knowledge claims in this paradigm constitutes the pursuit

of defining and describing the objects and their predicate relationships. Results from positivistic research are assumed to be independent of the researcher (Myers, 1997; Tatnall & Gilding, 1999). Such a research relies on evidence of formal propositions, quantifiable measures of variables, hypotheses testing and drawing conclusions on inferences about a phenomenon from a representative sample of a target population (Orlikowski & Baroudi, 1991).

In a critical research, the main task is to *critique*, so that the restrictive and alienating conditions of the status quo are brought to light. Critical research is emancipatory since it assists in eliminating the causes of unwarranted alienation and domination. This enhances opportunities for realising human potential (Alvesson & Wilmott, 1992; Klein & Myers, 1999). This type of research assumes that people consciously act to change their social and economic conditions, although the conditions are constrained by various forms of social, cultural, resource limitations, natural laws and political influences (Klein & Myers, 1999).

An interpretive research presupposes that reality is a manifestation of social construction such as shared meanings, language, consciousness, documents, tools, symbols and other artefacts (Walsham, 2006). Interpretive research assists researchers to understand human thought and action in social and organisational contexts better than the other paradigms. This type of research has the potential of producing deep insights about a phenomenon under study (Klein & Myers, 1999). An interpretive research also leaves room for a more realistic outcome and multiple interpretations due to the subjective, rather than objective, outlook that it adopts (Kaplan & Maxwell, 1994; Orlikowski & Baroudi, 1991). As alluded to by Kaplan and Maxwell (1994, p.94):

Interpretive research does not predefine dependent and independent variables, but focuses on understanding the complexity of human sense making in situated contexts.

This study adopted an interpretive stance since it was aimed at understanding and making sense of different roles played by various actors in a project organisation in moving an IS project towards the attainment of its objective(s) or vision. An interpretive research helped to better understand the social construction within IS projects and how they influenced project outcomes. In addition, by focusing on the complexity of the various interactions in different networks in the project, some important situations emerged (Kaplan & Maxwell, 1994), revealing unanticipated findings. The research study was analysed interpretatively using ANT as a “lens” to see and understand the IS project phenomenon.

4.3.3 Research timeframe

The aim of the study was to understand how processes, actors, associations, interactions and activities would (re)shape or influence project objectives. The time horizon for this study was cross-sectional, as opposed to longitudinal. In this study, effects of time would not alter the results. Cross-sectional studies, in general, provide an opportunity to examine empirical material at one particular point in time which make delivery of the research results quicker than if a longitudinal research were to be adopted (Hendricks, 2005; Saunders et al., 2003). The nature of the programme of study, under which this research study was undertaken, was also a determining factor for this research to be cross-sectional: it has a limited time frame; a longitudinal study may not fit into the time scale of the study.

4.3.4 Research strategy

There are two mainly accepted data collection and analysis methods in research namely quantitative and qualitative. Quantitative methods are commonly used to study natural phenomena through instruments such as surveys, laboratory experiments and mathematical modelling (Myers & Avison, 2002). The study of social sciences in a natural setting involves several uncontrolled variables whose incorrect measurement may result in misleading outcomes (Cook & Campbell 1979; Manicas & Secord, 1983; Maxwell, Bashook & Sandlow, 1986; Myers & Avison, 2002).

Qualitative research methods refer to the kind of research that produces findings not obtained through statistics or other means of quantification. Qualitative research involves extracting quality data from moulds of data and interpreting it rather than quantifying it. This research method emphasises subjectivity rather than objectivity, context rather than content and flexibility in the process of conducting the research. It also displays an explicit recognition of the impact of the research process on the research situation among other issues (Cassell & Symon, 2004). Taking these characteristics of a qualitative research, and the objectives of this research study into consideration, a qualitative method is more feasible than a quantitative one. A qualitative method was, therefore, adopted.

Qualitative research studies can take different forms such as action research, ethnography and case study. Case study research is regarded as the most commonly used qualitative research approach in the IS field (Alavi & Carlson, 1992; Orlikowski & Baroudi, 1991). This is due to the fact that case study research approach is appropriate for studying organisational systems (Tatnall & Gilding,

1999) such as IS projects. In-depth case studies may be of value in identifying networks of power, focal actors, interpretations and problems involving various actors (Klein & Myers, 1999; Nyberg & Henfridsson, 2001; Walsham, 1995). Furthermore, the understanding obtained in case study research is through the meanings that are associated to the phenomenon by the actors. Case studies also allow for an extensive examination of the IS project network as a whole. The examination is facilitated by the use of a combination of various data collection techniques such as interviews, observations, group meetings, questionnaires and document and text analysis (Nyberg & Henfridsson, 2001).

Action research is a research strategy generally concerned with management of change, where change is implemented and its results assessed. Action research involves close collaboration between researchers and practitioners in the phenomenon being studied. Results flowing from an action research should be able to inform other contexts, not only the one studied (Saunders et al., 2003).

Case study type of research is not without critics just like the rest of research types (Trauth, 2001). It is criticised for taking too long to produce results. Results from case studies are also criticised for being massive documents which are often unreadable (Yin, 1994). This type of research is also criticised for lack of rigour, since it does not display statistical properties of what other researchers call a rigorous research (Yin, 1994). The criticism about rigour comes from researchers who attach rigour and validity to statistics.

Since the basis of this study required a rich context in which the IS project network would be understood better than before by readers, a case study type of research was most appropriate. Being aware of the criticisms normally leveled at a case study type of research, the researcher has provided all pieces of evidence pertaining to a finding and each finding has been fairly reported. Each case report was composed as soon as possible after interviews were completed for a particular case to avoid information decay. This ensured that each case was reported succinctly to avoid massive and unreadable documents.

4.3.5 Data gathering and analysis techniques

The primary data gathering technique was participant interviews using semi-structured questions. This allowed the researcher to get immersed into the project's social and organisational reality that various actors find themselves in (Klein & Myers, 1999; Marshall & Rossman, 1999). Probes were

employed to surface barriers, constraints, challenges, tools, techniques, methods and discourse that were encountered in the course of the project.

Interviews followed a similar interview schedule, although commensurate with the type and calibre of the informants under probe. Most interviews were audio recorded, save those whose participants refused to give consent for audio recording. In addition to audio recording the interviews, interview notes were taken as both a backup plan and a gesture to demonstrate an understanding and the value of the interviews. The notes assisted with the preparation of the follow-up probes which were used either for clarity or richness. Group interviews and observations were also employed in data gathering. Group interviews were an easy way of getting more respondents involved in sharing their experiences with the researcher in a relatively short period of time i.e. 3 hours and 20 minutes.

Project documents and artefacts related to all phases of the project were also examined. The aim was to understand some of the non-human actors and their influences and associations in the project network (Linde & Linderöth, 2006). Secondary sources of data such as articles, emails, websites and minutes for project-related meetings (Nocker, 2006) formed part of the data collected for this study.

Prior to data analysis, the interviews were transcribed to coherently describe each interview in order to capture all necessary details before information decay or loss. The researcher personally transcribed the interviews in order to allow for deeper understanding and reflection of the cases. In transcribing the interviews herself, the researcher had an opportunity to recall and capture issues that popped up through mannerisms, body language and meta-language. Data collection closely followed ANT principles and vocabulary, since ANT is an underpinning theory for this study.

4.3.6 The research instrument

Research studies that have been undertaken to understand some aspects of First World PM practice that used ANT were conducted either in the form of action research or case studies and used semi-structured interviews to collect data (Linde & Linderöth, 2006). In this research study, semi-structured interviews in case studies was the most appropriate research instrument since this research study leans towards the same pattern of the First World studies conducted earlier: seeking to probe and understand processes, activities and interactions among actors in an IS project network, (Cicmil, 2006; Cicmil et al., 2006; Linde & Linderöth, 2006; Saunders, 2003; Shenhar et

al., 2001). Semi-structured interviews were selected because they assisted in directing interviews as opposed to non-structured interviews, yet they also provided participants with enough freedom to express themselves fully (Saunders et al., 2003).

The interview schedule had five sections (see Appendix D):

1. Section A sought to capture demographic details of participants (see Table 4.1). The section assisted to set a friendly stage for the interview to establish some kind of relationship to allow for a good progress of the interview;
2. Section B captured details of the project being studied;
3. Section C detailed the project initiation;
4. Section D provided details of project execution; and
5. Section E encouraged informants to discuss details of the project closure process if the project was closed and/or project envisioned outcomes.

Table 4.1 summarises what is contained in the interview schedule.

Interviewees were prompted to discuss how they were recruited into the project, how the project network was established and strengthened or disintegrated and how their own objectives were met by participating in the project team. The interviewees were also encouraged to discuss how they circumvented some of the challenges. Emphasis was placed on issues of network formation, tracing and investigating both human and non-human actors, as well as the alliances and networks these actors built in order to have a common IS project goal (Tatnall & Gilding, 1999).

Table 4.1: Data source and the research questions addressed in the interview schedule

Data to be collected	Stage of ANT moment of translation	Research question addressed	Section of the interview schedule & the question
Demographics			Section A
Name of the organisation			1
Sector in which organisation operates			2
Short description of core business			3
Number of employees in the organisation			4
Department participant is employed under			5
Number of years in the organisation			6

Data to be collected	Stage of ANT moment of translation	Research question addressed	Section of the interview schedule & the question
Participant's designation			7
Number of years in career			8
Project details			Section B
Project objectives and sub-objectives	Problematisation & Interesement	1, 3 and 4	13 and 14
Project delivery period	Problematisation, Interesement, Enrolment and Mobilisation	4 and 5	15
Project initiation			Section C
Project conception and goals	Problematisation and Interesement	1, 2 and 3	17 and 19
Actors and their roles in the project	Interesement and Enrolment	2 and 3	18 and 20
Reshaping project objectives	Problematisation, Interesement and Enrolment	1, 4 and 5	21
Project execution			Section D
Non-human actors and their roles	Problematisation, Interesement, Enrolment and Mobilisation	1 and 2	22 and 23
Communication in the project	Problematisation and Mobilisation	3 and 4	24 and 25
Project closure (if closed)			Section E
Project outcome		6	26
Lessons learned and network reinforcement	Interesement and Enrolment	6	27
Summation of actors and their roles	Mobilisation	1, 2 and 4	28

4.3.7 Target and sample population

The target population for this study was all IS project cases in Sub-Saharan African. The study was not only limited to projects which were termed successful, failed or challenged projects qualified equally. This study comprised of two case studies. The cases are fully described in Chapters 5 and 7. In the specific project cases, all actants affected by the project were eligible to participate in the study. The projects were drawn from three cities in sub-Saharan Africa which were conveniently sampled. Convenient sampling is a non-probability sampling procedure in which cases are selected on the basis that they are easiest to obtain. Convenient sampling is also used when there is very little variation in population (Saunders et al., 2003).

The cities from where cases were sampled are Nairobi in Kenya, Lilongwe in Malawi and Cape Town in South Africa. The cities were conveniently sampled due to the researcher's proximity to the cities. The researcher travels to Nairobi and Lilongwe often for a specified period of time. It was, therefore, opportune to study one case from each city. The researcher is a student at the University of Cape Town. It was, therefore, convenient to study cases within the city of Cape Town; hence the three conveniently sampled locations. This choice of projects from three different countries did not necessarily aim at studying how IS projects differ across the region, therefore the countriness (context) of the cases was not considered in this study. The case from Nairobi was used as a pilot case; therefore its data has not been included for analysis. The analysis proceeded with two cases; one from Lilongwe and another from Cape Town.

The sample of two projects was small enough to allow for a thorough analysis of the cases without rushing through moulds of data leaving out important concepts (Kvale, 1996). The sample provided insight for understanding project processes in an IS project.

Eleven individual and one group interviews were conducted for the Tobacco Grower Registration System (TGRS) Project in Lilongwe. Six weeks were spent on site in Lilongwe studying the case. The Fuel Codes System (FCS) Project case in Cape Town involved five individual interviews and one group interview. In the FCS project, one actor among the five interviewed played three roles: as a business analyst, a consultant and a systems' tester. In this case, one month was dedicated to the activities of the case. The group interview for the FCS project consisted of four speakers. The respondents in each case included project sponsors, project managers, project owners, business analysts, developers/implementers, testers, consultants, principle users and other stakeholders. In both cases, the individual interviews lasted between 1 hour 20 minutes and 2 hours while the group interviews lasted approximately 3 hours each.

The calibre of participants was not predetermined, rather they snowballed from interviews: an interview with one actor would direct the researcher to another actor or direction. The first interview from a project network was the only one referred and recommended by the organisation upon approval of for the research study. In both cases the organisations arranged for somebody to meet and brief the researcher on the company mission, vision, code of conduct and core business. During the first meeting, the contact person and the researcher agreed on a project case to study. This person was always the first person to be interviewed and observed. Following on from that first interview the researcher would then arrange to meet the next set of interviewees depending on

the direction the first interview took. The actors were followed as their interviews snowballed, until the researcher felt enough data was collected or a saturation point was reached. Snowball sampling is a non-probability sampling procedure in which subsequent respondents are obtained from information provided by initial respondents (Saunders et al., 2003).

4.4 Confidentiality and ethics

Information that identifies the individual participants, cases and their organisations has been treated in strict confidence, especially since the data analysis is done on the cases studied and not on individual respondents. At the beginning of each interview the respondents were reminded of their rights in respect of the study. Only when they agreed to take part in the study did the interview continue. Most agreed to have the interview audio recorded, although a few declined.

A letter of request was sent to organisations asking them to give the researcher a chance to study one of their projects. This letter (see Appendix B) stipulated all the ethical issues and how their anonymity would be maintained. Consent was also sought from informants before an interview was conducted. The interviewees were requested to sign a consent form (see Appendix C) as a proof of their voluntary participation in the research. However, some interviewees signed while others opted to give verbal consent. Interviewees were made aware that the study was part of a requirement for an award of a master's degree in Information Systems and not for commercial purposes.

To ensure that the University of Cape Town's research ethics requirements are adhered to, the research instrument, the research proposal and the duly filled and signed research ethics form were subjected to the standard UCT ethics approval process. Before proceeding with the research study, the proposal and the research ethics form were duly approved by the University's Research Ethics Committee (see Appendix A). Identifiable data of either organisations or respondents has been masked which is in line with the ethics form requirements.

4.5 Trustworthiness of the research results

To ensure trustworthiness of the research results, the researcher followed three procedures:

1. In most cases, several actors were quoted as backing an argument. This technique validated most findings and the finding was found to be universal to both cases or by many actors from the same case;

2. After every interview, 60% of the interviewees agreed to listen to the recorded interviews for those who agreed to have the interviews recorded. 40% declined this, due to time constraints; and
3. After transcription of the interviews, transcripts were taken to three of the interviewed actors to confirm that what was transcribed was a true reflection of what they (the interviewees) had said.

4.6 Background and personal reflection of the researcher

The researcher has an academic background in Computer Science and Economics from the University of Malawi where she graduated with a Bachelor of Social Science degree. She also obtained a Bachelor of Commerce (Honours) degree in Information Systems from UCT. Computer Science courses and research rarely depart from the positivistic paradigms. A few research studies in which the researcher participated in from the economics field were positivistic as well. It can, therefore, be deduced that originally the researcher had a heavy inclination towards positivist research paradigm. However, the Information Systems Department at UCT exposed the researcher to all the three dominant research paradigms prevalent in IS research. The programme of study instilled in the researcher the notion that the topic under investigation determines the paradigm, the approach and the method of investigation.

The researcher shares the sentiments of Orlikowski and Baroudi (1991, p. 24) that

Research methods and assumptions are not learned and appropriated in a vacuum. They are heavily influenced by the program attended, the agendas of powerful and respected mentors, the hiring, promotion, and tenure criteria of employing institutions, the funding policies of agencies, the rules of access negotiated with research sites, and the publishing guidelines of academic journals.

The change in research assumptions by the researcher, influenced by the numerous factors in the current environment, is not a constraint. Rather, it is an empowerment that the researcher has attained, in that now she is at liberty to opt for any paradigm depending on the actors' interplay in the research study network. This is due to the fact that the environment at UCT demanded the dynamism necessary for a researcher not to be confined to one research paradigm. The environment encouraged researchers to learn other research paradigms in order to make informed judgments as to the choice of paradigm appropriate for a particular investigation.

The researcher was once employed as a news reporter, a job that saw her interview and probe subjects to unearth some truth from a speculation. This notion in the life of the researcher also influenced the choice of the method of inquiry and data-gathering techniques. This introduced the researcher to the type of fact-finding technique which she apparently enjoyed. The researcher has participated in IS projects for seven years. She participated as a project leader in some projects; while in others she participated simply as a team member, hence her familiarity and passion about IS project processes and networks.

The researcher's interpretative stance in IS research has steadily gained ground. For her honour's research, the researcher investigated an IS project phenomenon and analysed its data using thematic analysis and Grounded Theory techniques in an interpretative research study. In this study, the researcher investigated a different strand of IS projects interpretatively using the lens of ANT for both the sense and epistemology of the subject matter. In the earlier research study, individual in-depth interviews were used as a data gathering instrument, while in this study interviews in case studies were used as data gathering techniques.

This research study investigated the phenomenon using three case studies. In the first case study it was very apparent that the ideals of ANT were not entirely clear in the mind of the researcher. The first case was, therefore, used as a pilot case study. After transcription it was discovered that more rigour was required in the subsequent cases in order to get to the bottom of the phenomenon under investigation. Data from the pilot study has not been included as part of the results of this study. However, maturity and aggressiveness in the way data was collected following ANT are apparent in the other two cases whose data is reported in this thesis. In the two cases full ANT language and behaviour was adopted where actors were followed into their black boxes where in some cases the black boxes were opened to follow the actors inside. ANT has assisted the researcher to clearly see what constitutes reality in IS project networks regarding project processes. Briefly, this is how the researcher reflects on this study and how she has grown in this research to the point that she even views herself as a network of several actants, both human and non-human.

4.7 Summary of the chapter

The chapter has highlighted that a research process follows ontological, epistemological and methodological philosophies that lead to the selection and choice of methods, approaches, paradigms strategies, data collection and analysis techniques to be employed in a research study. In this study, whose objective was to investigate and describe IS project processes, an interpretative

paradigm was opted for and qualitative data gathering and analysis techniques using the lens of ANT were applied. The data-gathering process in this study involved in-depth semi-structured interviews in two case studies carried in two sub-Saharan cities in two different countries.

The research method employed in this research study is summarised in Table 4.2.

Table 4.2: A summary of the research method followed in this research study

Research context	Understanding IS project process
Research purpose	Exploratory and descriptive
Philosophical stance/paradigm	Interpretive
Research underlying theory	Actor-network theory
Research strategy	Case studies
Data gathering techniques	Qualitative • Semi-structured interviews • Observations • Project documentation • Secondary sources (Articles and books)
Data analysis	Qualitative, Actor Network Theory
Time frame	Cross-sectional

Chapter 5: A description of the TGRS project case

5.1 Introduction

This chapter describes the TGRS project case. The TGRS project was an implementation of a biometric grower identification system. Biometric identification refers to the identification of an entity by using its Bio-data i.e. data collected by use of biometric characteristics (physiological or behavioural) of an individual (Fried & Thie, 2005). Physiological biometric identification depends on data collected from direct body properties such as finger prints, iris scans, retina scans, hand geometry and facial mapping recognition. While behavioural biometric identification depends on data collected from an individual's actions such as voice recognition, keystroke scan and signature scan. These characteristics are more reliable than knowledge-based forms of identification, such as personal identification numbers (Fried & Thie, 2005).

The TGRS project was initiated by a Chief Executive Officer of the "Tobacco Marketing and Monitoring Company" (TMMC), a tobacco marketing policing company for the tobacco industry. The project's implementation phase (systems development) was outsourced from Developer House (DH), a business consulting and IS solutions provider.

The rest of the chapter is outlined as follows: Section 5.2 outlines an overview of the tobacco marketing process. The current TGRS and problem background is described in Section 5.3. The solution to the problem is discussed in Section 5.4 while profiles of the outsourcee and outsourcer are given in Section 5.5. Project objectives are listed in Section 5.6 and the PM methodology followed is discussed in Section 5.7. The chronology of key events in the TGRS project are listed in Section 5.8 and actors in the project network are discussed in Section 5.9. The chapter closes with a summary in Section 5.10.

5.2. An overview of the tobacco marketing process

To understand the project, there is a need to highlight the tobacco marketing processes in Malawi. Malawi is an agro-based economy with agriculture contributing approximately 90 percent to foreign exchange earnings. Tobacco is the highest foreign exchange earner; it contributes more than 65% followed by tea (8%) and sugar (7%) (Mataya, Chulu, Khaila, Kumwenda, Machinjiri & Mthindi, 1998). Tobacco is, therefore, of strategic importance to the economy (Jaffee, 2003) and

due to this fact, tobacco was (and still is) gazetted as a special crop. Its production was, therefore, controlled (Laws of Malawi, the Tobacco Act, 1972).

Due to the strategic importance of the crop and due to the fact that most Malawians earn their living through agriculture, the government devised a way of equitably distributing income from tobacco farming (Strategic plan, 2005; Mataya et al., 1998). A quota system was implemented to achieve this and each grower was allocated a maximum tonnage to produce in a growing season. Growers exceeding their allocated production quotas were penalised with 30% of the proceeds from the excess going to the Ministry of Agriculture and the remaining 70% heavily taxed. According to one of the research informants, the quota system was discontinued in 1996 on recommendation from the World Bank and the International Monetary Fund (IMF). They argued that the system was not consistent with free market ideologies.

According to some research informants, the growers in the country are categorised as corporate growers or non-corporate growers. The non-corporate growers are further categorised into three based on land holding: smallholder club growers (farms not exceeding nine hectares); small (not exceeding 20 hectares); and big (exceeding 20 hectares). Regardless of grower category, all tobacco was originally sold through an auctioning system as green leaf (i.e. unprocessed). A unit of sale for tobacco in the country is a bale; a bale ranges from 25Kgs-100Kgs (Laws of Malawi, the Tobacco Act, 1972).

Tobacco growing and marketing is capital intensive and subsistent growers (who are the majority) can hardly afford the associated expenses. Prior to 1993, most growers financed their tobacco production by loans from commercial banks. The loans were tied to the grower's registration number so that once a grower sold their tobacco on that number; the proceeds would service the loan first before the grower received any money. Only when the loan was fully serviced would the grower get their earnings from the tobacco sales. For this reason, and others beyond the scope of this study, most growers defaulted on loan repayments resulting in defrauding the loan financing institutions. As a consequence, lending institutions involved in financing tobacco farming discontinued the service. This resulted in a decline in the quality and quantity of the crop produced.

Tobacco in the country is mainly sold through the auctioning system where tobacco buyers bid for the bale of tobacco they felt was most attractive. Contract growing was introduced in 2004 as a

parallel system of tobacco marketing to address the declining quality of tobacco largely due to lack of financing. In contract growing, in contrast to the auction marketing system, tobacco buyers and growers enter into a contract whereby a buyer finances tobacco farming and, in turn, the grower is obliged to sell the crop solely to the contracted buyer. To some extent, contract growing has reduced the defaulting behaviour among growers partly because the contracting parties know each other and the contracting buyers frequently visit the grower. The contract is signed at the grower's farm and in the presence of the village headman and Ministry of Agriculture officials. Contract growing is, however, done on a small scale, limiting the beneficiaries to the system.

Almost all the tobacco bought is exported (hence the buyers are also referred to as exporters). The buyers are required by law to specify to the government and the tobacco industry prior to the commencement of a growing season their requirements regarding tobacco type, quantity and quality they would need to buy. The government uses the requirements for planning purposes. Before the quota system was abolished, the requirements, especially as to quantity, were also used to apportion the production quota.

Tobacco buying companies (buyers) are jobbers between tobacco growers and the tobacco world market. The world market demands to buy tobacco from growers who participate in Good Agricultural Practice (GAP). It was difficult for the buyers to monitor GAP among growers because a traceability system was not in place. Contract growing facilitated the traceability leading to monitoring of GAP and living up to the world market requirements. Traceability is also important in cases where some tobacco is found to contain higher than acceptable quantities of toxins during phyto-sanitary inspections. Once tobacco is found to contain a higher than acceptable quantities of toxins, the consignment never gets exported and the farm on which the tobacco was grown is researched to certify it as to whether its crop is either fit or not for tobacco growing. Contract growing also assisted with traceability for this purpose as well.

Tobacco growers are required to have their farms registered to be able to sell their tobacco. A registration number which is also used for selling tobacco is allocated to each grower. The snag in the past was that a registration number was allocated to a piece of land and not necessarily to the person owning the farm. Since the country does not have a citizen national identification system, growers used to register multiple pieces of land using different identifying particulars such as names and initials. Due to lack of national identities, one individual may answer to several names. For instance, I have three names: Titani, Harriet and Thokozire. I, therefore, can answer to several

combinations of any of the three names with my family name e.g. Titani Matipa, Thokozire Matipa, Harriet Matipa, Titani Harriet Matipa or Titani Harriet Thokozire Matipa. Legally the different name combinations identify different people in the absence of a proper identification system or card. Likewise, if some of the names are written in the form of initials, they also legally identify a different person. Due to this, it was impossible to identify tobacco growers, especially if one grower registered more than one farm with different combinations of their names.

According to the informants in this research the quota system and lack of identification system in the country fuel, among other things, led the growers' loan repayment defaults. Growers wanted to be allocated a bigger quota. As a result, they started registering more than one piece of land so that quotas allocated to several of their farms would eventually amount to a desired tonnage. Once growers registered more than one farm, they discovered they would have a loan tied to one registration number while they sold all their tobacco using a number not tied to any loan. It was difficult to police loan repayments because of this lack of an identity system in the country. The idea behind the tobacco grower biometric registration system was to ensure identification of the same which would assist, among other things, in enforcing loan repayment and traceability of tobacco, farms and growers.

5.3 Current tobacco grower registration system and problem background

The registration of tobacco growers starts with the grower registering the piece of land where they would like to grow tobacco. The grower is given an identification letter by the chief of a village to apply for surveying officers to survey and sketch the piece of land. The piece of land once surveyed is sketched on a piece of paper showing the farms contours, co-ordinates, name of leasee, district where the farm is situated and number of years the land would be under lease. Once the lease fees are paid, the grower is given a deed for the piece of land.

With the deed or a lease offer letter, the grower can apply to be a tobacco grower. If the deed or the letter of lease meets the requirements for tobacco growing, the grower is licensed to grow and sell tobacco in the country and is allocated a grower registration number. The registration number is used as identification for all tobacco selling on that number. The number points to the grower as well as the grower's bank account number: all tobacco sold is paid for through commercial banks.

The tobacco registration number was used as collateral when growers were obtaining financing from commercial banks. However, growers would borrow from one commercial bank using one

set of names and a grower registration number and then sell their tobacco on a registration number different from the one they used as collateral for the loan which probably was used to received tobacco proceeds from a different commercial bank. This compounded the loan defaulting problem. Eventually commercial banks pulled out from issuing tobacco farm input loans. This reduced the quality and quantity of tobacco and consequently negatively affected the economy.

In 1998, three heads of tobacco firms, namely, a controlling body, a selling floors landlord and a farm inputs selling firm, in a quest to rescue the poor tobacco quality, came up with an idea of Agro-Input credit fund. Ministry of Agriculture bought the idea. With assistance from the European Union (EU), the fund kicked off, targeting potential credit worthy growers who were identified with the assistance of some statistical formulae. To the disappointment of the funders, this credit fund could not sustain itself due to high default rates; the same reason the commercial banks originally pulled out lending to tobacco growers for. The extract below explains why banks pulled out from financing tobacco growers.

With the earlier described registration system, growers started defaulting on their loans After doing all this, the grower would sell their tobacco on a registration number that does not have a stop order- defaulting on the loan 100%. Due to this, loan default rate escalated to about 70%. Banks stopped offering this facility as they had bad debts with growers (Project Owner).

The Project Owner had worked with the tobacco industry for close to 30 years by the time the Fund was being projectised. He still went ahead initiating this project before the reasons the banks pulled out financing tobacco growing for were solved. Why was the Project Owner getting himself into this project? It is surprising why he did not advise his colleagues against it.

5.4 A solution to the problems

The root cause for the massive grower loan default rates was discovered to be poor identification system for tobacco growers, a weakness that growers capitalised on to have more than one grower registration number. The remedy to the problem was envisioned to be a biometric identification system for the growers and that a grower registration number be allocated to a grower and not to a farm, as was the case originally. This would allow growers to have one registration number for each tobacco type, regardless of the number of farms the grower owns. The project idea was thus conceived and introduced in 2003 by the TMMC CEO, who was also one of the founders of the failed Agro-input Credit Fund project.

The Biometric grower's identification and registration called for a revamp of the entire registration system. An identification system using biometrics was the first of its kind in the country. It therefore, required intense civic education to command enough buy-in among stakeholders. After extensive and tactful selling of the idea, it was given a go ahead by the tobacco industry; the Government and the TMMC Board of Directors, resulting in the birth of the TGRS project.

5.5 Description of the two main firms in this project

The Tobacco Marketing and Monitoring Company is a Government corporate established in 1938 under the Control of Tobacco Auction Floors Act Chapter 65:03. It is also governed by the Tobacco Act, Chapter 65:02 (Laws of Malawi, the Tobacco Act, 1972). Half of the financing of TMMC comes from tobacco growers while the other half comes from tobacco buyers. According to the Malawi's Tobacco Act (1972), functions of the corporate are:

1. To regulate the production, manufacture and marketing of tobacco.
2. To advise government on the sale and export of tobacco
3. To promote and expand the sale of tobacco
4. To collate statistics relating to tobacco
5. To carry out market research
6. To distribute market studies and disseminate information relating to tobacco
7. To control and regulate the sale of tobacco
8. To register and license tobacco growers and sellers
9. To define tobacco grades and classes for the purposes of selling and buying.

TMMC employs a total of 170 people nationwide.

Developer House is a consulting firm specialising in IT/IS business solutions. Founded in 1987 in India, Developer House has since expanded into other regions including Africa. In Africa, Developer House has offices in Rwanda, Uganda, Kenya, Tanzania, Zambia, Malawi and South Africa. In Malawi, the company has an employee base of 19 international professionals and 60 locals. The company has been operating in the country since 1999.

5.6 Project objective

The main objective of the TGRS project is to produce a biometric grower identification system to be used for tobacco grower registration which will help:

1. Improve profitability of a tobacco farmer;

2. Ease collection of government taxes such as land lent and withholding tax;
3. Improve traceability for tobacco place-of-origin (where it was grown) which is one of the requirements of the world tobacco market. When Afro-toxins and other impurities are found in some tobacco, there should be a way of tracing that tobacco back to the farm on which it grown. The geo-coordinates and geo-positioning of every farm that the resultant system will store as part of the farm records will assist with that;
4. In facilitating GAP which is also one of the mandates and objectives for the world tobacco markets; and
5. In conducting tobacco estimates for the economy's planning purposes.

The resultant system would, for every grower, capture and store facial mapping and fingerprints for all ten fingers. When new growers file their application, the system would first capture the required biometric data of the applicants and verify it against the data in the database. Should there be no similar data in the database, and the applications meet all necessary requirements, then the applications will be approved and processed. Otherwise if the biometric data of the applicants is already captured in the system and the presented letters of land lease or deed have not been used before, then the farms' record would be added to the growers' records and the production quota would be increased, commensurate with their farm's production capacity.

Should there be problems with the tobacco at any stage in the marketing chain it can be easily traced back to the farm from whence it came because among the records captured are the farm's geo-co-ordinates. If no land rent is paid on a particular farm, the Ministry of Lands and Physical Planning would trace the farm owner.

It is hoped that commercial banks would resume disbursing farm input loans because they are assured that a grower is allocated one registration number which is pinned to one account number so that tobacco proceeds from whatever farms would be deposited in that one account number. This would prevent farmers from defaulting.

It is also envisioned that the Government through the Revenue Authority (RA) would easily collect withholding tax. Selling all tobacco on one selling number would enable RA to accurately calculate a grower's earnings. This would help the RA to reimburse excess tax to the growers or demand a top-up on the withholding tax collected should profits prove to be higher than estimated.

5.7 The Project Management methodology in the TGRS project

The PM methodology used in this project by the project team is home-grown. As much as there are some charts resembling Gantt charts, neither PMBoK nor any of the generic PM methodologies featured much in the project. Contrary to what is stipulated in either PMBoK or PRINCE2, the project was not initiated as part of a formal business. Rather, it was initiated by a seminar paper. The paper, which was presented at an annual tobacco industry seminar, outlined the idea and objectives of the proposed project. The annual seminar was attended by decision makers and heads of institutions in the tobacco industry. These major players in the industry meet to deliberate on policies and issues of crucial importance to it. Government departments and ministries with an interest in tobacco related issues are also represented at the seminar by senior officials with the authority to make a decision.

The objectives outlined in the seminar paper were transformed into a request for a proposal document for a consultancy. A consultant was recruited to look at the feasibility of the objectives. The consultant and the TMMC top management as well as the heads of some tobacco industry companies formed the initial project team that helped the consultant come up with systems requirements that formed part of the request for proposal document. Up to this point the team employed none of the PMBoK PM techniques or tools save for timelines that looked like Gantt charts.

For the selection of the supplier/outsourcee, the team used standard government guidelines recommended by the Government. The project kicked off with contracts between the consultant and the TMMC and not necessary with the project team. The team used to meet as and when necessary. To some extent, the contracting company and not the project team used product breakdown structure (PBS) to come up with an overall budget for the project. They used this without knowing that they were using PBS.

According to the Project Owner and Sponsor, the project is driven by common sense and not by the formal PM methodologies. Throughout the thesis the Project Owner in the TGRS project is also the Project Sponsor and the Project Initiator. For simplicity, he is here referred to as a Project Owner.

Ahhhhh!!!! Project Management!!! I never thought of any. Everything was done following logic and common sense and not using these fancy and difficult to adopt methodologies, unless the Project Manager did, but definitely not from my side (Project Owner).

According to the consultant in the TGRS project, there was no need for a formal PM methodology because he and his team had done similar kinds of projects in other countries and they had succeeded 90% of the time. They, therefore, came into the project with a lot of experience which helped them to proceed with it without their using fancy PM methodologies. This was probably because the Project Manager had an *inherent knowledge of PMBoK and PRINCE2*.

The Developers and the Testers indicated that they inherently followed PRINCE2 as a PM methodology. The structure of the team, however, did not demonstrate much of PRINCE2's features. For instance, there was no change control board and no heavy documentation as required by PRINCE2 (see Appendix F for some sample templates for PRINCE2 documentation). PRINCE2 could be seen in the responsibilities and roles prevalent in the project and in the PBS which assisted in costing and budgeting for tasks. The Project Manager acknowledged that the methodology they used was not PRINCE2; rather it was home-grown and only resembled PRINCE2. According to the Project Manager, their PM methodology was efficient. Both the outsourcer and outsourcee in this project were, at that stage, pleased with the progress of the project as well as the way resources were being allocated and utilised for different tasks. Since both parties felt that way, it was probably true that their PM methodology was efficient and probably effective too.

5.8 The chronology of key TGRS project events

The project idea came to fruition after biometric identification was hyped as the identification system of choice for both identifying individuals and for authenticating claimed identity by an individual. The idea was conceived following the September 11 incident. The project idea was, therefore, hatched in 2003. The project was implemented in phases.

- Phase 1: Feasibility study, where a consultant was recruited, a consultancy was carried out and results presented. In the consultancy report, suggested solutions to the problem were listed. From the list of solutions, systems development was opted for alongside its associated accessories;
- Phase 2: Acquisition and installation of hardware
- Phase 3: Acquisition and installation of software, commissioning of the project, user training and system implementation.

Table 5.1 chronologically lists key events in the TGRS project through the years since 2003.

Table 5.1: Chronology of key events in TGRS project

Date	Event
February, 2003	Biometric identification discussed with a technical officer within TMMC. The idea was deemed brilliant.
March, 2003 – October, 2004	Corridor salesmanship begun.
October 4, 2004	TGRS project was approved in principle by TMMC Board of Directors.
September 5, 2005	The project idea was presented at a tobacco industry seminar, project objectives were refined and the project idea was endorsed for enactment by Parliament and publication in the Government Gazette.
September, 2005	The idea was sold to commercial banks
December, 2005	Request for proposals for a consultancy was sought
February, 2006	A consultant was identified from the proposals and Government consent to recruit the consult was sought.
March, 2006	The consultant was recruited and the consultancy was started.
July, 2006	Consultancy report was presented to stakeholders.
August, 2006	Project funding proposal was presented to potential financiers, including the industry and Government
September, 2006	A contractor to work on the LAN and WAN was engaged and system developers were identified as well.
November, 2006	LAN and WAN were commissioned in all the three TMMC offices.
March, 2007	Grower civic education through formal media, grower meetings in both vernacular and English languages
October, 2007	Growers consented to funding the Smart Cards
November, 2007	System development was started and suppliers of hardware were identified.
January, 2008	Hardware and system interfaces were installed. First prototype of the system was demonstrated to stakeholders
June, 2008	Hardware and system integration demonstration was conducted
August, 2008	Smart Cards and ID printers were procured
The project has not yet been completed, it is still in progress. It is estimated to be completed in June, 2009 with user training. The system is expected to run parallel with the old system for a year to allow for a smooth transition.	

5.9 Actors in TGRS project network

The analysis in this case study has identified a total of 25 actors, some of whom are black-boxed for simplicity while others are treated individually. This section presents and describes the actors. The list of actors is not presented in any particular order. Figure 5.1 displays the actors in TGRS project and are discussed in the ensuing sub-sections.

The first interview in this case study was conducted with the CEO for TMMC. This interview led to several other interviews with actors such as the Chairperson of the Tobacco Exporters Association (TEA), the Executive Secretary for the biggest grower association, one grower and the CEO for the Tobacco Marketing Floors Landlord (TMFL). All these were enrolled into the project by objectives of the project. In other words, the objectives of the project negotiated for the actors specified above to be enrolled into the project.

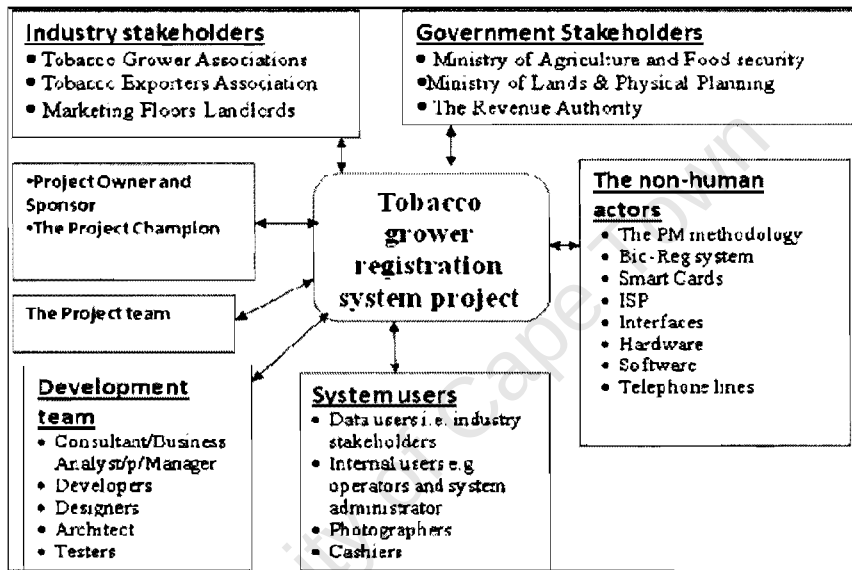


Figure 5.1: Actors in the TGRS project (Adapted from Vaagaasar, 2006).

5.9.1 The Project Owner

The Project Owner of the project was a CEO of TMMC. He had the power to decide on the fate of the project. The Sponsor was enrolled into the project because of a number of factors, including:

1. High loan default rates tobacco financing companies incurred caused by low or no loan repayments by the borrowers, tobacco growers;
2. Declining overall profitability for tobacco growers;
3. Personal satisfaction from “Eureka” kind of expression for the industry after gurus in the industry failed to sort out this loan default problem for decades; and
4. An exit plan for the CEO, as the project is part of his footprint and legacy in the tobacco industry.

5.9.2 Tobacco exporters' association

The TEA represented all tobacco buyers in the country. So far there are eleven licensed tobacco buyers. The Association was represented in this project by the chairperson. The Association became involved in the project for two reasons:

1. It is an expected user of the system and/or just its data; and
2. TMMC is financed by two groups of entities-the buyers and the sellers (growers). As a financier of TMMC, it is interested in how TMMC spends its finances

The buyers will use the system to assist them meet one of the requirements of the world tobacco market (where the different buyers sell their tobacco): tobacco to be sold should have been grown following GAP. To achieve this, buyers need to be able to identify, the grower as well as the area where the tobacco was grown for each of the bales of tobacco sold. This is important for buyers to be able to monitor and inspect the practices on the particular farm. The system would assist them achieve that objective.

In addition, the system would also allow buyers to find, trace and track the contracted growers to ensure that good agricultural practices are adhered to and that the contracted tobacco is not being diverted to side markets. To sum up, the buyers are concerned with traceability of the tobacco they buy. All the eleven buyers were treated under the umbrella of the TEA as one actor.

5.9.3 The tobacco growers' association

There are seven grower associations in the country inclusive of the one interviewed in this case. A grower is free to join any association. The tobacco growers' association interviewed in this study is not the umbrella of all the growers' associations. However, the interests of growers' associations in the TMMC business are similar for all of them. They are subjected to the same conditions and are governed by the same rules, regulations and Act of Parliament. The actors in this group were represented by a CEO of the biggest and oldest of the growers' associations. Since growers contribute half of the finances to the TMMC, the growers' associations are an interested party in TMMC expenditures, hence their interest in the project.

Like the buyers' association, the growers' associations are also users of the system. In actual fact, the project is centred on members of growers' associations. The system which is the outcome of the project is aimed at reducing loan defaults by growers. It was inevitable, therefore, for the growers' associations to be involved in the project. All growers would be required to register with

the new system, and finally get Smart Cards which they shall have paid for. Since the growers' association members are the centre of the project, it was logical for the associations to keep abreast with its activities in respect of the project. The only logical way was to get involved in the project in order to have a collective voice as to their interests and demands. The growers' associations were, therefore, an actor in this project.

5.9.4 The individual growers

Individual growers were an important actor. The whole project revolved around the grower because a grower was the centre of the identification problems. It was the grower who took advantage of the loopholes in the old registration system; growers could register more than one farm using different combination of their names. The grower took advantage of the numerous numbers and multiple identities to abuse loan facilities. The abuse did bite the growers back since all loan facilities were closed out. Consequently, growers started producing low quantities of poor quality tobacco, reducing their annual income and shrinking foreign exchange earnings for the nation. The old system benefited the grower in the short term.

The growers' associations may act on behalf of growers, however, in some instances, growers act on their own individual capacity. For instance, while the growers associations may act on behalf of growers in terms of policy, the decision to have a particular piece of land registered and actually volunteering personal details to the registering agency rests with individual growers. It is the grower's prerogative to pay for a Smart Card or not. Although the growers' associations were enrolled into the project, the inscription would not be left at that. It had to be extended to individual growers. The success of the project partly depended on successful interessement and enrolment of individual growers.

According to the Executive Secretary of the largest growers association, proper interessement strategies had to be used for the growers because they (growers) were *capable of not registering to be an official grower*. They would still grow and sell their tobacco in the neighbouring countries.

5.9.5 Tobacco marketing floor landlords

Most of the tobacco is sold through tobacco marketing auction floors. Tobacco marketing auctioning floors are owned by a single landlord. The floors handle all the tobacco sold and they are responsible for paying the growers the money their tobacco fetches. The floors keep records of each and every bale that passes through their market. Auction floors acquire the growers' data from

TMMC. It is important, therefore, to place their demands on TMMC regarding the type of data they would want. Being part of the project team would empower them to do this. They, therefore, joined the project to ensure that their interests were taken on board since they are also a user of the system and data, hence their involvement in the project.

5.9.6 The Government

The Government, through the Ministries and departments listed below was another actor represented by a group of senior officials. Ministries and departments interests in the project are as follows:

The Ministry of Agriculture and Food Security: It is the parent ministry for TMMC and, therefore, had to be in the project to ensure that the project was working towards agendas laid down for TMMC to implement. The ministry was also responsible for legal and parliamentary issues concerning the project. For instance, the Ministry presented to parliament the proposal that tobacco growers be required to volunteer their biometric data to the TMMC in order to be registered tobacco growers. The ministry also facilitated the enactment and gazetting of the bill;

Department of Statutory Corporations: The TMMC is a statutory cooperation fully subverted by the Government. The Government, through the Department of Statutory Corporations has a say on the way finances are spent, hence the involvement of Department of Statutory Corporations in the project. The department is an administrative department for all statutory corporations in the country;

Ministry of Lands and Physical Planning: Before being registered and allocated a registration number, growers are required to have their piece of land certified as existent by the Ministry of Lands and Physical Planning. In turn, the Ministry gets a land rent which they deduct from growers' tobacco proceeds before the money is sent to their respective bank accounts. It was important, therefore, to have the Ministry involved so it could express its interests and demands.

The Revenue Authority: This is a tax collector for the Government. Tobacco growing is a business. Every tobacco grower is, therefore, in business and liable to taxation. Since in the tobacco growing business profits can only be calculated when all the tobacco is sold, the Revenue Authority implements a withholding tax on all tobacco growers. At the end of the sales, growers

can calculate their profits. Depending on the magnitude of the profits, growers may claim some of the withheld tax or top it up.

These government entities were considered as one group of actor in this project's Actor-network. However, in a few instances some were dealt with individually, as single actors.

5.9.7 The consultant

The consultant acted as a mediator between the outsourcer and outsourcee of the biometric registration system and as a business analyst for the problem the project initiating company faced. The consultant recommended several solutions, one of which was to outsource the development of the system to some developers. The consultant was an employee of DH and was also involved with the actual selection of the developers of the system within DH.

According to the consultant, he was enrolled project due to a sense of duty and responsibility. The core business for the consultant is to engage in consultancy jobs. There was, therefore, no specific enrolling agenda for him. However, at the same time, DH is a multinational company. If it does not find any consulting work; it would not have enough justification to stay in a country. It, therefore, has to ensure that it gets as many consultancy jobs as its employees can handle to justify its continued operations in the country. The consultant was a business analyst as well as a Project Manager.

5.9.8 The development team

The interview with the consultant led to another group of actors from the DH. These were a designer, a developer, an information architect and a tester. The Architect was enrolled by the novel and challenging infrastructure to be put in place at the customer site, while the Developer was enrolled by the visibility to be *gained after delivery of the resulting system which would assist to identify and register close to 400,000 tobacco growers*. The Designer was enrolled by both duty and the enormity of the whole exercise and the Tester was also enrolled by the *magnitude of the project*. He was sure that being involved in such a project would improve his skills and would enable him *to network with gurus in the presumably richest industry of the nation*.

For simplicity, this group of actors was treated as one unit, save in a few circumstances where it was inevitable that they should be treated and understood them individually. Observing and

chatting with these actors revealed a good number of actors as well, most of which were non-human. The most powerful of the non-human actors was the PM methodology.

5.9.9 Project Management methodology

The Project Management methodology directed the development group and its project team to effectively and efficiently manage the project until completion, yielding required and desired results along the way. The Project Manager claimed to have followed a home grown PRINCE2-like PM methodology which maps well with the PMBoK Guide. PRINCE2 is in public domain and is a *de facto* standard in the UK. The PMBoK Guide provides the PM field with a guide on how to manage projects to successful completion (Thomas & Buckle-Henning, 2007). The guide offers “best practices” to the PM community. Best practices are those strategies, activities, or approaches that have been shown through research and evaluation to be effective in a given discipline, area of study, or application (Chapman, 2006). Some of the behaviour in this project was shaped by the methodology; therefore the methodology was also an actor.

5.9.10 Biometric registration system

Most of the negotiations in this project were done through the perceived usefulness of the resulting system. The system was expected to achieve the project objectives. The system translated the project objectives by use of the code which performed different procedures such as verifying the existence of a grower record before registering the grower. This procedure therefore ensured that no grower was allocated more than one registration number regardless of which regional office the grower registered with.

Another translation was that the system was able to capture the geo-coordinates of all farms. This procedure ensured traceability of farms and their owners which would, among other uses, be used to monitor GAP for the tobacco-buying companies. The system also captured grower biometric data which would be used to either identify growers or authenticate growers’ identities. This feature assisted in eliminating the existence of grower multiple identities - something that the financing institutions had problems with. The system shaped and reshaped action among actors in the project. The system, therefore, embodied the project objectives.

The system had its own demands such as infrastructure, additional hardware and software, interfaces and the Smart Cards. The infrastructure, interfaces, additional hardware and software required expertise from the architect, designers and developers as well as from testers. Therefore,

the same actors were enrolled by the needs of the project. The Smart Cards would store, *inter alia*, the grower's biometric data such as fingerprints and facial mapping.

The system negotiated with most of the human actors, especially those from institutions other than the project commissioning company such as TEA, the growers' associations and the Tobacco Marketing landlord. The system also negotiated and brought on board the Internet service provider, the database management system and the interface between TMMC and other organisations that would use the distributed database. The system was therefore one of the most conspicuous actors in the project.

5.9.11 The Smart Cards

The Smart Cards were to have two functions: (1) identification and (2) banking services. As identity cards, the Smart Cards would contain grower biometric data as well as other personal identification details.

Identification: Due to this function, the Smart Cards managed to negotiate with growers and enrolled them into the project. The growers were pleased that their *personal information* inclusive of *tobacco proceeds will be under their protection in a Smart Card*. To the tobacco industry, the Smart Cards would solve the persistent grower identification problem.

To draw any amount of money that was more than the daily automated teller machine limit, growers needed valid identification acceptable to the bank. It was difficult for growers to be in possession of any such acceptable identities since the nation did not have a national identification system in place. The Smart Cards provided the growers with such acceptable and valid identification.

Banking Service: The Smart Cards would also provide the growers with easy access to banking services. They, therefore, had the dual role of being debit cards as well as a means of identification. Due to this functionality in the Smart Cards, according to two informants, commercial banks showed great interest in using the cards for banking purposes as well. The banks have since requested the project to ensure that the growers would use the cards as debit cards as well.

Growers were at risk of being mugged by robbers once they had withdrawn their cash. The Smart Cards-cum-debit cards were seen to secure the growers' money since they (the growers) could

transact using the debit cards. There was no need for growers *to be moving around with loads of money anymore* to pay for their transactions.

The tobacco growers have a biggest spending power in the country, since tobacco contributes 65% of the nation's total foreign exchange earnings (Jaffee, 2003). For that reason, according to the User 1 from TMMC, most business owners, especially in the tobacco industry such as input suppliers, were acquiring point-of-sale technologies targeting this Smart Card facility. Although the banks were not directly interested in the growers, they are interested in the business to be made from the use of the debit cards.

On the smart cards there is a provision for banking facilities. Banks are already coming forward requesting that they play a part in the system. The system is really revolutionary. Most banks do not use smart cards, they use magnetic strip cards, since the bulk of the people who use the banks are tobacco growers. I can see banks going the smart card way. These smart cards are really communicating to the masses. (User 1: TMMC)

As far as the business owners were concerned these the Smart Cards/debit cards were the reason they (business owners) obtained card readers and system connection interfaces to banking institutions. The business owners acquired the systems and were *obtaining Smart Card readers in order to benefit from the Bio-reg system* and not to lose business from growers.

5.9.12 Other non-human actors

In addition to the non-human actors already listed as actors in the project network, others included the hardware infrastructure, the software infrastructure, the Internet Service Provider (ISP), wireless network antennas, the database management system, the development language, the interface and the telephone lines. In some way or another, these actants also impacted on the actions in the project.

5.9.13 Internal (operational) system users

Internal (operational) users of the system from the TMMC were another important group of actors. The internal users were to be responsible for capturing biometric data and grower personal details into the system. This group of users was to be most in touch with the growers from the time when the growers present their land documents to when the growers pay for their registration and receive both their licence and the Smart Card. The users will be responsible for

1. Capturing required data into the system;

2. Producing different statistics regarding tobacco growers, tobacco production and marketing;
3. Disseminating the collated statistics; and
4. Administering and maintaining the system.

These internal users would, inevitably, have a huge responsibility especially in the mobilisation as well as the implementation stages of the project actor-network. So far, there are fifteen internal operational system users distributed throughout the regional offices as well as the head office of the company.

Two expected internal operational users of the system representing the rest of the internal operational users were interviewed. These actors were enrolled because of their duty as well as the advanced technology envisioned to be brought in by the project. They (the users) were among the early adaptors of the sample technology thereby championing the rest of the other users.

5.10 Summary of the chapter

In summary, the different institution heads had their own agendas and objectives which they felt could be realised through this project. To make sure that their objectives were included in the resulting system, the CEOs saw it necessary to get involved in the project as early as the pre-initiation stages. These institution heads were 'black-boxed' in that behind them were other actors connected to them i.e. human and non-human actors in their organisations who the heads were representing. These actors include employees, hardware, software, network infrastructures, Internet service providers (ISPs) as well as telephone lines.

The biometric identification system, which is the outcome of the project, was a mediator in this project. The system assisted in negotiating with different actors both human and non-human to get enrolled into the project. Most of the actors in this project were black-boxed to allow for easy analysis. Table 5.2 summarises this case by listing actors, time period spent tracing the project network as well as citing the number of interviews conducted for the case.

Table 5.2: Summary of the TGRS project case

Name of the Case	Tobacco Grower Registration System (TGRS) project
Time period to cover the case	6 weeks
Number of individual interviews conducted	11, and sat in two of the project meetings for observation
Length of the interviews	Individual interviews lasted between 1 hour 30 minutes and 2 hours. While the group interview lasted for approximately three hours.
Number of group interviews conducted	1
Number of participants in the group interview	4
Non-human actors identified	The registration system itself, the hardware infrastructure, the software infrastructure, legacy systems, the Project Management methodology, the smart cards, the ISPs, wireless network antennas, database management systems, the development language, the interface, telephone lines and the systems development methodology, the tobacco crop, the tobacco selling system, the constitution, the economy, the farm and the culture of the growers
Human actors	The Project Sponsor/Owner, the marketing floor chief, the grower association chief, the tobacco exporters association chief, the growers, the users, the consultant, the developer, the tester, Director of Crops, Director of Lands, Director of Taxes, and the users.

Chapter 6: The TGRS project data analysis and findings

6.1 Introduction

The objective of this study was to explore and describe the essence of an IS project in order to gain an in-depth understanding of an IS project network and such issues as, IS project actors, interactions, influences and politics. This has enabled the researcher to appreciate and share how an IS project may progress towards attaining its goals. The objective was divided into three sub-objectives to answer a research question which was also sub-divided into six simpler research questions for simplicity of investigation (refer to Section 1.3).

After several rounds of reading the transcripts and field notes for both cases, stories started to emerge. The stories answer most of the research questions thereby achieving the objective of this research study. The stories are told using ANT vocabulary. This does not necessarily imply that the stories in this thesis are the only plausible ones ever to come out of the two projects. Others could have come up with their own stories, depending on their perceptions and the frameworks as well as the objectives of their study. The stories in this study followed the ANT in accordance with the objective of the research study.

Actors in the stories participated in the project depending on how their interests were met. Only when stakeholder interests were taken care of did a project phase and indeed the entire project become mobilised. However, politics seemed to come in when it came to mobilisation. It was later demonstrated that some operational system users (users who operate or manage the system) were enrolled into the project just because their CEO threatened them with retrenchment if they did not want to use the system.

This chapter presents an analysis of only the TGRS Project. An analysis of the FCS Project is presented in Chapter 8. The better part of the analysis in both cases has used ANT concepts to bring out the as-lived experience in the TGRS project. The concepts of inscription, translation and irreversibility take the centre stage in this analysis. Translation brings on board its four moments: *problematization*, *interessement*, *enrolment* and *mobilisation*. These four moments of translation are the main aspects of analysis and findings in this research study. The data analysis is, therefore, discussed at length using the vocabulary of these four moments of translation.

The rest of the chapter is outlined as follows: Section 6.2 discusses how the main project objective was unearthed from pre-project activities while Section 6.3 outlines the pre-project activities in which the project idea was engaged in. Section 6.4 lists and discusses different inscriptions that the analysis has uncovered in the project. Section 6.6 through to Section 6.8 discuss the four moments of translation alongside their various packages and strategies. ANT analysis closes the analysis with a discussion on irreversibility in Section 6.9. A summary in Section 6.10 concludes the chapter.

6.2 Unearthing the main project objective from pre-project activities

Originally commercial banks used to finance tobacco growing but they discontinued this service because growers defaulted on their loan repayments as they could not service their loans fully., The Project Owner initiated an Agro-Input Credit Fund (AICF) in 1998 in an attempt to rescue the dwindling tobacco quality. The fund failed to sustain itself due to high default rate. The loan default problem was persistent among tobacco growers. This can be seen from the quotation below:

With the earlier described registration system, growers started defaulting on their loans. Growers got a loan using one registration number and went through the screening procedure. They instructed the legal instrument and placed a stop order on the registration number to authorise the bank to deduct their loan in full before remitting the funds to the grower's account. After doing all this, the grower would sale their tobacco on a registration number that does not have a stop order- defaulting on the loan 100%. Due to this, loan default rate escalated to about 70%. Banks stopped offering this facility as they had bad debts with growers (Project Owner).

After working with the industry for close to 35 years, the Project Owner should have been aware of the tobacco grower loan default problems. It is surprising that, despite his experience, he did not advise his colleagues against initiating the AICF. He, therefore, could not be naïve about the practices among growers as regards loan defaults and proper identification.

Since 3rd August 1973 I have been working in various organizations but all in the tobacco industry. I have worked as a researcher on the same crop and have risen through the ladders. Since 1987, I have been working as a chief executive in various tobacco companies (Project Owner).

In the pre-project phase, the Project Owner is seen pondering and agonising over a lack of proper identification for growers that led to difficulty in tracing growers especially when they defaulted on farm input loans or when there was an identity theft. It is most likely that he is coming to the end of his career and wants to leave a legacy. This was his first attempt at an exit plan. Three years

prior to this, the Project Owner with two colleagues hatched the Agro-Input Credit Fund project which failed. As a second attempt of the exit plan, the Project Owner proposed the idea of a biometric tobacco grower identification registration system project. This can be seen from the following boxed observation captured in the field notes.

Box 6.1: The researcher's observation on the Project Owner's personal objective.

Researcher was in the car with the Project Owner (PO) to a project meeting.	
Researcher:	<i>Bio-Reg seems a big project.</i>
PO:	<i>Indeed it is, I am proud, it's my brain child.</i>
Researcher:	<i>Are you sure!!!</i>
PO:	<i>Oh Yes!! I have built that office for the organisation, I have opened up for house ownership loans at 6% interest for employees, I have restructured the portfolios and as an exit I have hatched and implemented this Bio-Reg. It's what the industry needs.</i>
Researcher:	<i>What is your motivation in all this?</i>
PO:	<i>I guess satisfaction. One has to leave a legacy for people to remember them. I am not renewing my contract, so this is my exit plan, Bang!!!!!! Off I go!!!</i>

Much as the objective of the project was phrased differently, from the note quoted above it shows that there is a hidden objective: Fame on exit. The following quotation emphasises this point:

The Agro-input Idea was hatched by me, Vic and Don over a bottle of beer but credit was given to somebody else. This time I really knew that I had to be careful with my tactics.
(Project Owner)

It is apparent, therefore, that a project might be initiated because there is a need; however, the project indicates that interwoven in the need are other agendas not conspicuous to the naked eye. Fame and leaving a legacy seem to be the main enrolling factors for the Project Owner although the main public objective is narrated differently.

6.3 Pre-project activities in TGRS project

In the pre-initiation phase of the project, which in most cases PMBoK does not take into consideration (see Figure 2.1), it is discovered that once the Project Owner enrolled himself into the project idea, he went on a *corridor salesmanship* campaign. Although his main aim was to test the waters and see if his ideas were feasible and plausible, he also solicited a buy-in into the project along the way. Partly, this corridor salesmanship was a form of problematisation for the project. The quotation below emphasises the aim of this “corridor salesmanship”.

Just to make sure that my ideas were not weird, I started out with pure corridor salesmanship. Whenever I got a chance to speak to some decision maker of an organisation that has some interest in the affairs of tobacco, I introduced my ideas and sought consent. Mind you, I basically talked to decision makers, Chief Executives mostly. To almost everybody I corroborated with, the response was positive (Project Owner).

In this pre-initiation stage, the Project Owner was not sure of the plausibility of his project idea. As can be seen from the quotation above, he was sure his project ideas were worth pursuing after a couple of his colleagues seconded it. The seconders were not just any other person, rather they were “*decision makers, Chief Executives mostly*” and were people with “*some interest in the affairs of tobacco*”. The Pre-project activities seemed to be part of an informal recruitment process for project team members who were to meet in the initiation meeting.

This could be termed as a first attempt at problematisation and interessement: The Project Owner was establishing himself as an OPP, an indispensable resource in the solution of grower identification and traceability problems eminent in the industry (Holmström & Robey, 2005). Although it has not been indicated, it can be deduced that the idea was narrated to the “*corridor salesman’s customers*” in the form that could be appreciated. The interessement in this informal setting is interestingly and strategically selective and segregative i.e. “*decision makers, Chief executives mostly*”. The segregation was political in that the Project Owner targeted decision makers and, as it will be discovered later, the “*decision makers*” were mostly individuals who sat in the TMMC’s board. They were the people who would approve or disapprove of the project.

It can be concluded therefore, that the pre-initiation “*corridor salesmanship*” was not blind-folded; it was purposeful. It can be seen from the arguments in this section that the project did not necessarily start from initiation stage. It started from far and required some degree of complex tactics and strategies to bring a project and its key stakeholders on board.

There are three things to note in this pre-initiation stage:

1. Self problematisation, interessement and enrolment around the problem area;
2. Informal, tactful and strategic problematisation, interessement and enrolment of possible mobilising agents; and
3. Some political elements playing a role in the informal problematisation, interessement and enrolment of possible mobilising agents.

6.4 Inscription in TGRS project

Inscriptions are informed by four aspects: (1) Identification of explicit anticipations/scenarios/objectives from which inscriptions start (2) How these anticipations are inscribed to interest actants (3) Focal actors undertaking the inscriptions (4) The strength of the inscriptions and their capability to form irreversible networks (Mähring et al., 2004).

It is documented that a project is kicked off with a project initiation document (PID) (Shawlbe, 2006; PMI, 2004) i.e. the document is the first inscription used in most projects. In the TGRS project, project initiation started from the pre-project activities where inscription could be observed from several incidences throughout the project life cycle. Inscriptions initiating the project were more than just the PID, contrary to what the main stream PM literature advocates.

The analysis in this case study has led to indentifying eight key and conspicuous inscriptions:

1. The biometric identification technology;
2. A list of objectives;
3. A paper presented at an annual tobacco industry seminar;
4. Enactment into the constitution and gazetting of the act;
5. Grower meetings;
6. A list of suggested solution from a consultancy report;
7. A pseudo code of the system to be implemented; and
8. The Smart Cards.

A discussion of the inscriptions brings out how project objectives were identified and how the inscriptions were crafted to interest actants alongside the strength or weakness of each inscription. Focal actors undertaking the inscriptions are also uncovered. The inscriptions are discussed in the ensuing sub-sections.

6.4.1 The biometric identification technology

In the initial stage, the vague project idea that was used in the *corridor salesmanship* was a motivation that sprang from the September 11 incident and the associated security and identification measures crafted thereafter. Among the different news items making rounds about the incident, were suggestions on how to identify individuals and how to authenticate individuals' claimed identification using biometric data (Jain, Hong & Pankanti, 2000; Mpazanje, Chigona & Roode, 2008). Biometric identification was mentioned as one of the possible solutions to the dilemma. The biometric identification technology became a script for the TGRS project's initial idea for presentation to the Project Owner. The idea emerged from the identification and

traceability problems the tobacco industry faced in identifying and authenticating the identity and the traceability of tobacco growers as well as the place of origin for the tobacco leaf. The following quotation emphasises this point and finding:

I then started wondering after hearing strategies of identification after the US Sept.11, 2001 incident. I wondered if we can start registering growers as entities and identifying them biometrically like using finger printing and retina recognition and connecting the same to each and every farm that the grower might have and the bank account that the grower might have as well. That is how I hatched the idea of [a] "biometrically based" tobacco grower registration system. (Project Owner)

Although the Project Owner's exit plan, traceability and identification problems were other inscriptions in the initiation of this project, the biometric identification technology was the main one steering the TGRS project. This inscription was the basis for the rest of the inscriptions. The inscription led to the project objective: to implement a system which would facilitate biometric tobacco grower identification and tobacco leaf place of origin traceability. The biometric identification technology was one of the strong inscriptions in this project. Focal actors undertaking this inscription include the September 11 incident, the media suggesting the biometric identification systems and the Project Owner.

6.4.2 A list of project objectives

After a *corridor salesmanship* for a year, the Project Owner presented the project idea at a board meeting for board approval. The project was easily approved in principle because most of the colleagues he had previously informally sold the idea to were the board members. However, during the board meeting, the project idea was further deliberated upon and thrashed out to (re)shape project objectives. However, as can be seen from the following quotation, it was said that as and when it was necessary the objectives would continue to be metamorphosed to accommodate the interests of the industry, especially when technically conversant officers were co-opted into discussing the idea.

...the corridor salesmanship that I did allowed all the board members who knew the idea to come up with their own objectives for the project which I liked very much. It helped me to score more because the project is now looked at as an industry project taking concerns of all players on board. We reformulated the project objectives without deviating from the original objective. We, however, agreed that those objectives were simply guidelines of what we wanted to have and that they were not cast in stone and concrete; they would be changed or polished when need arose (Project Owner).

The first formal inscription in this project was, therefore, the list of objectives that was “*not cast in stone or concrete*”. Much as the inscription was crucial to the project: how it was presented was also important to the strength of the project network. The project objectives covered interests of different actants and were fluid enough to allow for continued metamorphosis. Some time before the board meeting, the project idea was a subject of one-on-one discussions between the Project Owner and some of the board members. The board members pledged to support the idea once it was presented at a board meeting. This pledge meant they could renege on their word, so they supported the project by approving it. The board meeting was a rubber stamp of what was already pledged. The following extracts articulate more of the *how*:

After corridor salesmanship, and after I was sure of more support than opposition I sold the idea to my departmental managers. I started with the departmental head whose department is the anchor of the organisation. When I managed to convince him of the viability of the idea, I then convened a management meeting. Among the agendas of the meeting was this biometrically based registration system. Thereafter, I took the issue to board. The reason I did this corridor salesmanship was to minimise opposition since most of the people I sold the idea to sit in my board and the managers who are usually present at my management meetings are also present in board meetings. So from my managers, I would get full backing. We would all speak the same language on the issue (Project Owner)

When the board chairperson brought the agenda on board ...everyone was nodding their heads in agreement. No opposition at all, which I think comes from the fact that most vocal people in the board had already pledged to support the idea like I did. So I think prior selling of the project idea helped to gain buying-in of the project initiation (Chairman: TEA.).

It is interesting to note that the colleagues to whom the Project Owner sold the original project idea to were not mere colleagues. They were decision makers in their organisations and were probably people with some degree of power. Decision makers are usually highly placed and respected people in their organisations. Their positions of power might have assisted in strengthening the inscription. The following quotation emphasises this point.

To start with, I think the initiator of this project who is a colleague from TMMC is very clever. He knows I sit in his board and he knows I am a chairman of TEA implying I have some muscle to convince representatives of member companies to support endeavours. (Chairman: TEA)

It is important for an inscription to be craftily displayed to steer desired reactions among actants. It is, therefore, concluded that the *corridor salesmanship* was key to the success of this inscription.

Project objectives were crafted in a way to cover interests of most actants in the tobacco industry. Most stakeholders could envision a benefit from the project, making it a solution to a lot of problems the tobacco industry face. This was a strong inscription, it steered support for the project from the entire tobacco industry. This inscription was undertaken by the board members and the Project Owner.

6.4.3 A paper presented at an annual tobacco industry seminar

As the project progressed through the pre-project activities, inscription took the form of a seminar paper. The paper was presented at a tobacco industry annual seminar where the industry as a whole deliberated on the project objectives further. This debate continued reshaping the objectives so as to produce state of the art technology that would benefit the entire industry. This confirms the conclusion that project objectives should not be “*cast in stone*”, to allow for further reshaping to accommodate interests of all actants affected by the project.

The seminar paper and the debate that ensued convinced the Government that an implementation of a biometric identification system in the tobacco industry was a solution to the unending identification problems the tobacco industry faced. Government, through the Ministry of Agriculture agreed to have the new grower registration system enacted and thereafter gazetted. The Government also believed that the system would develop into a national identification system. The following quotation expresses the sentiments on the system of one of the team members and an actor in this project. The actor was a government representative, implying that the Government was pleased with the strength of the network.

This state of affairs actually makes the project one of the strongly knitted and revolutionary IS projects I have ever seen..... (Speaker 1: Government).

This was another strong inscription. It started the legal process of enacting the new grower registration system. The inscription was undertaken by the presenter of the seminar paper and the participants at the annual meeting.

6.4.4 Legal aspects of the project

The project had two legal aspects: (1) the enactment and gazetting of the new tobacco grower registration system and (2) the TMMC mandate which was also enacted. These were also inscriptions in the project as can be witnessed from the quotation below. The fact that the

biometric grower registration was enacted and gazetted as part of tobacco growing and selling legislation forced growers to comply and agree to register, as required by law.

A decision to gazette this form of registering growers was made and the government endorsed, accepted and committed itself to facilitate the gazetting of the same. As we are talking now, biometrically based tobacco grower registration system is gazetted and is now a legal requirement for every grower to be registered for growing and selling their tobacco through this system (Project Owner).

The enactment and gazetting of the new system of registration is an indication that the network being established was very strong and potentially irreversible. Once a system forms part of enacted legislation it has to be complied with, regardless of personal antipathy towards it. Failure to comply might result in the defaulter's prosecution. This made the new project appear real, serious and government business-like. It was no longer viewed as a simple TMMC venture. Since the inscription was undertaken by the Government and was enacted by Parliament, it was seen by the entire industry and the nation at large as having significance.

The mandate of the TMMC was another inscription. The CEO might have been encouraged to pursue the idea since he knew that the industry must abide by the regulations set by the TMMC. That would be one of the reasons the CEO of TMMC came up with the idea of the project. The mandate of the TMMC seemed to be another inscription that seemed to add value to the project network, as the TMMC is mandated by law to lead the tobacco industry. Initiating a project to benefit the industry is, therefore, expected of the organisation. Politically, TMMC was just doing its work initiating the project. It is also its duty to inform the entire industry of what it plans to do as long as it affects the industry stakeholders. The following quotation supports this statement.

In my view and from what I have read, the core business for the TMMC is to regulate the production, selling, and exportation of tobacco grown in the country. Hence this project is their mandate (User 1: TMMC).

6.4.5 Tobacco growers' meetings

Tobacco growers' meetings conducted throughout the country were another inscription aimed at wooing growers to buy in the project. During the meetings, tobacco growers were informed of the project and its benefits to the growers, in particular, and the tobacco industry in general. In attendance at these meetings were all tobacco industry players inclusive of Ministry of Agriculture officials. The players praised the project in the presence of the growers, something that encouraged the growers to accept it.

That masses of growers were told about the new system of registration at a meeting where all industry players were present and that each player, in the presence of everyone, declared that the system was going to be beneficial to the growers, was enough inscription to persuade growers to be enrolled in the project. The meetings were a complement to the other for interesting the growers. The inscription was enough to drive home to the growers the benefits of supporting the project. This inscription was undertaken by the tobacco industry.

6.4.6 A list of suggested solutions from a consultancy report

After a consulting firm was recruited to conduct a business analysis of the problem, the list of objectives was still acting as an inscription that scoped the consultancy work. From the consultancy came a full description of the problem and a list of suggested solutions. The list was yet another inscription. From the suggested solutions came a solution of choice, namely, systems development. The solution of choice selected was also tendered as a script to the systems development team. Even at this stage, the project objectives were still acting as a script since the development team had to translate them into a system. This inscription directed the project towards its systems development phase. The list inscribed in the project team the need to recruit a systems development firm to implement the solution of choice.

This inscription was one of the strong ones in the project; it set the ball rolling regarding systems development. The consultancy report thus became the focal actor undertaking this inscription.

After the solution of choice was decided upon, an outsourcer for the systems development was recruited. The firm that did the consultancy for the first phase of the project was reengaged. The consultant was given the responsibility of a Project Manager and came up with the PID (which he refused to release to the researcher, saying that it resembled a PID from PRINCE 2). A contract was drawn and the project was kicked off. The PID coupled with the project objectives was another inscription especially for the development team.

This inscription was also strong and very convincing. It commanded action in the team as it directed the deliverables of the project. The inscription was undertaken by project objectives and the Project Manager

Many characteristics of the project were examined before an outsourcer was recruited. One of the characteristics was the outsourcer's capability and performance. The candidates were requested to

provide a list of reference sites where they had done some development work before. The reference sites were visited. The outsourcer was satisfied with the work done and performance of the systems developed. Therefore, the outsourcee's track record of performance and work ethic was also an inscription for the project. The systems in the reference sites provided revealed to the outsourcer capabilities of the outsourcee. The following extract is an evidence of this type of inscription.

So in this game it's developers past experience and trust that we are working with. Even during our short listing of developers we used past experience using Murphy's Law. If they failed to deliver at some point they might as well fail to deliver ours hence eliminate them from our list (Project Owner).

6.4.7 A prototype of the system to be implemented

Another important inscription was the system prototype which the development team walked the project team through. The prototype confirmed to the project team that their objectives would be met by this prototype. Before the team was walked through the system prototype, some members doubted if their interests were taken on board in the system being developed. The walk through resolved the doubts. This renewed their commitment to the project. The quotation below confirms this point:

We were called to meetings which resulted in very little progress. TMMC recruited a consultant to access the idea. The consultant has done a good communication job on our part because he called some three software houses which he explained the idea thoroughly and asked them to come up with a pseudo system to explain what the system would do at what point and what reports it would produce on a high level. This demonstration worked wonders for most of us because that is where we understood that the system to be implemented from the project would benefit us. (Speaker 3: Government).

After the walk through some organisations were encouraged to start preparing for the implementation of the new system. Some upgraded their infrastructures while others replaced their hardware and software to have a better than before platform for the new system alongside its associated interfaces.

The prototype was, therefore, another strong inscription in the project, especially for locking stakeholders in place and also having them trust the system to be implemented. This inscription was undertaken by the systems development team

6.4.8 The Smart Cards

The Smart Card was another important script for enrolling the commercial banks, growers and some business owners. Smart Cards would be used as both identity cards and debit cards. As an identification facility, the Smart Card scores on privacy due to the fact that personal details are always on the individual and not entrusted with someone else individuals (Jain, Hong, & Pankanti, 2000). The Smart Cards were an inscription which in a way attracted actants such as growers, banking institutions and the business community at large. Both business owners and banking institutions wanted to benefit from business transactions which growers would be engaged in using the Smart Cards. The following quotation indicates the agency Smart Cards had in the project. The agency was extended beyond the project closure.

These smart cards are really communicating to the masses. Most shops especially farm input suppliers are beginning to be connected to banking systems and are obtaining smart card readers so that they benefit from the Bio-reg system. The system is revolutionary. Heee! Malawi is going electronic. For sure!!!! (User 1: TMMC).

6.4.9 Summary of inscription

In this project there were a good number of inscription instances that were displayed before getting to the PID which is also a script on its own. It may be appreciated that a PID is not the only script to kick-start a project: there are a number of scripts before the actual initiation. PMBoK and other PM methodologies prescribe a script at initiation. The as-lived experience reveals that scripts do not have to come in a single format, rather they come in all sorts of forms such as objectives, seminar papers, the system itself and Smart Cards, as examples from this TGRS project. The as-lived experience in the TGRS project also reveals that scripts are found throughout the project life from pre-project activities all the way to project closure. Table 6.1 presents a summary of the inscriptions. In this case study all the key inscriptions were strong.

Table 6.1: A summary of key inscriptions in TGRS project

Inscription	Focal actors	Results/impact
The biometric identification technology	September 11 2001 incident, the media suggesting the biometric identification systems and the Project Owner	Led to the objective of the project: to implement a biometric tobacco grower registration system
A list of objectives	Project Owner and board members	Steered support for the project
A paper presented at an annual tobacco industry seminar	The paper presenter and the participants at the annual meeting	Pushed for enactment and gazetting of the new registration system
Enactment into the constitution and gazetting of the act.	The Government	Demanded that the industry complied with the demands of the project
A list of suggested solution from a consultancy report	Project objectives and the Project Manager	Directed deliverables of the project
A pseudo code of the system to be implemented	The systems development team	Trust in the system and commitment to the project
The Smart Cards	Project objectives and the system	Actants buy-in for the project
Grower meetings	The tobacco industry	Grower buy-in for the project

6.5. Problematisation

Problematisation is aimed at reformulating a solution to a problem situation in a way to catch the attention of actants, so that upon seeing the solution the actants should be able to see their own problem being sorted out by the reformulated solution (Latour, 2005). In addition to providing a universal view to a problem situation, in the TGRS project, problematisation was found to be packaged differently for different stakeholders. The analysis has also revealed that problematisation is not a once off endeavour.

6.5.1 Problematisation as a “lens” for a universal problem situation

Problematisation allowed the formulation of the project objectives to encompass all interests from the different stakeholders. Project objectives were, therefore, formulated following principles of problematisation that would interest most of the industry players. Note that objective reformulation came after several pre-project activities. This allowed for the metamorphosis of the objectives to the advantage of all the stakeholders. The metamorphosis can be observed in the quoted extracts from one informant.

*The main objective of this project is to improve profitability of a tobacco farmer and with it come, ease for the government to collect taxes such as land rent and withholding taxes, traceability for tobacco which is one of the requirements of the international market. This is useful due to the fact that when afro-toxins are found in some tobacco we should be able to trace that tobacco back to the farm it came from. In this system we have geo-coordinates and geo-positioning of every farm that has been registered. This feature assists with the traceability issues of the industry, so you see I won there on the part of the tobacco buyers. They could not have afforded to reject this system as it was addressing one of their objectives as well (**Project Owner**).*

*The government would not have rejected it because the system is facilitating tax collections for the development of the nation. The government is actually looking at this system as a starting point for national identification system. Other objectives that come with the main objective include: facilitating Good Agricultural Practice which is also one of the mandates and objectives for international tobacco buyers. We will also be able to carry out our tobacco estimates for the economy's planning more easily and in a cost effect manner (**Project Owner**).*

*This system will cut down most overheads for various organisations and the end result will be improved profitability for the farmer. It was the farmer who paid for all the inefficiencies and overheads in the system.....farmers are a registering entity or unit if you like. So if they have more than one farm, all farms will be marked by the farmer's biometric identification and proceeds from all tobacco sales will be linked to the one registration number. All proceeds for a farmer will now be banked with a single bank and with a single bank account (**Project Owner**).*

Because of the belief that project objectives metamorphosise, it may be concluded that a project may not roll without an objective and just wait for actors in the project network to formulate them (objectives). Actors act on “something” which is presented to them. It is, therefore, important to have an initial objective on which the actors would act and reshape. This “something” might as well be referred to as an objective, however, this objective should not be “cast in stone”, and actors should be allowed to reshape it depending on the interests (Blackburn, 2002; Tatnall & Gilding, 1999; Neal, 1995).

Through problematisation, it was uncovered that different stakeholders were committed to the project because they could view benefits being realised through their participation in the project. For instance, the tobacco marketing floor landlord had a good number of perceived benefits from the project once the system was implemented. To the CEO of the marketing floor, problematisation was targeted at the perceived benefits. Some of their perceived benefits are included in the following extract from an interview with the CEO of the company. The benefits are

grouped into three: (1) cost effectiveness, (2) timeliness and accuracy and (3) grower identification and traceability.

Cost effectiveness

1. *We would handle the same amount of tobacco, but from a reduced number of growers since one grower seems to be having more than one farm since the old system used to allocate a number for each farm. This meant more paperwork and transactions for one grower. This time the grower will have one transaction regardless of the number of farms he has. We will cut down a lot on stationary expenses and time. That's a win for us.*
2. *We deduct our 3% on what we have collected. If growers default on their loans, we collect less for the lending institutions...; consequently our 3% is just a small amount. Now if we allocate one number per grower, and every loan will be serviced in full, our 3% will be worth mentioning. Our organisation will be financially on a sound track. ... Redundancies were looming. So if this one number per grower and grower identities issue is solved, everyone's mind will be at peace.*
3. *This project will enable my organisation to maximise profits ensuring sustainability of the company and indeed when I am asking my board for salary increments I shall not feel like I am defrauding the shareholders. So yeah I suppose the personal agenda would be continued employment for me and the rest of the employees.*

Timeliness and accuracy

1. *We open markets in April. For us to prepare for the selling season, we need to estimate the ... in February. This new system will enable us to use geo-coordinates for farms, zoom into the farm and see how dense the plant population is, and estimate the yield without having to visit a few non strategic farms.*
2. *We get data from TMMC it's in our interest to make sure that the data we get is ...accurate and compatible with our needs and our platforms. So we have to be there.*

Grower identification and traceability

We will be able to identify and trace growers. Meanwhile growers have multiple identities. We have some problems when we pay into some growers account when the money did not belong to them just because they stole somebody's license and changed the bank account details. We have had problems physically tracing such growers. This system will help us a lot.

6.5.2 Problematisation is packaged differently for different stakeholders

In the TGRS project problematisation started from the *corridor salesmanship* stage. During the stage, problematisation was aimed at amassing support; therefore, the original project idea had to be problematised in a form of benefits to the 'customers' (people the Project Owner talked to during the time the project idea was being marketed). The following extract confirms this.

I basically talked to decision makers, Chief Executives mostly. To almost everybody I corroborated with; the response was positive. To a few I got resistance, I explained to them the

importance of that system in terms of what they would benefit as a company and what they themselves would benefit. Things like improved productivity, profitability, renewed employment permits and improved traceability of the crop for afro-toxins, extended employment, improved government taxes and job satisfaction... You see! To gain buy-in from all these people I did corridor salesmanship to, I had to tell them how the project would benefit them hence easy and faster buy-in (Project Owner).

After “corridor salesmanship” to the institutional heads, the Project Owner problematised the project idea to the Technical Operations Manager (TOM) of TMMC. The TOM heads the core department in the organisation. The Project Owner discussed the project idea with the TOM on a one-on-one basis, emphasising the operational side of the project since the TOM was concerned with the operations of the industry i.e. implementing the policies. To the rest of the managers, the Project Owner presented the project idea at a management meeting as just one of the topics on the agenda and not the core issue for the meeting. The rest of the managers were recipients of the news and not necessarily actants whose input was required by the Project Owner. They were not directly affected by the project although the impact of the project would directly affect them. According to the Project Owner, the managers were not senior enough to debate the project idea since it was a policy issue, while the managers were simply operatives.

The Project Owner did not discuss the project with operational users of the ensuing system. He informed them at a departmental seminar and later at a staff meeting together with the rest of the employees. According to the Project Owner, the users were not critical to the goals he wanted to achieve. “*This project attracted interest for the entire economy*”: internal users were, therefore, not urgently needed. The different problematisation packages might not always include positive persuasion techniques. In the TGRS project in some circumstances, the Project Owner used intimidation to have operational users of the system accept it. The Project Owner, who is a CEO of TMMC, indicated that if operational users would reject the system on the account that they were not involved, they would be asked “*to shape up or ship out*”. With the high unemployment rate in the country, i.e. approximately 90%, in mind the Project Owner reasoned that any rational employee would not risk losing their employment. The operational users were, therefore, likely to *shape up*. The extract that follows confirms the finding.

.... I will work my way out. It's all about studying the situation and bringing in proper solutions. A little intimidation might work for me as I am the CEO of this organisation. If they (users) do not comply and deliver on the new system I will tell them “shape up guys or ship out” (Project Owner).

Tactfulness on the part of the Project Owner can be witnessed from the following statement by the Chairman of TEA displayed below:

You see the TMMC chief had done extensive ground work. The board had approved the project and most of the vocal us at the meeting were in the board as well. During the meeting the objectives of the project were laid out. We debated them and we cancelled some and added some depending on interests of those first participants. At the end of the day, the objectives of the project seem to address most of the grower identification worries which have been growing over the years. Participants have already seen how the system would benefit their organisations and supported it whole heartedly (Chairman: TEA).

Different stages of the project needed different problematisation techniques. The techniques determined the commitment project stakeholders invested in the project. For instance, problematisation technique for internal users was through intimidation while for TEA and marketing floor landlord, the technique was crafted in the solutions to the grower identification and traceability problems the two organisations were faced with.

When the Project Manager was recruiting the systems development team, he used yet another technique of problematisation. He enticed the team with a bonus on the delivery of the system and also told the team that the project was big and was a challenge. He indicated to them that if they would deal with this project it would mean they are “gurus” and that HD could then bid for any project because they shall have proven that they were capable. This can be witnessed from the observation captured in Box 6.2.

Box 6.2: Observation at Developer House on the development team.

Architect:	<i>Sir, what do you think of the code Geri walked you through?</i>
Project Manager:	<i>That was brilliant guys I must say. We must impress these people. We cannot afford to mess this project up. You do a good job. You will definitely earn a bonus on delivery of the system.</i>
Developer:	<i>Is that all you can say? How about promotions?</i>
Project Manager:	<i>That will come in yes; but it will not only depend on the success of this project alone but all other duties you are assigned to do. Succeeding in this project means a lot to this organisation. It is a big project that deals with big shots in the tobacco industry. You guys are gaining recognition and so am I [Says this in a hushed voice]. You do this very well you have earned yourself a big name in this country. You saw the calibre of team members we met the other day. They are not kids you know.</i>
Tester:	<i>Stop that, we are not kids either-[He laughs].</i>
Project Manager:	<i>I know deep down you, you agree with what I am saying and that hardworking is your motto</i>

It is observed from Box 6.2, and compared with the way the Project Owner problematised the project idea to various actants, that different stakeholders have their own problematisation styles which also depend on the calibre of the actors they are dealing with.

Problematisation may not be a once off endeavour. It is an ongoing process during the entire project life cycle. For instance, the main objective of the project was rephrased silently to appeal to a wide audience “to improve tobacco grower profitability”. From the goings on in the TGRS project, it can be observed that it took some effort for problematisation to get to the point of being successful i.e. changing forms from an idea to project objectives and to an Act of Parliament. The *corridor salesmanship*, for instance, took an entire year before commanding enough buy-in for support during a board meeting. The extract below emphasises that problematisation took some effort before intersement can be attained.

But at the end of the day there is a lot of groundwork where you have to set the screen very very carefully and right. There is a lot of politics that goes on behind the scene. This project is where it is today partly because it is me a head of an institution who initiated it and I have very good experience with public relations and company politics. I really did a lot and heavy ground work for the project to succeed (Project Owner).

In some instances problematisation was not successful despite the one-on-one *corridor salesmanship*. The Project Owner was, therefore, obliged to hold a few focus group meetings. The focus group meetings allowed some technocrats to understand the project idea better than they had before since there was a chance to reproblematised the situation. The meetings also assisted in reshaping the project idea as well as the main public objective without injuring the Project Owner's personal objective.

6.5.3 Summary of problematisation

In the TGRS project, problematisation was not “one size fits all”. It metamorphosised in accordance with the actants to be problematised. This explains why in this project's objectives were not stagnant; they kept on being metamorphosised throughout the life cycle of the project. As a consequence of the project's objectives' metamorphosis, the problem and the suggested solutions were also metamorphosising throughout the project's life cycle and not simply at the beginning. The analysis in the case has also revealed that problematisation was packaged differently for different stakeholder. The analysis has also shown that problematisation was continuous throughout the project's life cycle.

6.6 Interessement

In interessement, the big task is to convince actants that by going ahead with the focal actors' interests, their (the actants') interests are also taken care of. To ensure that interessement impacts on different actants, it is packaged differently. As in problematisation, interessement is also ongoing and not once off.

6.6.1 Different interessement strategies are used for different actants

In the TGRS project, the Project Manager alongside the Project Owner articulated the project idea to allow different actors to play specified roles. In playing the roles, the project team would help reshape the results of the project to match the Project Owner's vision as well as also meet the needs and expectations of other stakeholders: industry players, the Government, TMMC users and the development team alike.

From the start, the Project Owner identified actants whom he termed "customers" in his *corridor salesmanship* venture. One of the formal problematisation took place in a board meeting where project objectives were reformulated and reshaped to accommodate interests of the "customers" and other stakeholders. The success of interessement in the board meeting was confirmed at the industry seminar where the project idea and its objectives were further deliberated upon. At the industry seminar, it was the same board members in their different capacities and other stakeholders inclusive of technocrats who deliberated upon the project objectives. To show that interessement was attained, the new procedure of tobacco grower registration was endorsed for enactment and gazetting during the seminar.

Once the new registration procedure was enacted in Parliament, it meant the Government was locked in place in the project network as an ally. Successful interessement is also observed in the actor representing the marketing floor landlord. The representative indicated that he hoped that operations in his organisation will be "*cost effective due to the implementation of the system*" which is a result of the project. The representative from this organisation hoped "*to maximise profits ensuring sustainability of the company*" once the system was operational. The representative, therefore, viewed it as beneficial to be part of the project team as a stakeholder, a role defined by the Project Sponsor/Owner and the Project Manager.

Different actors were interested in different aspects of the project. Therefore, interessement strategies were also packaged differently. To some, interessement was about achieving personal

goals, while to others interessement was about achieving goals for the organisations they work with and yet to others interessement was not part of the deal. For instance, the internal users of the system would just have the system dumped upon them. Should these internal users want to sabotage the system, the Project Owner would fire them; hence no need to interest them (internal users).

In the TGRS project there were several motivational factors that led to interessement. For instance, the Project Owner was motivated by four things: fame on exit; poor tobacco quality; persistent loan defaults. However he was also informed by the biometric identification systems emerging after the September 11 incident in the United States of America in 2001. The following quotation contains some statements backing the revelations claimed above:

This project is of national importance, when I go from here, I will leave this institution a very happy, proud of myself and satisfied person. Of course I already have the recognition for championing what has been bothering several people's minds. I have found the solution for them. It actually feels good. Everyone who knows and understands the problems we had, looks at me as a hero now. I guess I am because I have never heard of any country that has implemented such a system (Project Owner).

An agro-input funding facility by EU tried and failed after four seasons due to the same problem. Tobacco quality, as a result of this, declined. ...I personally felt sorry for the tobacco industry.... considering the strategic importance tobacco has to this nation. I then started wondering after hearing strategies of identification after the US Sept.11, 2001 incidence [incident].... That is how I hatched the idea of "biometrically based tobacco grower registration system" (Project Owner).

For the tobacco exporting companies represented by the TEA chairman in the project, motivational factors were threefold

Tobacco buying companies, which are also exporters, are middlemen for tobacco buyers for the world market. The world market demands afro-toxin free tobacco. Tobacco found with afro-toxins beyond the acceptable limit is supposed to be returned to the country of origin. In turn, the middlemen are supposed to trace the place of origin of the returned tobacco. Tracing may only be achieved if there is a better traceability programme in place. The TGRS project offered the buying companies this opportunity.

The world market also demands that middlemen should sell tobacco from farmers who practice GAP. GAP can only be monitored if there is a proper traceability mechanism. This system would offer the buyers the required traceability. It was therefore, a motivation for them to participate in

the project to influence the project to include the traceability data requirement to the system to be developed. The following extract emphasises the point.

This tells us that he made proper research into what we are struggling to achieve on our list of goals and found something that this project would be able to address. So you can see that he is not up to using me to support the project idea but he is also offering a benefit along the way, a credit on my CV if you like. So that is my experience (CEO: TEA).

The operations of buying companies in the country depend on the availability of tobacco. The decline in quality and quantity of tobacco was, therefore, a concern for the buying companies. The project promised an antidote to both quality and quantity of the crop. It was only rational for the buyers to support the project.

Most institutional heads in TEA are foreigners. Their continued stay in the country depends on the continued production of the crop. The foreigners need a work permit to continue working in the country. The permit would only be granted if the business is too big to be handled by locals. Conversely, employers of buying companies pay their foreign employees expatriate scale of salaries. If the quantity of the crop declined, the employers would not be willing to keep expatriates employed. They (employers) would rather lay off the foreigners and hire locals to handle a declining business. It was, therefore, in the interests of the foreign institutional heads, a category the chairman falls into, to support the project since it promised the industry increased good quality tobacco. Personal endeavours were, therefore, another motivational factor for the tobacco buying companies. The following quotation emphasises the most of the points listed above.

To almost everybody I corroborated with, the response was positive. To a few I got resistance, I explained to them the importance of that system in terms of what they would benefit as a company and what they themselves would benefit. Things like improved productivity, profitability, renewed employment permits and improved traceability of the crop for afro toxins, extended employment, improved government taxes and job satisfaction (Project Owner).

To the growers and the growers' associations, the Project Owner also used a different package of interestment. He singled out what he thought would benefit them (growers and their associations). An example of this, for instance, was the use of the Smart Cards as identity cards as well as debit cards since the associations needed the Smart Cards to identify their members as well. The lack of a national identification system meant it was difficult for citizens to be identified

for a number of transactions such as the access to legal instruments, the opening of bank accounts and the withdrawal of large sums of money. The following extracts from the interview with the Project Owner and the growers' association back this point up.

I had to put the message in such a way that they saw more benefit in this system than the old one. In this system the farmers will have their particulars and their facial and finger print images on a Smart Card. The card will also be used as a debit card...their tobacco proceeds will be accessed using that Smart Card. So the Smart Card is both an identity card and a debit card. (Project Owner)

Since 1994, the Association has guaranteed seasonal fertilizer and other farm inputs loans on behalf of its members who collect such materials directly from the suppliers on acquisition of forms processed by the association. However, the scheme has presently been abandoned due to poor recovery rate. This is where the association derives its interest in the Bio-Reg system that TMMC is implementing (CEO: Growers' Association).

To a technocrat, such as an internal user at TMMC, the opportunity to quench her technology thirst that the project provided was enough motivation even though there were no deliberate efforts by the focal actor or any mobilising agent to interest her. The user was situated in one of the regional offices for TMMC. Before the project was initialised, only the head office enjoyed the benefits of the internet and its associated technologies. Because the system required that all regional offices be on-line, the regional offices were then given the opportunity to also acquire state of the art equipment and interfaces. The development seemed to flatten the organisation as anyone in the company could send emails to management and chat with friends and colleagues online.

Some users were sent on training to be able to operate procedures and manage and administer others. On first sight, this gesture by management (sending users for training and allowing them to use the internet and chat technologies) would be taken as interessement; however, it was not intended to interest users, but rather to satisfy the system requirements. The users did not negotiate for anything. The interessement was as a result of the "thirst" for technology the user had. The following extract emphasises the idea:

It starts with registering growers and the rest follow... Look we had no backup system or procedure, these systems bring in one. We have now a data highway as well as proxy servers for back up. We are migrating to Oracle as a backend database for our bulk data storage. The system has now user level passwords which will enable some users to access only a few fields of a particular record in the database. Growers can also decide to register on line using their computers or cell phones because the system is real time. We are considering linking the system to Google Earth so that we can visit farms on-line and assess their crops right from the office. You see life will be much easier for most of us and also the system will save some funds for the company for example instead of sending personnel out to assess the crop in the field we will do it online (User 2: TMMC).

Peer pressure, power dynamics and politicking seem to be other factors in which interessement was packaged. The concept of the biometric tobacco grower registration system was first sold to grower councillors (who are elected leaders of the growers). The councillors were to act as opinion leaders (Rogers, 2003) within their constituencies. For instance, grower councillors are growers themselves, but they are also leaders in their areas. The councillors convened meetings to introduce growers to the newly enacted law on tobacco grower registration. The growers believed that if their leaders, who were also growers, had agreed to the idea, they too might follow suit. Politics also played a part in this scene. As much as growers were interested in the Smart Card capabilities, they (growers) were also recruited because the councillors had power over ordinary growers. It would, therefore, be easy for these councillors to convince growers to support the system.

The growers' association used to provide farm input loans to growers. This facility was discontinued due to high default rates. According to the CEO of the growers' association, the worst of the defaulters were councillors, and the growers knew this. The fact that councillors supported the new system confirmed that the councillors saw a benefit in the new system. The growers, therefore, thought it was safer to accept the system and benefit alongside. The following extract from an interview with a grower confirms this.

Councillors do not just adopt strange ventures just like that. There must be some benefit behind. Either monetary or some fraud. I am supporting the system, in case I am a councillor in future and I will equally benefit. (Grower)

6.6.2 Interessement is not always successful

Interessement is not always successful. At times it fails, especially when actants feel that their interests are in jeopardy (Callon, 1986; Latour, 1986). In the TGRS project, there were instances of resistance. The resistance was from both external and internal stakeholders. Interestingly, the resistance seemed to come from actors whom the Project Owner did not have a one-on-one encounter with, for instance, councillors. For the councillors to be interested in the system, the Growers' Association's CEO "had to twist some councillors' arms for them to endorse the project". A bit of intimidation and politicking seem to have yielded interessement in the councillors and growers. The growers were told that the system had already been enacted by Parliament and that beyond 2008 they would be able to sell their tobacco only when they were registered using the biometric registration system.

At first councillors were grumpy, but later on they agreed to support it. ... These councillors then took the message to the growers, as usual I am told some growers did not want the system, but after government enacted that selling of tobacco in the industry will only be permitted for growers who shall have biometrically registered themselves. I am glad to report to you that they have now agreed to the system. From this season, the money for their Smart Cards will be deducted from their tobacco proceeds at auction floors (CEO: Growers' Association).

True, I actually had to twist some councillors' arms for them to endorse the project. There are a couple of reasons. [Adjusts himself, clears his throat, and raises his voice, kind of intimidating – really looking very serious].one- loan defaults have been a headache to the entire tobacco industry. This organisation has been faced with infamous retrenchments because most of the funds for running the association were tied in bad debts. This really affected the operations of the association. It was almost declared bankrupt and you know that is very serious. Would I be so stupid not to support the idea that seems to fish us out of the sinking boat? (CEO: Grower's Association).

Further resistance came from the internal users. They, too, did not have any one-on-one interestment encounters with the Project Owner. Their fears and anxieties were not addressed. According to the Project Owner, the users were not worth worrying about because they were easily manipulatable and replaceable; therefore, there was no need to waste any efforts interesting them. If they needed employment, they would *shape up* on their own. The following quotations indicate that there *were* fears which were not addressed and that the interests of the users were not taken care of. The second quotation also implies that the users were not in any way involved in the project; they were only speculating issues. They did not even know the origin of the project.

To be honest with you most people do not want it because we fear that revenue base for TMMC will go down because the Bio-Reg will reduce number of growers since there will never be any one man clubs. There will be no reason for growers to pay fees as they will not be receiving licences every year. We are also afraid of redundancies since the registration workload will be reduced due to the reduced number of growers and efficiencies introduced by the new system. So this new system, we do not like it, but what can we say, we are employees. The bosses want it (User 1: TMMC).

I have no idea of who hatched the Bio-Reg Idea. Somehow I think the idea comes from above judging from the way it is hyped. But for sure I know that growers and their associations are not happy of the system because they will have their membership reduced in that every registration number was counted as a member regardless of whether one grower grows on more than one number or not. This system will reduce revenue for grower associations (User 1: TMMC).

In a different scenario, resistance was also observed in the project team, especially when one of the Government speakers indicated that there was “*some kind of tension*” among the team. The

resistance was in line with interests earlier expressed by the Government. The Project Owner wanted to have the cost towards the project shared among stakeholders. The Project Owner failed to see one aspect, that TMMC implemented policies by Government and that it was a fully subverted Government corporate. The Government, could therefore, not contribute towards any cost of the project. Through TMMC, Government was already paying for the costs. The Project Sponsor failed to ammanse support on this because he tabled the request at a meeting and not on a one-on-one discussion with the Government officials. Once the Government refused to contribute, the rest of the players equally declined to do so, resulting in growers bearing the cost of the Smart Cards by themselves. The following extract bears witness to this revelation.

The tension arose because some things were not clear. At first it appeared like TMMC wanted to share the cost of the system with all stakeholders including us which did not make much sense because the money that TMMC gets is through the law which we present to Parliament. We are TMMC's bosses. You do not make a boss pay (Speaker 1: Government).

6.6.3 Interesement is an ongoing activity

Interesement is an ongoing activity in projects, if the project networks are to be stable, with actors locked in place. If there is no re-interesement, the project network might disintegrate (Latour, 1986). To keep the actors motivated all the way through to the completion of the project, there is a need for re-interesement efforts. In TGRS project, instances of re-interesement can be observed on industry stakeholders. Firstly, interesement was achieved during the one-on-one *corridor salesmanship* instances.

Secondly, the same actors that the Project Owner had one-on-one discussion with were re-interested during a board meeting where objectives of the project were reshaped to address industry concerns. After the objectives had gone through several metamorphoses, they were pseudocoded in a prototype. Actors were walked through the prototype. After the walk through actors were once more motivated. They witnessed their interests that had originally been presented as project objectives, being translated in a code. At this instance, the actors were impressed and happy that their interests were being taken care of by the development team. This 'walk through' was the third instance of interesement for the actors. As can be witnessed from the following extracts, interesement is an ongoing activity.

When the walk through is in progress, we keep an eye on features that are concerned with addressing our objectives. If we can't vividly see our objective being addressed, we ask the developers who come with the consultant/project manager to explain how the objective is addressed. The developer re-walks us through this time with an interest to show us how the objective is addressed... (Speaker 1: Government).

...the developers walk us through the skeleton of the system. We are satisfied that our concerns have been taken aboard. We are happy. We can continue being part of the project (CEO: Tobacco marketing landlord).

This analysis has revealed that project team members stayed in the project team for different reasons, ranging from personal to corporate. It was also found that different stakeholders needed different intersement techniques to be motivated to participate in; or simply support, the project. The project has also confirmed that intersement was not always successful; in fact at times it failed. It was also revealed that not every actor in the project needed intersement; some actors sailed along with a little intimidation depending on catalytic circumstances such as unemployment. Politics as well played a role in some successful intersement instances. It is safe, therefore, to conclude that, although stakeholder interests seemed to be very important in the initiation and progress of the project, politics as well as intimidation also played a role to maintain intersement.

6.7 Enrolment

In the enrolment stage, interrelated roles were defined and allocated to actors. An alliance of actors was thus created to pursue the objectives of the focal actor after the rest of the actors are convinced of the benefits they may reap from their involvement in the Actor-network (Linde & Linderorth, 2006; Linderorth & Pellegrino, 2005).

In the initial stage of the project, the Project Owner did not have a defined role. He was a project initiator. The analysis showed that he was a focal actor and had established himself as the OPP for the tobacco industry. The network, especially the industry stakeholders, also pushed the Project Owner to be the OPP by, among other things, refusing to take taking part in financing the project. The following extract confirms the stakeholders' refusal to take up responsibilities thereby empowering the Project owner.

At first it appeared like TMMC wanted to share the cost of the system with all stakeholders including us, which did not make much sense because the money that TMMC gets is through the law whose green and white papers we present to Parliament. We are TMMC's bosses. You do not make a boss pay. We would not pay. Eventually it was agreed that TMMC would foot all the costs for the project except for the cost of the smart cards which will be deducted from grower sales from this selling season (Speaker 1: Government).

The industry stakeholders were enrolled as a group of actors by the focal actor. The focal actor's reason for giving the industry players the role of a stakeholder and project team members was twofold:

1. To assess the viability of the project idea and to reduce opposition once the project idea was taken to board for approval, since most of them used to sit in the board meeting. Their role, therefore, was to support the project idea.
2. To assist in financing the project once the idea was approved. The focal actor hoped that the idea would stir the industry stakeholders to share in the project costs. The idea was not supported as can be seen from the quotation in the preceding paragraph.

Another set of actors that enrolled into the project was Smart Cards. The role of Smart Cards was twofold:

1. To lure financing institutions to the role of stakeholders so that they (Financing institutions) could once again start trusting growers and financing farm inputs; and
2. To attract growers to buy-in the project idea since they (growers) were the whole reason for the project.

Financing institutions discontinued the loan facility to growers due to the escalation of loan defaults, the blame of this being laid at the door of the absence then of a proper national identification system. It was expected that the Smart Cards would solve the identification problem and that the financial institutions would consider reintroducing the loan facility.

The inefficiencies in the old system benefited growers in the short term. It was, therefore, feared that growers might not appreciate the new system. However, it was expected that once Smart Cards were introduced, growers would see a benefit in the system hence support the project. Other than locking the grower in place, the Smart Cards also locked other stakeholders such as business owners and banking institutions as well as those from the tobacco industry. The following extract emphasises the agency given to Smart Cards.

These Smart Cards are communicating to the masses; most shops especially farm input suppliers are beginning to be connected to banking systems and are obtaining smart card readers so that they benefit from the Bio-reg system. The system is revolutionary. Growers will not have to be moving around with loads of money anymore. Bye-bye to the pick-pocketers who reaped growers' money, this time hard luck. We will not even have the trouble of asking village chiefs to identify their subjects. The smart cards will do the job. Heee! Malawi is going electronic. For sure yes !!!!. (User 2: TMMC).

The TGRS was an actor that was enrolled into the project and unintentionally used to enrol other actors such as the Revenue Authority and some internal users.

It can also be observed that the project objectives enrolled the TGRS which, in turn, enrolled the stakeholders; that is why they (stakeholders) were speaking on behalf of the system. The system

had two enrolment roles in this project: (1) to translate project objectives into a code that would solve tobacco industry problems presented by the stakeholders and (2) to enrol stakeholders as well as users especially the users who were passionate about technology (technocrats).

Operational systems users (especially the technocrats) were enrolled into the project because it offered them three opportunities: (1) career advancement, (2) marketability and (3) fancy technical systems.

Career advancement: Some users were sent on two training courses of a fortnight each in preparation for the smooth commissioning of the project. The training was career advancement for the users. The training offered the users an opportunity to advance their career through what was taught as well as through interaction with other learners from different environments. Being “*exposed to the state of the art technology*” also assisted the users to advance their careers as well, because the technology was equipping the users with new skills.

Marketability: The users felt the exposure to the state of the art technology made them marketable. The fact that the project affected most stakeholders in the economy and that the system was the talk of much of the nation made the users visible and thus more marketable than before. This was because employers viewed them (the users) as technically knowledgeable people. The training further increased the marketability of the users as they had an opportunity to renew and hone their skills. The following extract explains how the users felt about themselves in terms of marketability.

I am now exposed to the state of the art technology which puts me on my toes every time. I am assured of not having my knowledge decayed. The technology is challenging. I think I am now more marketable than before. I can easily face the world and take up a better job. Besides the challenging job, I have already benefited from the project in that I was sent for networking training course (User 2: TMMC).

Being part of the good image of TMMC: The system demanded that the organisation acquire fancy technology systems such as the website, internet, intranet, extranet and Oracle database management system that boosted the image of TMMC. Internal users were, therefore, proud to be associated with the company. With the internet, the users were assured of visibility to colleagues and friends since they (users) could “*even chat online with friends and colleagues*”. Socially, the users became more confident and were happy to be associated with a company that implemented state of the art technology which was admired and had made an impact throughout the country. The users believed that because TMMC was viewed as one of the most influential and “*efficient*

companies in discharging its duties", it was, therefore, prestigious for to be associated with such a company because it meant, in turn, that it was the employees (including the users) who were efficient.

On the development team side, the Project Manager who is also a consultant in this project played a role in enrolling actors and assigning roles to them. The Project Manager, also a focal actor from the development side of the project, first enrolled leaders in different portfolios; he attracted actors with the magnitude and exposure the project would bring to both the organisation and to the actors involved. He went to greater lengths, promising the team a bonus if they delivered the required results. The development team, also a group of actors in the main project team, was recruited to translate the objectives of the tobacco industry on grower registration.

Just like interessement, enrolment can also reoccur. This reoccurrence can be observed in the enrolment of industry stakeholders. Much as the industry stakeholders were enrolled by the focal actor for aims which have already been discussed, the project objectives also re-enrolled the industry stakeholders for the second time. The project objectives were addressing some of the problems the stakeholders faced. These objectives were, therefore, a second enrolment agent for the stakeholders. The stakeholders experienced a third enrolment during the system prototype walk through. The walk through enabled the stakeholders to have confidence in the system because it had shown to have taken care of their interests. The following extract emphasises the agency in the system.

So far I can confidently indicate to you that revenue authority is happy with the resultant system. It appears that all our concerns have been addressed...we are very sure that both financial and operational benefits will be realised at the end of the day...Since we have seen that it will benefit us once the project is implemented and functional we decided to budget for the technology updates... I and the organisation I work with support it (project) because it solves our problems and those of Ministry of lands, beside's it's a gateway towards national identification system which the revenue authority will benefit a lot from. (Officer: Revenue Authority)

From the discussion in this sub-section it is apparent that members of a project were not in the team by accident. They were indeed in there for a purpose often articulated either by the Project Owner or the Project Manager or indeed both of them. The purpose for which individual project team members were enrolled into a project ranged from being a mere figurehead, to a sponsor to a spokes-agent either for other project team members or for some artefacts to come out of the project.

6.8 Mobilisation

In the mobilisation stage the network is represented by spokes-agents which are authorised to speak legitimately for the rest of the actors (Blackburn, 2002); this “silences” actors who may want to speak against the network. The strategy, therefore, ensures that the network is established and a successful translation is achieved (Linde & Linderoth, 2006). The degree and form of mobilisation determines whether or not a project attains its set objectives (Stanforth, 2006).

In the TGRS project, there are five key spokes-agents identified. These five agents are:

1. The tobacco grower registration system,
2. The Smart Cards,
3. The PM and the systems development methodologies,
4. The Project Owner, and
5. The tobacco industry stakeholders.

6.8.1 The tobacco grower registration system

The most conspicuous of all the spokes-agents in the TGRS project was the tobacco grower registration system itself. The system spoke for the project and the system development team. It spoke to three groups of actors: (1) the industry players, (2) TMMC operational system users and (3) the development team.

The system development team presented a system walk-through to the main project team. The walk-through emphasised that all the project objectives were incorporated in the system. As a consequence, all the industry players were convinced that their interests were addressed through the project. The message from the system encouraged stakeholders to continue participating in the project.

The system brought with it state-of-the-art technology into the organisation which eased most technology problems such as unauthorised access to data (the system implemented “*access level passwords for security*”) and data integrity. The system also implemented an “*Oracle database management system*”: which the users believed was “*robust enough to handle such big loads of data*” which the organisation handled in registering growers and in collecting statistics.

When the system development team walked the stakeholders through the pseudo code of the system, the stakeholders developed confidence in the team saying “*all our concerns have been*

addressed”, even before the actual system was delivered. Stakeholders believed that the team would deliver the required results. The confidence the team instilled in the stakeholders might even earn the team and its employers more systems development work since most of the stakeholders were decision makers in their various organisations.

6.8.2 Smart Cards

The Smart Cards were another spokes-agent in the project. They were speaking on behalf of the project as well as the resultant system to (1) growers, (2) grower associations, (3) commercial banks, (4) business owners and (5) tobacco industry stakeholders.

One of the reasons growers accepted the project was because they would be issued with Smart Cards which were to be used for both identification and as debit cards. They were, therefore, assured of the much needed identification and that their cash would be safe from robbers.

To the business owners, the Smart Cards/debit cards were the reason they (business owners) obtained card readers and system connection interfaces to banking institutions. The business owners acquired the systems and were *“obtaining smart card readers so that they benefit from the Bio-reg system”* in order not to lose business from growers.

As much as banking institutions were requested to resume farm input loans, they were also interested in the Smart Cards/debit cards because of the business opportunities the card would bring to the banking sector. To the tobacco industry, inclusive of growers’ associations, the Smart Cards spoke about the much needed identification of growers.

6.8.3 The PM and the systems development methodologies

The PM and system development methodologies was a set spokes-agents as well. The methodologies provided the team with guidelines and rules of the game called PM. They also advocated to its users the PMBoK ways of doing things in PM since the methodology followed maps well into PMBoK (Siegelau, 2004). The methodologies also prescribed deliverables expected at different stages of the project. The deliverables included stage gate reports, the business case which came in the form of a consultancy report and a contract (project charter) for the PM methodology. For the systems development methodology, deliverables included use-case diagrams, business entity models and activity diagrams.

6.8.4 The Project Owner/Sponsor

Other than being the focal actor, the Project Owner was also a mobilisation agent because, as long as the system was not yet implemented, his personal objective was not achieved. It was, therefore, inevitable for him to be a mobilising agent as well to ensure his personal objectives were achieved. He was, therefore, a spokes-agent for both his personal interests as well as the interests of the project-the project objectives.

6.8.5 The industry stakeholders

The industry stakeholders were also mobilisation agents since they were legitimate spokes-agents for the project in their respective organisations. Most of the stakeholders were decision makers and not operatives. They (stakeholders) were, therefore, entrusted with the job to speak for the system and the entire project to operatives in their respective organisations. Validating the stakeholders' agency are the quotations below.

On the whole this project had a very sound foundation and the initial team members did a very sound background work of selling the idea out and letting prospective shareholders digest it and discover their portion of benefit in it. Team members were very constructive in their criticisms, resulting in a very robust project. The owners are open to discussion and are not ridged to one view of the solution to their problem (Speaker 1: Government).

I represent these buying companies. When I come back from the meeting I have to brief them of what transpired and what has been agreed upon. On that I am being looked at as someone who understands the said system. Mind you it's not everybody who might understand this system. One has to have the interest in technology at heart. They also have to have security issues at heart. I happen to poses both of those characters. So I speak for both the system being implemented and the project. So yes personally I guess am benefiting in enriching my CV [adjusting himself in the chair while making an "I do not know type of face"] though I do not know for what-I am already 60 years of age (CEO: TEA).

This system will facilitate collection of withholding tax; land lent from growers and will enable government to have reliable statistics about land issues in the country... By all means this project cannot fail. Why should it fail? We will make sure we resuscitate it at all costs. It will not fail. Most organisations are benefiting from it so it will not fail. We will all work together to resuscitate it if it shows any signs of failure (Officer: Revenue Authority).

The spokes agents in the TGRS project are summarised in Table 6.2 listing the actors the agents spoke for in some cases, and the actants the agents spoke to. In a few instances, the outcome of the mobilisation has been highlighted.

Table .6.2: A summary of the spokes-agents

Spokes agent	Spoke for	Spoke to	Message and results
The system	Project	Industry players	Convinced the system will deliver
			Continued commitment to the project
	Development team	TMMC users	Commitment; confidence in marketability and visibility
		stakeholders	Convinced the system will deliver
Smart Cards	Project		Continued commitment to the project
		growers	Ease of being identified; debit cards
		Industry	Ease of grower identification and traceability
		Banks	Business opportunity
Methodologies	PM standards	Business owners	Business opportunity
		Project team	Guidelines and directions
The Project Owner	Himself		Succeed in his personal objectives
	The project		Useful and can solve industry problems
Industry stakeholders	The project		The project was useful and worthy support

The discussion in this sub-section brings the analysis to the following findings:

- 1 A project needs some kind of advertising if team members are to be committed to the project. The responsibility is entrusted to agents who are loyal to the objectives of the project;
- 2 Artefacts are very strong advertising and marketing agents for projects as well as for different portfolios such as developers, designers, testers as well as documentation officers; and
- 3 Perceived outcomes of projects are enough reason to keep the project team in place and strive to achieve success in a project for instance in the project under discussion, it is observed that most industry stakeholders were locked in place because of the perceived benefit of the resultant system from the project.

A plausible project advertises itself when all is done. It is documented that mobilising agents are selected from among the actors to speak on behalf of some network (Linde & Linderöth, 2006; Mähning et al., 2004). This project shows that no agent was purposely recruited as a mobilisation agent. The agents themselves had objectives in addition to being spokes-agents for some or other aspect of the project. For instance, the CEO for TEA might have been a mobilising agent for the project because that role earned him respect from his organisation and power over other employees in it. He was *“being looked at as someone who understands the said system”*. The CEO also believed that he was the rightful spokes-agent because he *“understood this system”* which not everybody could do. He believed to understand this project *“one has to have the interest in technology at heart”*, a quality he believed he possessed.

6.9 Irreversibility

Irreversibility refers to the difficulty in making changes once an actor-network is established and strengthened. When the inscriptions are strong, the actor-networks in which the inscriptions exist become irreversible (Mähring et al., 2004). In the TGRS project network, all strong inscriptions, save one which was not key, were strong (see Table 6.2). The only weak inscription was the idea that all stakeholders assist in funding the project. It did not lock in place a single actor, consequently all project expenses within TMMC was shouldered by the project initiating organisation. The inscription did not seem to have a proper medium.

Some strong inscriptions, such as the TGRS, affected technology needs and upgrades for some stakeholders and some organisations started sourcing such technologies. The extract below confirms this.

So far I can confidently indicate to you that revenue authority is happy with the resultant system. It appears that all our concerns have been addressed. However, some organisations are not really ready to sail along TMMC technology advances for example us; we do not have state of the art technology to handle the data from TMMC. However, we hope to be acquiring the technology bit by bit until we are in line with what is required....Much as the project is now introducing demands for technology update in our organisation..... It was in fact proper that we got involved at the initial stage of the project so that we understand the technology demands before we committed ourselves to supporting the project.....we decided to budget for the technology updates. I am glad to tell you that the updates have been approved by government and we will definitely update them the soonest (Officer: Revenue authority).

The strong inscriptions strengthened the project actor-network, making the network irreversible. This was also the belief of the actors themselves as indicated in the following extracts.

This project is where it is today partly because it is me a head of an institution who initiated it and I have very good experience with public relations and company politics. I really did a lot and heavy ground work for the project to succeed. Am saying succeed because where we are now, we can never fail (Project Owner).

...some employees in TMC celebrated that the project will fail because the cost was enormous for TMMC to finance (US\$10/grower for a hundred thousand growers). I was surprised at this kind of reaction. I thought we are all happy that the project will ease our problems yet others are busy praying the project fails. But hard luck for them, growers have accepted to have full cost of the cards (User 2: TMMC).

The irreversibility was very important to the progress of the project. Although the project was not yet closed, team members as well as other stakeholders believed that it would succeed and that if it

“showed any signs of failure or weakness” they would *“resuscitate it”*. In this research study it is found that the irreversibility of a project network ensures the success of the project.

6.10 Summary of the chapter

The chapter has presented an analysis of the TGRS project case using ANT as a framework bringing arguments in the light of the three ANT concepts of inscription, translation and irreversibility. In highlighting moments of translation, the analysis utilised the language of the four moments, namely, problematisation, intersement, enrolment and mobilisation. The analysis has brought to light a story of how projects emerge and how objectives get shaped and reshaped by interactions that take place among actors in the project network. In the TGRS project case, as-lived experiences have assisted the researcher to understand project processes better than before. The analysis revealed that in the project no one actor/stakeholder was a hero in the success of a project.

Analysing the case using ANT lenses has also revealed that a system user is defined differently by different stakeholders. The translation moment has also brought to the fore the fact that personal benefits and interests in a project breed passion for the project.

Chapter 7: Description of the FCS project case

7.1 Introduction

The FCS project was a two-phased project that eventually implemented a Fuel Codes System in its second phase. The project involved two parties: the outsourcer, Mega Fuels and the outsourcee, Ultimate Solution Providers (USP). This chapter is aimed at describing the FCS project case while tracing the project network and following its actors in an effort to understand the as-lived experience in the project.

The rest of the chapter is outlined as follows: Section 7.2 discusses the profiles for the two organisations involved in this study while Section 7.3 outlines the problem and background to the project, followed by the solution in Section 7.4. Objectives of the project are outlined in Section 7.5 and the PM methodology followed in the FCS project is described in Section 7.6. Actors in the FCS project network are listed and described in Section 7.7. The chapter closes with a summary in Section 7.8.

7.2 Mega Fuels and Ultimate Solution Providers profiles

Mega Fuels is the third largest global energy company with its headquarters situated in Europe. The company is one of the six super players in the oil industry that advance vertical integration-i.e. private sector oil exploration, natural gas exploration and petroleum product marketing. Major functions of the company include:

1. Exploring oil and gas,
2. Extracting oil and gas,
3. Transporting oil and gas,
4. Manufacturing fuels and products,
5. Marketing fuels and products , and
6. Generating low carbon energy.

The company was founded in 1909 and currently operates, across six continents. Mega Fuels products and services are marketed in more than 100 countries across the globe. The company processes crude oil at a refinery while the manufacturing of lubricants takes place at an oil blending plant. Locally, Mega Fuels services approximately 600 gasoline service stations, operates

eight owned depots and three coastal installations and is claimed to be the largest in the country. The company was established in 1920 in the country.

USP is also a multinational company specialised in providing IS solutions to businesses in Europe and Africa, company has two offices. The company is considered reputable amongst its fellow solution providers due to the calibre of its employees as well as the quality of the solutions it provides.

7.3 Background and problem of the FCS Project

The FCS project was drawn from Maga Fuels country headquarters. Originally, departments in the company worked in silos. The company had records in the refinery, gasoline service stations, the manufacturing site, in the depots as well as at the country office. The databases could not communicate to each other and there was no data integrity. Each unit had its own databases with product codes referring to the same product differing from department to department. For instance, a code for fuel type A would be referred to as ParaA in the depot database, while in the retail unit database it would be referred to as BenzPA. The same type A would be identified with the code MANPA in the manufacturing site database and HeadPA16 in the head office database

A Performance Unit at Mega Fuels prepares and produces monthly performance reports for the organisation after reconciling the records from different databases. Some of the reports present quantities of fuel types received per consignment; balances of commodities in the warehouses, in the pipelines and at retail stations; profits and losses per fuel type/consignment; reorder levels and period for a fuel type; adjusted prices for commodities; and damages incurred per fuel type. Often such reports are inaccurate and untimely. The trend was observed for several months, and for five consecutive months, the PU head was constantly cautioned for producing substandard reports which would eventually land Mega Fuels in disrepute. Within these months at least one or two reports were either inaccurate or out of date consequently, *the "reports were no longer trusted"*. This started affecting the PU head and further affected his performance at work. The PU head had this to say on the matter.

Our reports were no longer trusted. I started getting really embarrassed at monthly meetings when heads of various stock centres started challenging my reports. I really looked stupid and dumb especially when I thought I had checked the figures but still find that I have presented substandard reports. I could feel from the venomous remarks from my bosses that my job was at ...The reports were done partially manually. The whole thing was frustrating. I actually contemplated quitting the job. (PU head)

The PU head was on the verge of resigning from his job to run away from the problem. It can be urged, therefore, that the PU head's chief motivation to search for a solution to the problem was to save his reputation. This is how the project came into existence

The PU head indicated that once he started feeling that the problem was becoming out of hand he called for a meeting with his subordinates to establish where the problem had arisen from. At the meeting he discovered that any prospect of producing accurate reports were farfetched: procedure was tedious as it was partly manual and needed a high level of concentration. The accurate reports also needed more time to compile since it was complicated and difficult to reconcile records from different databases manually. The following extract emphasises this point.

The problem is that the field headers specifying similar fields are different in all the tables. The field lengths are different too. Yet we are expected to identify and follow a commodity from say manufacturing, to pipelines, to warehouses, to retail stations and produce a report for each commodity. The reports must show that it's one commodity and it's in this state at this location. It is really tedious to come up with reports, besides; the reports are numerous while we are also constrained on time. It's really frustrating (PU head)

The PU head approached the IS Manager to address the codes problems. They felt that the problem was simple enough to be sorted out internally. The IS Manager assigned two of her juniors from the department to attend to the problem. As is noted from the extract below, the two IS junior officers recommended that the system be updated to produce the required automatic reports.

They (IS junior officers) sat with the people who actually prepare the reports for the whole day. The two officers later in the day briefed me that the system needs to be upgraded to accommodate our requirements. I asked them if it was doable by them and they confirmed that they would do it but it would take them some four months because they had to rearrange some databases in different locations (PU head).

A week later, the PU head met Henry from USP at a dinner party. In their discussion the PU head narrated his problem to Henry. Being a consultant and a business analyst himself, Henry recommended that the PU head look for a consultant to thoroughly investigate the problem and propose a solution.

Henry, having worked with the IS Manager from Mega Fuels before, jumped the gun and booked an appointment to see her. When they met, Henry narrated the discussion he had had with the PU head over the weekend. Henry was trying to influence the IS Manager to recruit a consultant to investigate the problem further and suggest a lasting solution. Henry saw this as an opportunity

and coaxed the IS Manager to consider recruiting USP for the consultancy. The following extract emphasises the point.

In our conversation when I paid her a visit, I convinced her to recruit a consultant to research on the problem. I reminded her that USP is also a consulting firm and that she should consider short listing it as well. I promised her a good discount if she recruited USP. I further invited her that we would talk more on the payment issue to assure her that we can negotiate more on the price issue (Business Manager)

The IS Manager discussed the possibility of recruiting a consultant to analyse the problem and propose a solution with the PU head. The PU head agreed to the proposal, however, the IS Manager pointed out to the PU head that she would not be responsible for payment of consultancy fees and any associated costs. The PU head agreed that his unit would take responsibility for the bills. After this agreement, the IS Manager wrote a report on the problem to management.

In the report, she explained that the way forward to sort out the PU problem was for the company to outsource a consultant to research the problem and come up with a list of suggested solutions. She also indicated that the PU had committed itself to be responsible for the bills associated with the consultancy. The organisation approved the idea of the project and authorised the PU to spend on the project. However, management dictated that it needed accurate reports by the end of 12 months from the day the report was presented. After the approval, the formal project process commenced.

7.4 The solution to the problem

The solution to the problem was two-phased:

1. Consultancy to investigate the problem and suggest solutions; and
2. Implementation of a solution of choice from the list of the suggested solutions.

The internal IS department consulted IS solution providers to suggest solutions to the problem. According to the informants in this research study, the IS department from Mega Fuels consulted USP who, after analysis of the problem, came up with a list of five alternative solutions.

1. Do nothing and continue with the way the system was running;
2. Use a spreadsheet application to come up with the required report after pulling up the required fields manually;
3. Buy an integration system off shelf which would convert the product codes into some universal code;

4. Build a middleware-like system to integrate the various silo legacy systems and generate the required reports automatically; and
5. Outsource the solution suggested in 4 to a software development house.

After an examination of the options, Mega Fuels opted for the fifth option. Three software development houses were shortlisted as possible solution providers. Mega Fuels eventually recruited the same consulting firm that suggested the solutions to build the middleware-like system as a solution to the problem. The solution provider, USP, therefore, continued with the project using its own consultancy report as a business case for the second phase of the project. The Fuel Codes System was developed and delivered in less than 12 months.

USP was recruited as a solution-provider partly because of historical and as well as compatibility reasons. According to the IS manager, Mega Fuels had already worked with USP on several projects and their (USP) reputation was commendable. Since USP had already done the business analysis for the project at hand, it was easy for them to proceed without wasting any further time in trying to understand the problem as would be the case if a totally new solutions- provider was to be recruited.

The two companies (outsourcee and outsourcer) follow the same PM methodology -PRINCE2. It would, therefore, be easy to understand each other on administrative and procedural issues governing the project network. Both companies use similar systems development methodologies symbolologies and artefacts which are both generics of Unified modelling language (UML). The UML is an open method used to specify, visualise, construct and document the artefacts of an object-oriented software-intensive system under development. The UML represents a compilation of "best engineering practices" which have proven successful in modelling large, complex systems. The companies use UML annotations in the systems design phase as well as in the entire systems development life cycle. The methodologies are not UML *per se*; rather, the flow charts and annotations resemble UML. The organisation insists the development methodology is not UML, rather it is home-grown and a generic of UML. It was, therefore, convenient to work together and agree on the standards and quality of the required outcomes from the entire project.

7.5 Project objectives

The objective of the project was twofold: (1) offer Mega Fuels a full business analysis of the problem at hand, and (2) implement a system that would integrate and normalise silo legacy systems so that in the regional office generated reports a fuel type has one and the same code. This

would enable the commodity to be traced all the way from the receiving bay at the port through to the warehouses, to the retail stations and to the point of sale. The resultant objective of the project was that the PU at Mega Fuels headquarters would be able to automatically generate reports, such as amounts received per consignment, balances of commodities in the warehouses, in the pipelines, at retail stations, profits, losses, reorder levels, adjusted prices and damages incurred per fuel type. In line with the objective, the system would automatically generate a code whenever a new product is introduced into the fuel market. This code would have to be uniform for the product throughout the supply chain in all departments.

7.6 Project Management methodology in the FCS project

The Project Manager in the FCS project indicated that they followed PRINCE2 for a PM methodology and a home grown software development methodology that resembled UML and used some UML notations. The Project Manager, due to ethical issues, could not release any of the project documentation; however, he referred me to PRINCE2 templates just to see some few procedures which they followed. PRINCE2 templates can be seen from Appendix F. The Project Manager could not release the home grown systems development methodology either saying it is against their company policy to divulge such information. See the extract from the Project Manager below.

We followed PRINCE2 whose templates are available and you can have. PRINCE2 is in the public domain so you can have the templates. But I cannot give you the project artefacts; they contain information of our client and company secrets. It is against the policy and rules of this company for me to give you such information. I cannot even give you our home grown methodology. If I do that I can lose my job unceremoniously. Unless you don't mind having me fired. (Project Manager)

7.7 Actors and networks in the FCS project

In this case study, there were many actors interacting in the project actor-network. The actors were revealed from a chain of interviews where one interview led to other interviews with other actors. This enabled the researcher to trace and follow the key actors in the project network. The request to conduct a research study on IS projects in USP landed in the hands of a Business Manager for action.

An interview with the Business Manager, an actor in this project network, led to other actors and directions: the Project Manager, the Business Analyst and the IS Manager from Mega Fuels-the

client side. An interview with the Project Manager pointed to yet other actors-the artefacts, the PM methodology and the software development methodology. An interview with the IS Manager pointed to other actors and directions such as the PU head representing the entire unit, the Principle User, the legacy systems, the existing hardware and software infrastructure and the software development methodology.

Some actors were black-boxed in order to simply procedures. Other black boxes, however, were opened for clarity during the analysis stage of the case. This sub-section presents the actors. Figure 7.1 displays the actors in the FCS project network.

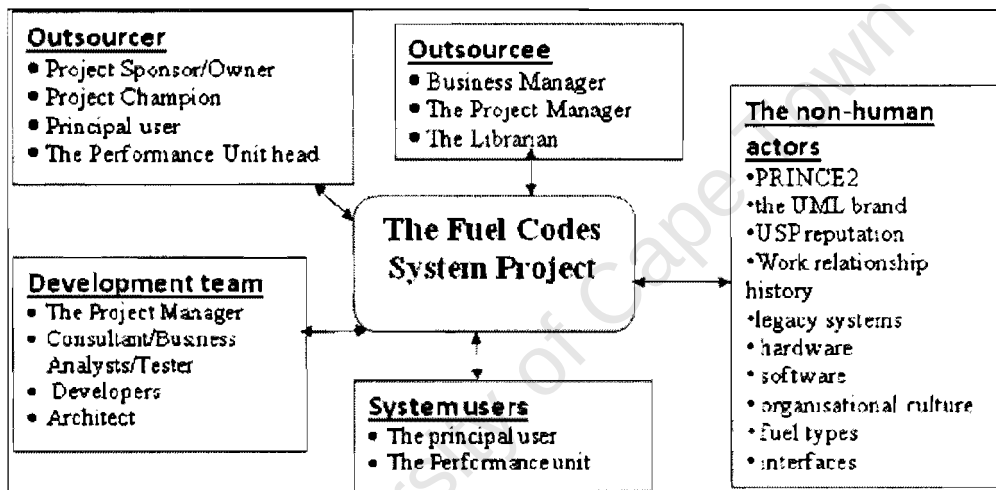


Figure 7.1: Actors in Fuel Codes Systems project (adapted from Vaagaasar, 2006).

7.7.1 The Business Manager

In the FCS project, the actor network study started by identifying one actor-the Business Manager from USP. The Business Manager briefly brought up the objective of the project since every consultancy work in the organisation first gets to him. The Business Manager heads, among other units, the Business Analysis and the Systems Development units. All projects, therefore, fall under his jurisdiction.

Once a consultancy request gets to the Business Manager, he visits the client to obtain first-hand information about the problem. Depending on the nature of the problem, he identifies and recruits expertise in the problem domain area from among his team members. In the case of FCS, he recruited the Business Analyst. Likewise, when the organisation is requested to implement a

business solution for a client, the Business Manager “*first investigates the nature of the problem and appoints a Project Manager*” for the project according to the skills required and the clients’ needs.

The Business Manager gave a brief background on how the project was initiated. The Business Manager was enrolled into the project by a sense of duty and because it was his hierarchical responsibility. The Business Manager in this case worked tirelessly to win both the consultancy and the systems development phase of the project. He convinced the IS Manager to trust USP. He promised the IS Manager “*a good discount*” and the fulfilment of unspecified “*obligations*” which seem to be catalysts to the awarding of the consultancy to USP.

7.7.2 The Project Manager

The Project Manager, a senior member of staff at USP, was recruited into this project by the Business Manager due to “*his skills at managing such projects*” and “*his past experience with systems as well as other platforms at the client's site*”. The Project Manager was originally only a member of the project team. The original Project Manager resigned from the company hence the appointment of this Project Manager. He originally declined to take up the position because he was busy with his studies, however, when his predecessor resigned this Project Manager had very little choice but to manage the project team. According to the Business Manager, the Project Manager was the right manager for the project.

Geoff is suitable for his position in this project. He has worked with Mega Fuels in different projects both as a team member and as a Project Manager. I assigned him to manage this project but he declined because he was trying to concentrate on his studies. When Mathews left, we could not hesitate to ask Geoff again to manage the team. Being a mature person that he is, he accepted this time although this was adding pressure to his work load. He has managed nicely though. I must say it was a blessing to have him as a Project Manager; I can assure you (Business Manager).

Over and above over-seeing the daily running of the project, the Project Manager was also responsible for recruiting the software architects, software developers and testers.

7.7.3 The Business Analyst

The Business Analyst, another of the actors in the project network, conducted all the research on the problem area and outlined five alternative solutions. Later, the analyst acted as a consultant for the project because of his earlier involvement in researching the problem. He understood the

problem and the proposed solution the best because he had crafted it. It was advantageous for USP that the client opted for systems development as a solution to the problem. The Business Analyst/Consultant acted as an internal Project Owner at USP and later as a Tester. This actor, therefore, had three roles.

The actor “*worked with*” the Business Manager “*for four years*” and he knew of the actor was diligent in his work habits. The Business Analyst was, therefore, recruited because of his past experience with responsibility of the same kind as well as his familiarity with the problems PU usually had with reports. According to the Business Manager, the actor was “*a very terrific enquirer when it comes to digging problems out*” of a situation. The following extract from the interview with the Business Manager confirms why he was recruited into the project.

So from my first encounter with client, I straight away thought of Ahmad to be the most suitable Business Analyst. The situation was tricky; it needed expertise in order to suggest a plausible solution (Business Manager).

7.7.4 The Systems Development team

The systems development team was at times handled as one actor. Where necessary, however, the team members were dealt with individually. The team comprised of the Business Analyst/Consultant/Tester, the Architect and Developers. The architect was recruited into the project to inspect the architecture of the client site to assess their architectural and compatibility needs between the existing systems, platforms, interfaces and the incoming system. This was necessary, since the new system was to run on existing platforms and communicate with other legacy systems.

The developers did the hands-on development work of the system. They followed a home -grown systems development methodology which they claimed that its symbols resemble those of UML. With the assistance of the Business Analyst/Consultant/Tester, the Developers coded the system. The Developers were recruited due to their expertise and dedication to duty especially when deadlines were tight.

According to the Business Manager, the same Business Analyst/Consultant/Tester previously worked as a Developer and a Tester. His new responsibility fitted in well with his earlier ones because he understood what the system was to deliver in order to sort out the client’s problem. It was consequently an easy task for him now to be a Tester in addition to his other roles. These roles helped him deal with the testing task better because as a Business Analyst, he understood the

problem as well as the solution better; he came up with the solution himself. The following extract emphasises this point.

I had a thorough understanding of the problem. I was the business consultant for this problem and I was the one who suggested the solution. I designed the solution if you like. When testing I was also checking if what I included as part of the solution were included and that the functionality was not faulty or giving wrong results. It was an advantage that I was involved in these positions. Of course I admit the project was very simple, not as challenging as most of what we have delivered before (Tester).

7.7.5 The IS Manager

The IS Manager was contacted by the Business Manager to discuss and initiate the project. The IS Manager gave insight as to why USP became involved in this project. The IS Manager also gave a comprehensive explanation as to the problem definition that helped to understand and describe the pre-initiation stage processes of this project as well as how the company came to decide on recruiting USP as the solution provider of choice for the identified problem.

The project team considered the IS Manager as the Project Champion; she made an extra effort to see the project launch and proceed to a successful completion. The IS Manager, represented the IS department, the department that was also responsible for recruiting the consulting firm. The IS Manager was instrumental in all these decisions, hence her being in the picture. The IS Manager was a contact person for USP due to her strategic position in the organisation regarding IS projects.

7.7.6 The Performance Unit head (Project Sponsor and Owner)

The PU head, the Project Owner and Sponsor, represented the unit in this project. He is considered both a Project Sponsor and the Project Owner since the project originated from the unit he heads. The unit was responsible for settling the bills for the project. Although he was the Project Owner and Sponsor, he was handicapped in that he could not make an informed decision on whether or not to halt the project because he did not understand systems development. He, therefore, relied on advice from the IS Manager. The latter would not be regarded as the Project Sponsor due to company politics. The budget for the project was the responsibility of the PU and not the IS department. The IS Manager, therefore, could not suggest expenditure which was not under her jurisdiction. However, due to her position in the company she was responsible for recommending the project to management and, at the same time, for ensuring that what the system was required to deliver was delivered before signing off the project for payment.

7.7.7 The principal user

The FCS is a sort of a middleware which converts different fuel codes of the same fuel type coming from different databases into a common code. Middleware is software that functions at an intermediate layer between applications and operating system or database management system, or between client and server. The job of running the conversion from different databases was supposed to be carried out by the Principal User. This actor was key to the adoption of this new work procedure. She was, therefore, considered to be an interesting and interested actor in this project.

The Principal User did not have a problem with her work routine. When the middleware was introduced, she was forced to change her previous routine which to her was not worth the effort because she never complained of having a problem with it. . She could not appreciate the change and she was further, unwilling to change. The following extract confirms the Principal User's frustration.

Everything went on very well after I took over from my colleague who resigned. However, the main user of the system was not the performance unit. It was a lady who was almost forgotten and excluded from the equation all together. She could not take the change amicably and she completely refused to use the system. She did not see the point to change. She did not see the importance and the significance, but on our part we did a great job and they have paid us. But it's going to be a mission to bring her on board I promise you. (Project Manager)

7.7.8 The Project Management and the systems development methodologies

The PM and the systems development methodologies used by both Mega Fuels as well as USP were actors in the FCS project network. Both companies use PRINCE2 as their standard PM methodology. Both organisations have some roots in the United Kingdom where PRINCE2 is popular and widely used (Great Britain OGC, 2005). It is, therefore, not surprising that both organisations follow PRINCE2.

PRINCE2 and the systems development methodologies brought into the project actors that negotiated recruitment of some team members. These actors include the scope definition, the change request procedures, project organisation and structure and the time management prescription. PRINCE2 dictated to the project team stages of the project, roles of stakeholders, as well as deliverables coming from the project processes. The methodologies also dictated the calibre of a Project Manager to be recruited. To some extent both methodologies influenced the recruitment of USP as a solution-provider as well. As claimed by USP, the systems development

methodology used makes use of symbols that resemble the annotations used in UML. The systems development team, therefore, used this home-grown UML-like generic methodology in developing the system. Mega Fuels prefers UML for a symbology in systems development to other methodologies that may not use similar annotations as used in UML. It, therefore, would better do with a UML symbology clone than any other generic methodology or symbology.

7.7.9 The legacy systems and existing hardware and software

The new system runs on existing infrastructure and interfaces, and it uses data from some legacy systems for its queries. The queries are used to generate the required reports. Due to the existence of the legacy systems and platforms as well as interfaces, the new systems development process was mandatorily mindful of the existing infrastructure. The following extract from one of the developers emphasises the fact that their work was influenced by the legacy systems

This was rather a challenging system to build. We had to first or all study what was there in the organisation in term of their legacy systems and staff like that for us to fit in the middleware. We were mindful of the fact that there are already database management systems so our system was developed with that in mind so that it would talk to all the systems already there in the organisation, if you see what I mean. It had to be compatible to the hardware, to the existing software and indeed to the database management systems.
(Developer 1)

To some extent the existing infrastructure, former business ties and the legacy systems influenced the decision made by the IS Manager in recruiting the solution provider. Among other aspects, the IS Manager considered a provider that had experience working with the systems in their offices. This criterion was also one of the criteria used by both the Business Manager and the Project Manager in recruiting their project team.

7.7.10 The system

The system and its reports were one set of actors. The nature of the reports influenced the other actors to be affected by the project network. The Principal User, for instance, became involved because of the nature of the required reports and the system which was implemented. The system and the nature of reports also influenced the type of involvement the IS department had in the project and also the calibre of Developers as well as the Architect involved.

7.8 Summary of the chapter

In summary, the FCS project network consisted of both human and non-human actors. However, only key actors together with the reasons they (actors) were considered key are highlighted. The project involved implementation of an IS project involving an outsourcer, Mega Fuels and an outsourcee, USP. The case is summarised in Table 7.1.

Table 7.1: Summary of the Fuel Codes system project case

Case Name	Fuel Codes System project
Time period to cover the case	A month
Observations made	Throughout the one month period and attended one meeting
Number of individual interviews conducted	5
Length of the interviews	Between one hour and three hours, 20 minutes each
Number of group interviews conducted	1
Number of participants in the group interview	4
Non-human actors identified	The Fuel codes system, PRINCE2, the UML brand, USP reputation, work relationship history, legacy systems, hardware, software, ISPs, telephone lines and organisation culture, fuel types.
Human actors	The Business Manager, the Project Manager, the developers, the business analysts/testers, the project librarian , the Project Owner/Sponsor, The Project Champion, the user and the resigned project champion and the resigned project manager.

Chapter 8: The FCS project data analysis and findings

8.1 Introduction

This chapter presents the analysis of and findings for the FCS project. The chapter starts off by unearthing the main objective of the project, in Section 8.2, and then analyses the use of ANT vocabulary in Section 8.3 through to Section 8.8 discussing problematisation, interessement, enrolment, mobilisation and irreversibility. The chapter closes with a summary in Section 8.9.

8.2 Unearthing the main project objective

The main objective of the project was to investigate the root cause of the inaccurate and out of schedule reports generated by the PU in Mega Fuels at the country office and, thereafter, suggest solutions. A follow-up objective was to implement the most plausible of the suggested solutions. The main objective was, therefore, twofold.

For five consecutive months the performance reports were neither accurate nor timely. The PU head only started reacting after the fifth month because management strongly disapproved of being constantly presented with inaccurate reports. The response to address the problem seemed to come from the embarrassment the PU head suffered in front of his peers. During the interview, he kept on mentioning that he *“lost face in that meeting”*. The PU head wanted to sort out the problem to reclaim his lost image among his fellow managers and top management and not necessarily to sort out the problem to reflect the performance of the various fuels the organisation markets. It appears that personal objectives drove the PU head to embrace the project.

The first time the IS Manager was approached about the problem, she sent her junior officers to assess it, which is the normal practice for most organisations. Even after the junior officers' report, the IS Manager did not meet the PU head to discuss the findings and map the way forward. However, when the Business Manager convinced her to recruit a consultant to research the problem, she discussed the matter with the PU head and wrote a report. According to the PU head, the meeting between him and the IS Manager was *“more to inform”* him *“that a solution to the problem was found”* than to discuss the problem. The IS Manager immediately struck a deal with the PU head on payment in that she would write the consultancy proposal to be presented to management, but that funding would come from the PU.

What is remarkable is that after the meeting with the Business Manager, the IS Manager suddenly became responsive. This spontaneous responsiveness is questionable. Possible explanations include the “*good discount*” she was promised upon recruiting USP; the invitation by the Business Manager that “*we would talk more on the payment issue*” to assure her that the price was negotiable; the track record and history of the two managers’ work relationship; and “*some other obligations*” which the Business Manager said “*were fulfilled as well*”.

Normally, during the meeting between the IS Manager and the Business Manager, the IS Manager could have indicated the steps the IS department had already taken in respect of the project. According to both managers, this was not discussed. In normal circumstances, the IS Manager could have feared being labelled incompetent by dumping the problem on consultants before trying to sort it out herself. However, in these circumstances, the IS Manager risked her reputation of being competent and recommended a consultant to sort out the problem for the PU.

It was the PU that was responsible for the payment of the consultancy fees. It is, therefore, unlikely that the pledged “*good discount*” on the consultancy fees could have prompted the IS Manager’s immediate response. Again, it is unlikely that the speed of the response could be entirely due to their (the IS Manager and the Business Manager) work relationship history because normally that fact would play a role only during the short listing of the bidders and not at the stage this was taking place. The likely reason for her motivation was the undisclosed “*some other obligations*” which the Business Manager said “*were fulfilled as well*”.

The undisclosed “*some other obligations*” were understood to imply personal rewards which she was promised upon awarding the consultancy to USP. It is unlikely that the IS Manager would have had no personal benefit if the project were implemented internally using local human resources. However, the IS Manager indicated that she was only doing her work in recruiting USP. She argued that she awarded the consultancy and later the systems development part of the project to USP because of several reasons one of which being diligence USP previously displayed in respect to projects of this sort. She indicated that she had worked with USP on several projects and that they had a good track record.

The discussion has highlighted how a project need, the technology opportunity and the stakeholders were integrated within a PM process. It is found that a project process did not start from the initiation stage; it started from afar. It is also found that personal objectives were integrated in the project need. In this case, the PU head was “*depressed*” about and embarrassed

with the unit's failure to produce accurate reports on time - to the point of him contemplating quitting the job. The IS Manager reacted only after the Business Manager promised her a "*good discount*" and undisclosed "*other obligations*".

8.3 Inscription

In the FCS project case, eight key inscriptions were identified. The eight are:

1. The rebukes from management to the PU head;
2. The proposals from the PU meeting to the IS Manager;
3. The meeting between the IS Manager and the Business Manager;
4. The IS Manager's report to management;
5. The consultancy report on problems identified and a list of suggested solutions;
6. An identified solution of choice;
7. The project standards followed by Mega Fuels and USP; and
8. The Fuel Codes System.

A discussion of the inscriptions brings out how project objectives were identified; how the inscriptions were crafted to interest actants; as well as the strength or weakness of each inscription. Focal actors undertaking the inscriptions are also uncovered. The inscriptions are discussed in the ensuing sub-sections.

8.3.1 The inaccurate reports and rebukes from management

The first inscription in the FCS project was the inaccurate and persistent performance reports. The persistent reports led to repetitive rebukes and scolding showered on the PU head. The PU head suffered the consequences of the rebukes for five consecutive months before he realised he needed to sort out the problem. This trauma forced him to call for a PU meeting to brainstorm a solution to the problem. The inscription is considered strong due to the upheaval it caused Management and the inaccurate reports were active in this inscription. They were, therefore, the focal actors undertaking this inscription.

8.3.2 Proposals from the PU meeting to the IS Manager

The PU head convened a meeting with his subordinates to brainstorm a solution to the problem. The meeting came up with a list of proposed solutions which were taken to the IS Manager. The proposals were another inscription in the project.

The inscription failed to steer interessement in the IS Manager. All the IS Manager did was to send her juniors to assess the problem. Even when the juniors filed a report on the problems and the suggested solution, the IS Manager did not act on the report. She opted not to disclose whatever her junior officers found in their one day problem investigation in the PU. This Inscription is, therefore, considered weak. In this inscription, the focal actors were the PU head and the proposals made by the unit.

8.3.3 Meeting between the Business Manager and the PU head

Another inscription was the meeting between the Business Manager from USP and the PU head. When the IS Manager seemed not to care about the performance report problems, the PU head was becoming *“more stressed than before”*. In desperation, he explained his problem to the Business Manager as a colleague at a dinner party. The problem immediately interested the Business Manager. He instantly saw a business opportunity in the problem and seized it. Like the previous inscription, this inscription was revolutionary since it inscribed programmes of action in the Business Manager. This inscription was in the form of a business opportunity for Business Manager.

8.3.4 The meeting between the Business Manager and the IS Manager

After the discussion between the PU head and the Business Manager the latter acted pre-emptively and booked an appointment with the IS Manager. The Business Manager described the meeting he had with the PU head and requested the IS Manager to take up the matter and implement a project out of it. The Business Manager asked the IS Manager to have USP recruited for the consultancy and, in return, he pledged to give Mega Fuels *“a good discount”* and to fulfil some undisclosed *“obligations”* to the IS Manager. These pledged rewards to the IS Manager by the Business Manager were yet another inscription that led the IS Manager to be interested in the project.

The meeting between the Business Manager and the IS Manager persuaded her to look somewhat differently at an issue that she had considered relatively unimportant, probably because of the pledge the Business Manager made to her, as can be witnessed from the extract below. Soon after the meeting between the two, the IS Manager suddenly became interested in the project. How did this change of heart occur? It is suspected that the Business Manager promised an incentive for her as the following quotation seems to suggest.

I promised her a good discount which I did and some other obligations were fulfilled as well...
(Business Manager).

The defensive reaction by the IS Manager to the researcher when asked to explain the procedures followed for short-listing bidders confirm that there were indeed personal benefits involved in the project. The IS Manager lost her temper and, in a high pitched tone, she responded that she “*was only doing [her] work*” in short listing bidders as indicated in the following quotation:

...I thereafter shortlisted bidders using a criterion approved by our head office. We finally settled on USP for that consultancy. ...Of course this was after we advertised for the consultancy, nothing personal. I was only doing my work. (The IS Manager in a very defensive and aggressive tone)

This inscription was wrapped in the personal benefit, which might explain the IS Manager's sudden interest in the project. The meeting steered desire in the IS Manager to pursue the project. Before the meeting the IS Manager had a *laissez faire* attitude towards the problem. Soon after the meeting she initiated a meeting with the PU head and thereafter prepared a report to management outlining the need to recruit a consultant. This inscription was also as revolutionary as the first one. It started the project implementation process. The meeting between the IS Manager and the Business Manager was, therefore, another strong inscription. Focal actors in this inscription were the Business Manager and the PU head.

8.3.5 The IS Manager's report to management

After discussing with the PU head the consultancy and the bill payment responsibilities, the IS Manager filed a report to management. The report was another inscription crafted to interest management. Convinced by this report and aware of the severity of the problem, management approved the proposed consultancy. The inscription was wrapped in the report presentation the IS Manager made to management and the severity of the problem.

In this inscription, the PU head was also interested because his rebukes would be minimised since management seemed to have appreciated the root cause of the inefficiencies of the PU. The problem was not only human error, it was due also to the inefficient tools that the workmen were given, i.e. an old system which could not have records from different databases reconciled automatically. The report was also revolutionary because it enlightened management of the root cause of the persistent problem and promised a solution. The inscription is, therefore, considered strong. This inscription was undertaken by the IS Manager and the management report.

8.3.6 The consultancy report

The consultants' report and its presentation was another inscription in the FCS project. The consultancy report and its presentation interested management and the PU head further because it spelt out the problem and listed suggested solutions. Since management was impressed with the USP report and its presentation, it was easy for management to approve a solution to be implemented and that the same consulting firm would implement the solution.

Management was provided with a list of five alternative solutions. The solution of choice was to develop a system to convert the codes. The list was another inscription that allowed the parties to debate and settle on one solution. The list forced the meeting not to "think out of the box". They were locked in place by this list.

8.3.7 The Project Management standards and work relationship

Another inscription was wrapped in the standards the two organisations follow for Project Management and systems development: PRINCE2 and UML. The inscription impacted on the recruitment of USP as a systems developer for the Fuel Codes System. The same inscription locked the project team in place to abide to the standards required by the two methodologies.

The conduct, procedures and roles in the project were shaped by the PM methodology (PRINCE2) while the processes in the development of the system were informed by UML. These two methodologies interested Mega Fuels, and among other things, persuaded the company to recruit consultants and systems developers from a company that followed the same methodologies. The whole project was based on norms set by the two methodologies. Focal actors in this inscription were the two methodologies; they commanded a set procedures and conduct of business in the project. The two organisations were to some extent focal actors in this inscription because they were the ones that directed that the two methodologies be the standard. PRINCE2 and UML were another set of strong inscription in addition to the two organisations.

Other inscriptions that played a part in the project include the work relationship between USP and Mega Fuels and the track record and diligence displayed by USP in its work procedures. These inscriptions contributed to the decision to reengage USP in this project. The following extract emphasises this.

This is not the first time USP has provided a solution to our problems, they have done that several times in the past and this organisation is very happy with their diligence in the way they carry out their duties. This solution provider is one of the most reliable providers available in this country. So yea, we just had to recruit them again. We were assured of a job well done as they have always done. Another thing is that we know that USP use PRINCE2 for PM methodology and so do we; USP uses some kind of UML for systems development and so do we. It was easy to work with USP on that front as well. We spoke the same language and dance to the same tune. (IS Manager)

8.3.8 The Fuel Codes System

The FCS itself was another inscription. However, this inscription was one of the weak inscriptions. The inscription failed to command an audience from the Principal User. She could not be interested. According to the Project Manager and the Developer, the system was not much of a success because the Principle User was not keen to use it. It was believed that the Principle User would eventually use the system once she was properly initiated into the change process which was assumed not to have been properly handled by the IS Manager. The following sentiments from the Project Manager and one of the developers confirm the point.

I would not really say the project created much of an impact because until now we are struggling with the principle user. She just doesn't understand why she has to change her routine. She does not appreciate the need to learn new ways of doing things for her because she says she had no problems with her original procedures and she did not complain to anyone she needs a change. That's the problem of not involving users in the project. I tried to push the IS manager to push into the project team a user, but the IS manager is just somebody; she could not be driven to do that. (The Project Manager)

Technically the system is perfect and although it was not a challenge. It's a success technically, delivered even before time; it's what the client specified and was delivered on budget. The system generates new codes for new products as well. But they can't see that. A new product in the fuel industry may be introduced after so many years. So they don't see the immediate importance. The main importance is the code conversion which the principle user fails to appreciate (The Developer)

However, the IS Manager no longer pleaded with the Principal User to get trained and use the system, she trained two officers from PU and they efficiently use the system, while the Principal User continues with her old duties though with a reduced work load. The focal actor in this inscription was the system itself and the IS Manager. The inscriptions are summarised in Table 8.1.

8.3.9 Identification of explicit objectives

The main public objective of the project was crafted in the report by the IS Manager to Mega Fuels management which approved the project. According to the IS Manager, the report which she wrote indicated that the objective of the project was to further trace and electrify the root cause of the problems the PU was facing in producing the company's performance reports. The report started crafting the public objective of this project. Since the project was two-phased, the IS Manager first put up a request for proposal for a consultancy to investigate the actual problem further and later after the consultancy and during the second phase, a system was developed. As can be observed in the following extract from the IS Manager's responses, the request for proposal requested the bidders to unearth the problem and suggest solutions to the same.

I filed a report to management that we needed consultants to research on the current problem and suggest feasible solutions to us if the problems are to be eliminated. Management approved the project and I thereafter shortlisted bidders using a criterion approved by our head office. We finally settled on USP for that consultancy. Of course this was after we advertised for the consultancy. (IS Manager in a very defensive and aggressive tone)

The objective of having a consultant research on the problem and suggest solutions was achieved. A report was written on the findings of the consultancy. This report was an inscription to the second objective of the project. According to the IS Manager and the PU head, the consultancy report was presented to management. Management was apparently pleased that the problem was discovered and a solution suggested. The suggested solutions were debated and one suggestion was voted to be the most feasible.

The second part of the project was to implement the most feasible of the suggested solutions. This was to develop a system that would convert codes and names of the same fuel type from different databases to a common code and name. The solution was approved immediately, since it addressed the problems management encountered. The objective for the second phase of the project was crafted from the consultancy report and the suggested solutions. Specifically, the list of suggested solutions was the inscription that interested management to approve and authorise expenditure on the project. The consultancy report was also instrumental in the systems design stage of the project since it stipulated what the system was supposed to achieve. The inscription was twofold. It was an inscription for Mega Fuels management and it was also an inscription for the development team, especially in the design stage of the system.

8.3.10 A summary on inscription

It may be concluded from the above discussion that inscriptions may be presented in different packages and may command different reactions from different actants as shown in Table 8.1. It is observed that the stronger the inscriptions the more the intended actions are supported by actants in the project. In the pre-project stage, the inscriptions were strong; as a result the first steps were taken towards initiating the project. The strong inscription in the form of the IS Manager's report resulted in the approval of the consultancy. The strong inscription in the form of the consultancy report resulted in the successful implementation of the second phase of the project. However, the weak inscription in the systems user involvement resulted in the system not being wanted by the user. It can, therefore, be concluded that in this project strong inscriptions resulted in successful endeavours while weak inscription resulted in the opposite.

Table 8.1: Summary on inscriptions

Inscription	Strength	Focal actors	Results/impact
Criticism and inaccurate as well as untimely performance reports	strong	Managers and the inaccurate reports	Search a solution
Proposals from the PU to the IS Manager	weak	Performance unit head and the list of suggestions.	Weak reaction
Meeting between the PU head and the Business Manager	Strong	The PU head and his desperation	The Business Manager met the IS Manager
The meeting between the IS Manager and the Business Manager	strong	The business manager	Report to management
The IS Manager's report to management	strong	The report, the IS manager and the business manager	Approval of first phase of project
The consultancy report and a list of suggested solutions	strong	report itself and the IS Manager	Solution of choice
USP history and diligence	strong	History and diligence	Recruitment to provide solution
PRINCE2 and UML	strong	PRINCE2, UML and the two organisations	Recruitment to provide solution
The Fuel Codes system	weak	The system itself and the IS manager	Uncooperative users

8.4 Problematisation

In FCS project, problematisation seemed to follow inscriptions. There were several instances where actors were seen to take a deliberate effort to create alliances. In the instances, problematisation was packaged differently for creating different alliances. The analysis following

problematism has also revealed that sometimes problematisation may fail to create an alliance; hence it was termed 'failed'.

8.4.1 Problematism is packaged differently for different actants

The PU head, for instance, problematised his interests to the rest of the unit at a meeting. The meeting made suggestions which the head took to the IS manager. Here the PU head seemed to have succeeded in creating an alliance with his subordinates in the unit. In this instance the PU head's problem was not to sort out the inefficiencies, rather it was to save his face. However, this was carefully woven in the problems of the unit. He realised that once the inefficiencies were sorted out, management would stop complaining.

As witnessed from the list of proposals from PU to the IS Manager, the alliance was created. Employees in the unit did not like the difficulties they were having when producing performance reports and the process was an opportunity to air out their frustrations with the system and to seek redress. The problematisation in the meeting was not about the criticisms the PU head endured from management rather it was about the problems the unit faced in producing performance reports. The following extract emphasises this point.

In the meeting we had in the unit, I solicited ideas from the team on what they thought were problems in coming up with accurate reports. We brainstormed and came up with a list of suggestions which I was to present to the IS manager and did. I tried hard to keep my frustrations away from this meeting for fear of scaring away the employees. So my presentation to them was rather casual. I did not want them to live in fear of the uncertainties of their future employment like I did. (The PU head)

The job of the Business Manager as a consultant was to acquire as many consultancy jobs as possible for USP. The problems of the performance unit were, therefore, of interest, to him. That explains why the Business Manager seized the opportunity and decided to be proactive by consulting with the IS Manager about the problem. The Business Manager's motivation was that this was a readily available consultancy work. He, however, problematised his interest to look like his desire was to assist Mega Fuels. Apart from offering free advice to the IS Manager to recruit a consultant to research on the problem thoroughly, he also suggested to her that USP was available for the task at a negotiable rate. The Business Manager's interest was hidden in goodwill - trying to bail out Mega Fuels from its inefficiencies. This alliance was successful in that the IS Manager immediately took action after the meeting and pledges.

The IS Manager took a definite action after her meeting with the Business Manager. It is clear she was pursuing her own interests. However, these were interwoven with the need for a consultancy which the PU head supported by pledging to pay for all the costs. It was because the IS Manager saw herself as meeting her interests from this project that USP was recruited as a consultant. The same applied to the actual provision of the solution.

In recruiting the Project Manager, the Business Manager was looking for a person with both PM skills and experience who had worked with the client before. This would minimise the time the person would need to be acclimatised to the environment and, consequently, minimise the time needed complete to the project. The Business Manager was told that the consultancy report was required as soon as possible. The following extract emphasises this point.

The performance unit head was given a year to sort out his inefficiencies. He therefore needed the project delivering results yesterday.... I promised to give the IS Manager a good discount which I did and some other obligations were fulfilled as well. The only choice I had was to work with resources which were familiar with the client as well as very experienced to deliver in a shortest time period and save on financial resources. I also hinted to the Project Manager to also recruit in his development team members who have worked with the client before and experienced at their work, which we did. I actually told the Project Manager that this was a baby project as far as I know him and based on assessment of the problem. This was to give him a bit of a motivation to believe he is a star, which he is actually. I am glad to report that despite delays caused by the client, we delivered in both phases before the due date. (The Business Manager)

From the above extract it can be observed that problematisation was hidden in the praises for the Project Manager. As can be learnt from the two-factor hygiene and motivation theory (Berzberg, 1987), it is likely that the Project Manager was motivated by the fact that the Business Manager recognised his diligence in his work. Obviously, the Project Manager would want to defend his reputation by delivering in a record time to prove his PM skills as well as his expertise. However, the reality was that the Business Manager was trying to save on financial resources to make up for the “good discount and some other obligations”. Once again this kind of problematisation infected the Project Manager. The Business Manager suggested to the Project Manager to recruit experienced team members who were familiar with the client’s work environment to accelerate the project. Since the Project Manager was already branded a star performer, he went with the Business Manager’s recommendation thinking he was pursuing his own interests, while actually he was also pursuing those of the Business Manager.

Both organisations have similar interests as far as methodologies and standards are concerned. PRINCE2 and UML were, therefore, a silent problematisation.

8.4.2 Problematisation is not always successful

Problematisation failed to take its course as regards the Principal User. The Project Manager believed it would have been different if the user were involved in the project at an earlier stage than the time she was introduced. In this case the Principal User was directed to learn and use the new system immediately, which she resented. If concerned individuals are not part of a solution they are likely to resist the proposed change because they have their strengths and weaknesses, their ways of getting things done and their values (Drucker, 1999).

8.4.3 A summary of problematisation

In this project it was noted that different problematisations had their own time frame for a specific interest area. In this case it has been emphasised that for project objectives to be realised, interests of focal actors need to be in synch with interests of all other actants in the project network. It has also been noted that different groups of actants need different packages of problematisation. If not packed strategically for actants to see a benefit in being in the alliance, problematisation may fail.

8.5 Interessement

In the FCS project, there were several instances where actants were locked in place, thereby validating the alliances formed. Interessement may be on going depending on the nature of the actor network being formed. Not all instances of interessement instances succeed, others fail. Should interessement succeed, actors are then enrolled (Callon, 1986; Latour 1986,).

8.5.1 Different strategies for interessement

Different strategies may be employed to interest actants and have them in a project network. The different strategies may be seen in the following instances:

The PU head presented the performance reports problems to his subordinates in the unit and invited them to assist in coming up with suggestions on how to solve the problem. The unit brainstormed and came up with the suggestions. The PU head did not tell the subordinates of his frustrations. The subordinates, therefore, did not think they were helping the PU head out, rather, they felt their boss had finally understood their problems as regards the inaccurate reports. By

offering suggestions as to how to solve the inaccuracies, it showed that the actants were locked in place. The PU head's intersement strategy assisted in forming the alliance in the PU.

The PU head presented his problems to the Business Manager. This was not a deliberate, but rather an accidental, intersement. The problem provided the Business Manager with a business opportunity, hence the intersement. This intersement led to another instance of intersement. The Business Manager's intersement strategy to the IS Manager was the pledges he made to her. The strategy was wrapped up in the benefits.

Using the IS Manager's report and the consultancy report as intersement strategies resulted in locking management in place, and consequently approving both phases of the project. The approval of the second phase of the project marked the beginning of a project network alliance. This intersement promised a solution to the problems that annoyed management.

The system development team was locked in place, partly because it was duty-bound to work on projects and partly because both the Business Manager and the Project Manager indicated that the team was picked based on the previous projects' good performance appraisal from both the Business Manager and the Project Manager. The team was motivated to be associated with high quality project outcomes even when it (the team) worked under time constraints and "*the project was not challenging*" at all.

Mega Fuels was locked in place by the history of USP as well as the PM methodology and the system development methodology that USP used. There was, therefore, an alliance formed between the team and the methodologies. The methodologies locked in place some standards and procedures in the two project phases.

8.5.2 Intersement may not always succeed

Not all intersement attempts were successful. Some instances failed to create any alliance. For instance, when the solution proposals from the PU were presented to the IS Manager, her reaction indicated that she was not locked in place and so far there was no alliance formed. This alliance between the PU head, the project objectives and the IS Manager failed originally. However, the alliance was finally formed after a different strategy was used.

Another failed intersement instance was the report from the IS Manager's juniors to the IS Manager. The IS Manager could not be pushed to react differently. She ignored the report

altogether. The juniors' reactions to the problem did not stimulate intersement in the IS Manager. The FCS also failed to interest the Principal User and eventually other staff members were trained to use the system. In these instances, no alliances were created.

8.5.3 The same intersement strategy may affect different actants differently

When the solution proposals from the PU were presented to the IS Manager, her reaction indicated that she was not locked in place and so far there was no alliance formed. However, the same proposals seemed to have locked the IS Manager's juniors in place i.e. they promised to work on the project within four months.

When the Principal User was asked to use the system, she declined and could not be persuaded to use it. However, immediately after Principal User's refusal, two officers from PU were trained and use the system effectively.

The IS Manager could not be locked in place by the proposed problem solutions and complains from PU. However, the same problems locked in place the Business Manager as, according the PU head, *"the birth of the project was owed to"* him.

8.5.4 A summary on intersement

It may be concluded, therefore, that the same intersement strategy may interest actants differently. In this discussion, it is also shown that different strategies of intersement may yield different intersement results. From the discussion in this sub-section, it is becoming apparent that alliances are formed when actants realise that their participation in the network would benefit them in some way. Once again, it has been shown in the FCS project that once actants' interests are interwoven in the project objectives, the actors become committed to the project.

8.6 Enrolment

The instances of the PU staff being supportive and offering assistance on sorting out the performance reports problems are evidence that the PU employees were enrolled into this project before the project was formally initiated. The employees offered their assistance to the PU head by participating in a brainstorming session where suggested measures to sort the problem out were drafted. PU employees also assisted the IS department personnel to figure out how the problem would be sorted out.

The following extracts confirm this.

As I said before, my colleagues in the unit were very supportive; we brainstormed on the problems and they offered suggestions on how to go about it. The IS department officers sent to look at the problem, also sat with these very employees for the whole day and at times they sat one-on-one trying to figure out the solution. Unfortunately we ended up not using these efforts. When the consultants started their work, they started with these employees too. It would not be good of me to say they do not feature anywhere in this project. They do from the start actually. (The PU head)

Enrolment is also clearly seen from the reactions of the Business Manager. He got unexpectedly excited about the situation to the extent that he would not wait for the PU head to approach the IS Manager. Obviously he had an objective which he could see being realised through this project. The Business Manager's objective was to win the consultancy. As a consultant, it is part of the Business Manager's job to get as many consultancies as his team can possibly handle.

.....part of my job here is to make sure the organisation is running consultancies always. So yeah I was interested in this project. In consultancies I see money....mmmm!!!!!! Personal benefits!!! I guess not really, no!no!no! Wait!! Depending on how I have scored that year, I would get a good bonus at the end of a year. (The Business Manager)

The Business Manager's objective was achieved. He was enrolled and became a focal actor. He defined a role for the IS Manager: that of an actor so that she would command action from the PU head, her subordinates and management. The IS Manager, in turn, defined roles for the PU head: as a Project Sponsor as well as a Project Owner. The following extract confirms the agency of the IS Manager in the project.

This solution provider is one of the most reliable providers available in this country. So yeah, we just had to recruit them again; we were assured of a job well done as they have always done. Another thing is that we know that USP use PRINCE2 for PM methodology and so do we; USP uses some kind of UML for systems development and so do we. It was easy to work with USP on that front as well. We spoke the same language and dance to the same tune. (IS Manager)

The meeting between the IS Manager and the Business Manager resulted in her getting enrolled in the emerging alliance. She thus became a focal actor. The IS Manager at this juncture took ownership of interestment for management. She at this point alienated the PU head. She did not talk of the report to management as a concerted effort from both herself and the PU head. She

accorded agency and credit to herself. In the extract below the IS Manager indicated that she owned the project as she said “*I filed a report to management*”; “*I thereafter shortlisted bidders*”. The following sentiments from the IS Manager confirm this revelation.

I filed a report to management that we needed consultants to research on the current problem and suggest feasible solutions to us if the problems are to be eliminated. Management approved the project and I thereafter shortlisted bidders using a criterion approved by our head office. We finally settled on USP for that consultancy. Of course this was after we advertised for the consultancy. (IS Manager in a very defensive and aggressive tone)

The IS Manager’s report to management enrolled management into the project network. That they did can be seen in the approval of the budget for the project. The approval ensured that the Project Sponsor would not fail to pay for the project. The IS Manager herself turned out to be a Project Champion; she had the success or completion and delivery of the project at heart. She would, therefore, do everything to ensure the success of the project implementation.

A consultancy report and its presentation enrolled management further and approved the system implementation. The approval of the two phases of the project is an indication that management was enrolled into the project. Management in this project had an interest to have accurate performance reports. It is interesting to note that the IS Manager portrayed the approval as her personal effort despite the well-known fact that management wanted to be presented with timely and accurate performance reports.

There are signs showing that the development team was perhaps enrolled by duty into the actor network and not by any other objectives. The team did not seem to be enthusiastic about the project. All they wanted to do was to get the project completed and delivered even before the delivery date. The following extract compounds this finding.

I basically wouldn't say the project was anything wow! It's not anything that has made me grow in my work....To be blunt, it was one of those jobs you do because your boss says do it. Honestly it was too shallow for my intellect. (The Architect)

According to the Business Manager, all the team members were skilled, experienced, had worked with Mega Fuels before and this project was a baby for the team. The project was, therefore, “*not a challenge*” to the team and it was not in any way advancing its skills by participating in it. As the Business Manager indicated, the motive behind using experienced resources was to deliver the project using fewer resources to make up for the “*good discount*” as the quotation below confirms.

....although it was not a challenge....the system is a success technically....The system generates new codes for new products as well. But they can't see that. A new product in the fuel industry may be introduced after so many years. So they don't see the immediate importance. The main importance is the code conversion which the principle user fails to appreciate. (The Developer)

The analysis in this sub-section has revealed that no one actor is a hero regardless of whether they are a focal actor or not in the FCS project. Success of the project is a result of concerted efforts from all players. In the FCS project the IS Manager tried to give a heroic account of how she managed to enrol management single-handedly into the project, hiding efforts by the PU head and ignoring the Principal User of the system. The end result was that the Principal User did not appreciate the system and the new work procedures.

In this discussion, it appears that personal objectives are strong enrolling agents in IS projects. Unless interests of actors were addressed, enrolment was difficult to attain. It has also emerged from this analysis that an operational system user was regarded as a tool that could easily be replaced i.e. when the Principal User resented the system. She was quickly replaced by other willing operational users. The action implied that it was not crucial to include operational system users in an IS project.

8.7 Mobilisation

Mobilisation is when spokes-agents are identified to speak on behalf of other actors in a network. In the FCS project, the following were identified as key spokes-agents. The agents are discussed briefly in the subsequent sub-sections.

1. The inaccurate and out of date performance reports,
2. The Business manager,
3. Reputation of USP and the IS Manager's agency on behalf of USP,
4. The standards, and
5. The Business Analyst.

8.7.1 The inaccurate and out of date performance reports

The inaccurate and outdated performance reports had agency, communicating to the PU head and his subordinates, the IS Manager's juniors and the consultants who investigated why the reports were persistently inaccurate and out of date. The reports communicated to the said actors that the old system was inefficient and needed an upgrade. It was the agency in the reports that prompted

management at Mega Fuels to react sternly to the efficiency of the PU head and his unit. As a result of this agency, the project was launched.

8.7.2 The Business Manager

The Business Manager was also a spokes-agent in the project. He spoke on behalf of the PU head to the IS Manager, the PU head to the project and USP to the IS Manager. Speaking on behalf of the PU head to the IS Manager, the Business Manager influenced the latter to champion the project to sort out the dreaded problems. This he did with an aim of achieving his own objective which would only materialise by assisting the PU head to solve the reports problems.

Speaking on behalf of the project to the PU head, the Business Manager emphasised to the PU head that the solution to the problem was in a two-phased project: (1) researching the root causes of the problem and thereafter table suggested solutions and (2) the implementation of a solution of choice from the list of suggested solutions.

Speaking on behalf of USP to the IS Manager, the Business Manager convinced the latter that USP was the worthwhile solution provider for the problem at hand. The presence of the Business Manager on the scene before the commencement of the project reminded the IS Manager of the existent work relationship between USP and Mega Fuels. The Business Manager also communicated to the IS Manager about capabilities of USP in providing cost effective solutions.

8.7.3 Reputation of USP and the IS Manager's agency on behalf of USP

USP's reputation encouraged the IS Manager to recruit it - in both phases of the project. Through her report to management, the IS Manager, in turn spoke on behalf of USP to Mega Fuels management. The IS Manager verbalised the diligence and work ethics USP displays on projects to management. She wanted USP to win the bids for both phases of the project. To the public ears she stated that she believed USP could deliver its assurance that it would deliver "a job well done". The following sentiments from the IS Manager reveal her role and confirm her agency on behalf of USP.

This is not the first time USP has provided a solution to our problems, they have done that several times in the past and this organisation is very happy with their diligence in the way they carry out their duties. USP is one of the most reliable IT solution providers available in this country. So yea, we just had to recruit them again; we were assured of a job well done as they have always done. Another thing is that we know that USP uses PRINCE2 for PM methodology and so do we; USP uses some kind of UML annotations for systems development

and so do we. It was easy to work with USP on that front as well. We spoke the same language and dance to the same tune. (IS Manager)

8.7.4 The standards

Another spokes-agent in the project was the PM methodology and the systems development methodology/symbology. The two enforced standards of their correct use. To use PRINCE2, users have to live with all the associated documentation and deliverables. Likewise the user has to follow the associated notations and procedures in order to use UML. The two standards also spoke to Mega Fuels for USP recruitment in both phases of the project. Both USP and Mega Fuels follow the two standards for PM and systems development respectively. It was, therefore, in the interest of Mega Fuels to recruit a solution provider that followed similar standards as it did. It was easy for Mega Fuels to trust the quality of the outcome.

8.7.5 The Business Analyst

The Business Analyst was also another spokes-agent for the FCS as well as Mega Fuels vis-à-vis the system requirements. The Business Analyst had a thorough understanding of the problem because he had researched on it and had come up with suggestions on how the problem could be resolved. He *“designed the solution”*, therefore, during testing, he *“was also checking if what [was] included”* was what was suggested in the solution, *“and that their functionality”* was as the client wanted. By ensuring that the solution he designed was delivered, he was speaking on behalf of Mega Fuels for the developers to produce desired outcome from the system requirements.

8.7.6 A summary of the mobilisation

From the above discussion, it can be said that for USP to win the consultancy and the systems development work, it needed a spokes-agent to speak positively on its behalf. For the requirements to be achieved in a systems development project there was also a need to have a spokes-agent for the requirements. There was also a need for a spokes-agent for the methodologies to be used effectively. In this case the agents were the Project Manager and the templates which were readily available for use. However, it is observed that the spokes-agent for the system requirements did not extend the duties to include being a spokes-agent for the system to the users. Due to this, the user was reluctant to adopt the system. Analysing the entire project process, the outcome of the project was somewhat an orphan. There was no mobilisation for the system. From this experience it may be concluded that every stage of a project needs mobilisation for a buy-in. Table 8.2 displays a summary of the mobilisation agents in the FCS project.

Table 8.2: A summary of key spokes-agents in FCS project

Spokes agent	Spoke for	Spoke to	Message and results
The inaccurate and out of date performance reports	Old system	PU	Old system needed an upgrade
		IS Manager juniors	Old system needed an upgrade
		Consultants	Old system needed an upgrade
The Business Manager	PU Head	Project	Project was initiated
		IS Manager	A need for further investigation on the problem in the form of a consultancy
	USP	IS Manager	USP could do the job at a negotiable rate
Reputation of USP and the IS Manager's agency on behalf of USP	USP	Mega Fuels Management	USP is diligent, ethical and quality conscious solution providers
The standards	USP	Mega Fuels	USP lives up to Mega Fuels quality standards
	Themselves	Project team	Need to be followed properly
The Business Analyst	FCS	Developers	To deliver as per systems requirements

8.8 Irreversibility

Of the inscriptions identified (see Table 8.1), two were identified as weak. In most cases, strong inscriptions resulted in irreversibility. The criticisms from management to the PU head emanating from inaccurate and untimely reports, was one of the strong inscriptions. The irreversibility of this inscription initiated the project. The meeting between the IS Manager and the Business Manager was another strong inscription. It resulted in a report to management. The report was instrumental in obtaining management approval for the proposal for a consultancy. Once again this IS Manager-Business Manager-management report actor network became irreversible due to the strength of the inscription.

The consultancy report alongside its presentation was another strong inscription. This inscription led to another irreversible network: recruitment of USP as a consulting agency for the first phase of the project as well as the involvement of the IS Manager in the decision making loop and its associated demands. The consultancy report, its presentation, USP's history and diligence in working with Mega Fuels were yet another set of strong inscription that resulted in another irreversible actor network: recruitment of USP as a provider of the solution of choice. Another strong inscription was the set of methodologies: PRINCE2 and UML. The two impacted on the decision Mega Fuels made as to how to recruit for the second phase of the project.

The two weak inscriptions were the proposals from PU to the IS Manager and the new system itself. The system was an orphan. It had no spokes-agent; as a result it did not have buy-in from the user. According to the Project Manager, the Principal User would have sold the system to herself

and other users if she were involved as a project team member. However, even though there was a need to involve her, and the IS Manager (the Project Champion) was advised to involve the user into the project, she (the IS Manager) did not bring any user along.

The solution proposals made by the PU to the IS Manager was another weak inscription. It never seemed to gain any buy-in from the IS Manager. The IS Manager acted on the issue only after her meeting with the Business Manager. It is very tempting to conclude that the first inscription did not offer the IS Manager any personal benefit while the second inscription did, hence her buy-in.

8.9 Summary of the chapter

The chapter has analysed the FCS project highlighting as-lived experiences as well as the impact of pre-project activities to the initiation of the project. The chapter has also highlighted how a project objective was crafted from the pre-project activities. Three ANT concepts: inscription, translation and irreversibility enabled the researcher to understand how the project process advances from one stage to the other. Translation moments further enlightened the researcher on how project objectives are crafted to interest different stakeholders in the project. In the moments of translation, the project was analysed following instances of problematisation, interessement, enrolment and mobilisation.

Several actors in the project were followed, not only to observe what they were doing in the project, but also to know and understand the factors that influenced their loyalty to (or lack thereof) the project. The analysis has unearthed a few key findings from this case. For instance, the revelation that operational system users were, in this project, not part of the project team, and were not much of a problem to the project success. The project has shown that operational users can be treated as tools which can be discarded and be replaced with ease and with little, if at all, disturbance to the project process and outcome.

The analysis has also shown that success of a project process in the FCS project depended on buy-in from necessary actors. Where buy-in was a problem, the project process slackened and where it was present, it flourished. Another finding that emerged from the analysis was that alliances are formed when actants realise that their participation in the network would benefit them in some way. When interests of actants are interwoven within project objectives, the actants become loyal to, and passionate about, the project.

Chapter 9: Discussions, interpretations and conclusions

9.1 Introduction

The chapter discusses the findings that emerged in the research study. Interpretations to the findings are also presented and so are conclusions to the findings. The rest of the chapter proceeds as follows: Section 9.2 discusses the project start-up. It is not a straightforward process; rather it is winding. That project objectives may not be “*cast in stone*” is discussed in Section 9.3 while Section 9.4 discusses personal interests which are often interwoven with the project need. Section 9.5 discusses the importance of operational user involvement in a project team while championship in a project is discussed in Section 9.6, followed by a discussion on use of PM methodology versus experience of the Project Manager in Section 9.7. The finding that no actor is a hero in a project network is discussed in Section 9.8. That the definition of IS project success is evolving is discussed in Section 9.9. The chapter closes with a summary in Section 9.10.

9.2 Project start-up may be a winding process

Finding: *Project start-up may not be a straightforward process; rather it is a winding process.*

Research question answered: *How is a project network initiated, established and strengthened?*

Discussion: In the PM mainstream training materials, a project is depicted as five- phased (see Figure 2.1), giving the impression that a project is a simple and straightforward endeavour that follows the five given phases linearly. The contemporary project literature also gives the impression that a project starts from the initiation stage (PMI, 2004) and is silent on the difficulties that may be encountered in initiating a project. It simply presents practitioners with the five-staged mode, encouraging them to think a project starts from the initiation stage (Marchewka, 2003; PMI, 2004; Schawlbe, 2006). Literature and mainstream training texts seem to be somewhat mechanistic on this point. The two cases in this research study have shown that it is not an easy task to start up a IS project. Projects may not follow a straight forward process; rather a winding one to get to the initiation stage, bringing to light the real picture on the ground.

Both cases presented similar findings on how a project is started. There are a lot of pre-project activities before the actual formal initiation stage of a project, for

instance, in the TGRS project, there was corridor salesmanship for close to a year while in the FCS project, the following activities took place:

1. Monthly performance meetings where inaccurate reports were presented;
2. Trauma suffered by the PU head who heads the unit that produced inaccurate reports due to the fact that the reports were inaccurate and outdated for five consecutive months;
3. Unplanned meeting between the traumatised PU head and the Business Manager where the two discussed the Performance Unit problems at Mega Fuels;
4. The meeting between the IS Manager and the Business Manager;
5. The meeting between the IS Manager and the PU head;
6. The report construction on the problem by the IS Manager; and
7. The PU head pledging to pay for all the bills associated with the project.

Contrary to what is stated in the literature, the as-lived experience in this research study indicates that a project starts very early, well before the official initiation stage. It is also shown from the TGRS project case that the pre-project activities may determine the strength of the project network and, in turn, the extent to which each stakeholder considers the project a success. This finding brings to light the fact that there are different players on the project scene before the formal phase of project initiation.

Contribution: The contribution is of both theoretical and practical importance. *Theoretical importance:* the finding contributes and adds to the body of knowledge on PM. It can be recommended, therefore, that PM institutions revise their training materials to include the knowledge contribution this finding has made so as to give novices a clear picture of what to expect in starting up a project.

Practical importance: The contribution may assist especially novices in the PM field to learn what it takes to have a project initiated. This would assist in reducing the risk of having project team members who may abandon the team in the middle of a project or having team members who are not committed to the project affairs.

9.3 Project objectives may not be “cast in stone”

The finding: *Project objectives may not be “cast in stone”.*

The research question answered: *How do problematisation, interessement, enrolment and mobilisation impact on the objectives of an IS project?*

Discussion The definition of a project suggests that each project has to have a *clear and definite outcome* (objective) that is to be delivered on a specified date using specified resources (PMI, 2004). Some literature indicates that an IS project objective should not be determined upfront due to the fact that requirements are often not clear at the initial stage of the project (Linde & Linderoth, 2006; Pollack, 2007). This research study has found that there is a need for a project to have an objective spelt out upfront; however, that objective should not be *cast in stone*. Stakeholder interactions should be allowed to reshape the objectives to cover interests of both the stakeholders (inclusive of the project team) and the project owner.

It is found that objectives attract stakeholders to be loyal and committed to the project. In the TGRS project, for instance, the project objectives were left to be debated upon by the necessary stakeholders to the extent that the interests of stakeholders were taken care of by the list of objectives. The system that was implemented addressed the objectives. Project team members participated in the project voluntarily because they wanted to ensure that their interests which were embraced by the project objectives were translated into the system functionality. Every team member in the project strived to see the project being successfully completed as exemplified by the following extract.

....By all means this project cannot fail. Why should it fail? We will make sure we resuscitate it at all costs. It will not fail. Most organisations are benefiting from it so it will not fail. We will all work together to resuscitate it if it shows any signs of failure (Officer: Revenue Authority).

This finding extends the finding of a research study by Pollack (2007) and Linde and Linderoth (2006) who posit that project objectives should not be clearly defined upfront because project requirements are not clear at the onset of a project. They

argue that project objectives should be formulated as the project progresses. The finding in this study is slightly different in that it indicates that the objective can be specified upfront, but should allow players (both human and non-human) in the project network to reshape it in order to take care of interests from different players in the project network. It is recommended, therefore, that in an IS project, objectives should not be “*cast in stone*” rather actants in the project should be allowed to reshape them to take their respective interests into consideration.

Contribution: The finding is of both theoretical and practical importance.

Theoretical importance: By extending the findings by Pollack (2007) and Linde and Linderoth (2006), the finding contributes to the body of knowledge on project objectives.

Practical importance: This finding may guide practitioners as to how to handle the issue of formulating project objectives and seeing them through a metamorphosis to capture interests of players in the project network inclusive of the project owner’s interests.

9.4 Personal interests may be interwoven in the project need

Finding: *Personal interests may be interwoven in the project need*

Research Questions answered: (1) *How is a project initiated, established and strengthened?*
(2) *How are problematisation, interessement, enrolment and mobilisation effected in a project network?*

Discussion: Personal interests interwoven in the project need may yield, in actors, a passion for the project. In the TGRS project case, it was observed that the Project Owner/Sponsor was desperate to find an exit plan from an industry he had worked with for 35 years. It was his desire to leave behind a legacy which he would be remembered for. In 1998, the Project Owner along with some of his colleagues, tried to implement Agro-Input Credit Fund to finance tobacco grower farm inputs. The Project Owner was least impressed with the Fund because *credit* for the project “*went to someone else*” and not to the founders of the Fund.

The TGRS project was a second attempt at obtaining the required credit from the industry. However, this desire/interest was interwoven in the project need. The Project Owner saw in the deficiencies of the grower registration system an opportunity to implement his exit plan. He seized upon the opportunity by coming up with a project idea to address the deficiencies. This would woo back financing institutions to start refinancing tobacco farming which would in turn improve the grower profit margin. The objective was problematised in a way to interest most tobacco industry stakeholders. However, the Project Owner was the OPP for the project making his personal objective materialise. His personal interests were, therefore, interwoven in the project need.

In the FCS project case, the IS Manager's reaction was *laissez faire*, probably because she could not see any benefit in participating in the project. However, to pacify the PU head and to be seen as doing something, the IS Manager sent her two juniors to access the problem. The juniors wrote a report after the problem assessment which the IS Manager did not act upon.

In desperation, the PU head discussed the embryonic project with a business consultant, the Business Manager. To the Business Manager, this was a business opportunity which he promptly grasped because it was in his interests to win and complete as many consultancies as could be handled. The bonus system for the Business Manager and his subordinates depends on the number of consultancies won and completed. In this instance, the Business Manager had incentives to get bonus cheques - which he discovered could be realised through this project.

The Business Manager discovered that he could not realise the benefit on his own. He, therefore, identified someone who was key in Mega Fuels to influence the project start-up. That person was the IS Manager. The Business Manager realised that there was no motivation for the IS Manager to initiate the project start-up. He, therefore, promised her a "good discount" on the project fee, in addition to fulfilling unspecified obligations to her. After the IS Manager's interaction with the Business Manager, she started acting on the project. It could not have been the discount that motivated her because the project was not being paid for from her departmental budget, but from the PU budget. It is, therefore, assumed that the

unspecified obligations which were promised to be fulfilled upon awarding the consultancy to USP included some personal benefits for the IS Manager.

This finding has brought to light how stakeholders integrate their personal interests into the project need through the technology opportunities available to them. The finding has also shown that when personal benefits are realised through a project, the concerned stakeholders become passionate about the affairs of the project. Success of the project, therefore, becomes part of their personal agendas. Personal interests in a project breed a passion for projects.

Contribution: The contribution this finding makes is of practical importance. The knowledge may benefit project practitioners in coming up with project ideas and selling those ideas to actants. Once the project practitioner knows what other actants' interests are, the project idea and its objectives can be problematised in a way which addresses the personal interests so that the project secures support and passion from many actors. The more passion the actors have for the project, the higher the chances of its success.

9.5 Importance of user involvement in a project team is questionable

Finding: *Importance of operational system user involvement in a project team is questionable.*

Research question answered: *How do actors relate to each other in a project network?*

Discussion: Research studies concentrating on critical success factors for IS projects come up with different lists of critical success factors. Among the factors listed in these different lists, end user involvement in a project team is usually listed as one of the top four most important critical success factors (Karlsen, et al., 2006; The Standish Group, 1994). In the TGRS project case, growers who would swipe their Smart Card to either identify themselves or authenticate their identification is an end user, and so is the user who captures grower details into the system. According to the literature, both users are supposed to be involved in the project.

However, in both cases in this research study, end operational users were not involved in conceptualising the project. In the TGRS project case only the grower

as an end user was involved while the operational end user - the actor supposed to capture grower details into the system - was not involved. The Project Owner indicated that such a user was not involved in conceptualising the project because, as far as he was concerned, such a user was not necessary to the project team. To the Project Owner, the operational user was an employee of the organisation, and was bound and guided by the rules governing the organisation.

The Project Owner indicated that the users would have "*to shape up or ship out*", implying that the users were expected to make some efforts to use the system as the system demanded, or else quit the job. According to one of the informants, if users would not *shape up* and was not willing *to ship out*, the organisation would relieve them of their duties and they would be asked to leave the organisation because they were incompetent. The organisation, in turn, would hire another competent user or at least one who would be willing to learn and use the new system as would be required. Taking advantage of the current high unemployment rates in the country, the Project Owner believed that no rational users would risk losing their job by not shaping up. He, therefore, believed that all users would not "*ship out*" and that if they did, he would quickly replace them since there are many people looking for that type of job. The unemployment rate is currently estimated to be close to 90% in the Malawi (SIAS, 2008).

In the FCS project, the scenario is similar. The Principal User was not involved in the project despite the request from the Project Manager. The Principal User, however, did not "*shape up*", neither did she "*ship out*". She refused to use the system. Since the PU head and management were desperate about the performance report status, they asked two of the officers from PU to learn the new system and do the necessary conversions at the close of business every day.

In both cases, it has emerged that operational users were not involved in the project and high ranking officials in the project did not find it necessary to have the operational system users involved. The rationale seems to be similar in both cases. Operational users are simply regarded as tools for operating the system and not of any importance. Although the Principal User was not asked explicitly to "*shape up or ship out*", in as far as operating the new system, she was replaced. The

organisation trained two other operational users and the system produces what it was intended to produce. It is beyond the scope of this research to describe what happened to the Principal User after the other two operational users from the PU started operating the system.

This finding brings in some contradiction regarding the importance of involving operational users in a project team. The finding shows that operational users are tools, once they are not efficient, they can either be replaced by new ones or improvise other tools to do the same job. The cases were drawn from two culturally and economically different nations: Malawi and South Africa; i.e. the countries have a Gross National Income Per Capita (GNIPC) of US\$250 and US\$ 5,770 respectively (World Bank, 2008). Unemployment in Malawi is close to 90% (SIAS, 2008) while in South Africa, as of September 2007, the unemployment rate was 22.7% (Statistics South Africa, 2007). It is interesting, therefore, that the results from both cases depict similar behaviour towards the operational users.

This finding contradicts the much hyped importance of user involvement in an IS project. Further research is recommended to reconceptualise user involvement in IS projects as well as to validate this finding. There is need to evaluate which users are critical and need to be consulted and which ones the PM practice may afford not to consult. This entails that this finding is of both theoretical and practical importance. Hying operational user involvement in IS projects needs to be reconsidered.

Contribution: The finding is of both theoretical and practical importance.

Theoretical importance: PM institutions may wish to review the material on operational user involvement in an IS project team.

Practical importance: The research community may wish to research this finding further in order to validate it.

9.6 A project championship may be critical for the success of a the project

Finding: *A project championship may be critical for the success of a project.*

Research question answered: None

Discussion: Consistent with existing literature, this research study found that a Project Champion plays a critical role towards the success of a project. In the TGRS project, the Project Owner was also a champion of the project. He worked hard to have the project initiated and succeed. Likewise in the FCS project, the IS Manager worked tirelessly to ensure that management approved both phases of the project. In both cases, the champions had the projects at heart. However, both cases show that project championship is not an elected position, rather, the position emerged due to the passion the actors had on the respective projects. As discussed in Section 9.3, the championship seems to have emerged due to the fact that the projects were seen to take care of personal interests for the project champions.

Contribution: This finding is of practical importance. Practitioners may wish to find some actor that is a champion to the project for the success of the project.

9.7 PM methodology use depends upon the experience of the P/Manager

Finding: *Use of a PM methodology depends upon the experience of the Project Manager.*

Research question answered: *How does an IS PM process integrate the PM body of knowledge in a project network?*

Discussion: In line with literature (Mpazanje et al., 2008), this research study has validated the finding that use of a PM methodology depends upon the experience of the Project Manager. In both cases PRINCE 2 was followed as the PM methodology. In the FCS project, the methodology was followed closely, but not producing every deliverable that the methodology specifies. For instance, the team did not have a communication plan, configuration management plan, or stage plans. It, however, had PID in the form of a report from the IS Manager for the first phase of the project and a consultancy report as the PID for the second phase of the project. The project had a project plan, approach, issue logs, quality logs, risk logs, request for change and end project report (See Appendix E).

The Project Manager for FCS project indicated that as an experienced practitioner in PM, it was not necessary to follow the PM methodology by the book, especially

because the project was not complex. However, he indicated that he had internalised PMBoK knowledge. He no longer needed to consult the guide neither did he tell himself at a particular stage of a project that *“now I am using risk management techniques, or now am managing project time or scope”*. The Project Manager followed *“some stages”* of the PM methodology *“as a formality, especially for the sake of the client”*. If it were an internal project, the Project Manager could have managed the project without many of the document deliverables such as the *“product check list and the work package”*.

In the TGRS project they did not follow a specific PM methodology. Rather they followed logic and the experience they have had in handling projects. However, the team used Gantt charts to an extent for some shorter tasks. They could not use Gantt charts for the whole project because the progress of the project depended on the availability of monetary resources (that is the reason the project took a long time to be completed).

The Project Manager for TGRS project, a UK trained project practitioner claimed to have followed PRINCE2 as a PM methodology. The Project Manager was also experienced; he had worked in unspecified number of projects for 18 years and in most cases as a Project Manager. The Project Manager claimed that he had internalised PM knowledge to such extent that he no longer uses any PM manual. He did, however, emphasise that in this project he used some, although not all, templates from PRINCE2.

In both cases, PM knowledge was inherent in the experienced practitioners. It is apparent from these studies that PM methodologies are not followed religiously by experienced PM Managers. It is also found that in the FCS project case, most of the PRINCE2 deliverables were produced *“for the sake of the client”* to be satisfied that the agreed methodology was being followed.

Contribution: The finding is of both theoretical and practical importance.

Theoretical importance: This finding confirms the results of a research study conducted by Mpazanje et al. (2008) where it was found that a PM methodology may be followed, modified or abandoned depending on the level of experience and training the Project Manager attained.

Practical importance: It is recommended that this finding be researched further and reconfirmed before it can benefit practitioners.

9.8 No one actor is a hero in a project network

Finding: *No one actor is a hero in a project network.*

Research question answered: *What are the actors in an IS project?*

Discussion: The study reveals that in a project network, success or failure needs to be attributed to all actors. In both cases, it was found that an IS project is a network of actants, human and non-human. Both the human and non-human actants were able to command action. In the TGRS project, one actor was visible and was the OPP for the project. It was observed that the actor was very agile and instrumental in problematising the project idea to stakeholders. This was done because he realised that it was important to have the right buy-in from right stakeholders to yield success in the project. Although the actor was visible and agile, it was impossible attend to all the ramifications alone and gain all the credibility.

The projects in this research study involved system implementation. The implementation required the installation of additional hardware and software in the organisation. It also required proper interfaces to be in place for the system to be implemented. The implementation required the skills of the development team and the systems development methodology. All these actors were important to the success of the project. No single actor could, therefore, claim heroism in the project network because all actors were important in the capacity they played.

Contribution: The finding is of both theoretical and practical importance.

Theoretical importance: Instead of thinking about causality as the primary way in which projects activities occur, emergence is also a very revealing alternative lens in understanding projects.

Practical importance: This finding came about because ANT was used in collecting the data and analysing it. ANT gave the researcher the insight to see that no one actor is a hero in a project network. The researching community may benefit from this finding by using ANT in exploratory

and descriptive research studies of this nature since ANT has once again proven to be a strong tool for unearthing experiences in a phenomenon.

9.9 Definition of project success might have evolved

Finding: *Definition of project success is evolving.*

Research question answered: *How do IS practitioners understand and define IS project success and or failure?*

Discussion: Traditionally a project is considered successful when it delivers the required outcome on time using budgeted for resources (PMI, 2004). Shenhar et al. (2001), indicates that project success may not be confined to the traditional view, rather success be dimensional as specified in Table 2.2. Both cases in this research study were said to be successful. The TGRS project went well beyond the schedule to the point that the client decided to do away with the schedule for the project. However, it is considered successful primarily because it delivered an outcome which all stakeholders were satisfied with.

The FCS project could be traditionally considered a failure because the intended operational user rejected it and did not use it. However, the developer believed it was *technically successful* because it delivered what was specified. The definition of project success, therefore, might be evolving from the traditional definition. Stakeholders seem not to be confined to the traditional definition of project success. Success has dimensions as specified in Table 2.2. This finding confirms the finding by Shenhar et al. (2001) and Mpazanje et al. (2008).

Contribution: The finding is of both theoretical and practical importance. The finding leads to a recommendation that main stream training material and the body of knowledge from PM institutions be revised to accommodate variations in the definition of project success.

9.10 Summary of the chapter

The findings of the research study have been discussed and interpreted to unearth the contributions they have made to knowledge. The research questions answered by the findings have also been indicated. Table 9.1 presents the summary.

Table 9.1: A summary of findings and research questions answered

Research question answered	Findings	Importance of contribution
How is a project network initiated, established and strengthened?	- Project start-up may be a winding process. - Personal interests are interwoven in the project need	Theoretical and practical
How do problematisation, interessement, enrolment and mobilisation impact on the objectives of an IS project?	Project objectives may not be "cast in stone".	Theoretical and practical. It extends on the findings by Pollack (2007) and Linde and Linderoth (2006).
How are problematisation, interessement, enrolment and mobilisation effected in a project network?	Personal interests may be interwoven in the project need	Theoretical and practical
How do actors relate to each other in a project network?	Importance of operational system user involvement in a project team is questionable.	Theoretical-researchers to take it up again to confirm
What are the actors in an IS project?	No one actor is a hero in a project network	Theoretical to researchers
How do IS practitioners understand and define IS project success and/or failure?	Definition of project success is evolving	Theoretical and Practical. Extends research by Shenhar et al, (2001) and Mpazanje, Brown and Sewchurrun (2008).
	A project championship might be necessary for the success of the project.	Practical
	Use of a PM methodology depends upon the experience of the P/Manager.	Theoretical and practical. Extends research by Mpazanje, Brown and Sewchurrun (2008).

Chapter 10: Conclusion

10.1 Introduction

This chapter presents conclusions from the research study and proposes further research ideas in the form of propositions/research questions derived from the findings. The rest of the chapter is outlined as follows: Section 10.2 describes high level implications of the research study while conclusions and recommendations are presented in Section 10.3. Ideas for further research are outlined in Section 10.4. The chapter closes with a summary of the thesis in Section 10.5.

10.2 Implications

PM has evolved over the years. It started out as a fire fighting exercise to combat persistent project failures, hence it started out with Gantt charts followed by PERT charts, CPM and more recently some fancy calculations such as the EVM, all of which were directed at combating schedule and resource constraints in projects (Stretton, 2007). To date, practitioners and researchers alike have a hangover from the fire fighting spirit, for instance, the tone in finding critical success factors seems in line with fire fighting. Even the call to reconsider PM is still in the spirit of fire fighting, however, this time in the right direction. It is not surprising; therefore, that it has been a tough journey towards a breakthrough of IS project success. This research study is one of the responses to the “rethink PM” call. It is hypothesised that if PM emerged from understanding as lived experiences, the scenario would have been different.

The researcher did not find a documented description of what goes on in IS projects. To provide the needed description of the as-lived experiences in IS projects, the researcher responded to the “rethink PM” call. She responded by stepping backward a bit to research into and describe the as-lived experiences of IS project practitioners with the hope of improving practitioners’ understanding of IS projects. From the two cases studied, the researcher found that IS project processes, especially in the pre-initiation phase, may neither be linear nor simple; rather they (processes) may be long and convoluted. The outcome from the research is described in this thesis. This research study is an attempt to bridge the gap in the literature of missing descriptions of as-lived experience in IS projects. The study may provide practitioners as well as the researching community with some insight to the IS project processes to assist them with formulation approaches that yield more potential to achieve success.

The research study has also brought to the fore different actants in an IS project. The actants include people, hardware, software, ISPs, interfaces, artefacts such as PM templates, systems development methodologies and their artefacts, and the project out comes themselves.

Apart from the fact that the research study has made an academic contribution, project practitioners in the sub-Saharan Africa have something to take home. They would understand IS projects better and work towards combating failures, well-armed with a narration of the as-lived experience at the back of their minds. Practitioners can make informed decisions on where to start from to yield success in their IS projects.

10.3 Conclusions and recommendations

Literature on traditional PM insists that project objectives be defined clearly up front and the project should strive to deliver as the objectives stipulate. The project is deemed a failure if the objectives are not met (PMI, 2004; Schawlb, 2006). Pollack (2007) and Linde and Linderöth (2006) urged that IS project objectives should not be defined upfront because the requirements are not so clear at the beginning of projects. However, the projects studied for this thesis indicate that objectives can be defined upfront, but may not be "*cast in stone*". It is, therefore, recommended that IS project objectives be thoroughly debated by stakeholders in order to incorporate their interests. If the interests are incorporated in the project, the stakeholders become committed to, and are passionate about, the project and its success. Even after stakeholder interests are incorporated in the project objectives, they still need not be "*cast in stone*". This recommendation is a variation of that of Pollack (2007) and Linde and of Linderöth's (2006) recommendations.

Literature emphasises the importance of end user involvement in a project team as one of the four most important critical success factors. This research concludes that in the two cases studied, involvement of operational end users was not that important to the project; they were mere tools. If they become inefficient they could easily be replaced by more efficient tools. Project practitioners in these projects, therefore, got away with not involving operational users in the project teams. In this research study both cases did not involve operational users and the projects were successful anyway. Perhaps the grouping user involvement needs to be clarified.

10.4 Further research

Three further research studies can be proposed from the findings of this study. The further research is aimed at validating some of the findings. The first proposal is to investigate further the importance of operational user involvement in an IS project with the following research questions:

What is the importance of involving an operational project end user in an IS project team?

What homogenous groups are bundled into the term end users?

The second proposal is directed at validating the relationship between experienced Project Manager and use of PM methodology in an IS project in the form of the following research question:

What relationship exists between the experience of a Project Manager and the use of PM methodologies in an IS Project?

The third proposal is repeating this study using virtual project teams since more virtual projects are becoming more available than ever before. Finally, this was an in-depth case study research that concentrated on two cases: further research is recommended in which a different research technique would be used to reach more than two project cases.

10.5 Summary of the thesis

The thesis commenced by introducing the background and the problem area of this research study. The problem area was discovered through a literature survey. In the IS Project Management field, both practitioners and researchers seem not to be pleased with the persistency of low project success rates. In fire fighting the problem, several researchers embarked on finding critical success factors for IS projects while others have continuously argued that the definition of project success has deviated from the traditional definition; success has dimensions. The research findings have not yielded satisfactory results; consequently there is a call to rethink PM so as to come up with theories *for, in and about* PM. This research study was part of the rethinking.

In rethinking the PM practice, the researcher hypothesised that the IS projects often fail due to poor understanding among practitioners. As indicated, PM emerged as a fire fighting venture. Researchers, therefore, seem to be preoccupied with combating project failure as opposed to dedicating some time to understand and describe the goings on of an IS project. The description would assist practitioners to understand IS projects and thereafter work towards combating the persistent failures.

This research study is an attempt to provide an as-lived description. To describe the experiences in an IS project, the researcher studied three cases from three sub-Saharan Africa countries. However, data from two countries only was used during the analysis because the first case was used as a pilot study where the researcher was still grasping the ANT concepts and still advancing in her abilities

in a case study-type research. Each case consisted of an outsourcer and an outsourcee, and involved the implementation of a system. In describing the as-lived experiences, the researcher used an ANT lens to both collect and analyse the data.

The findings of the research study are of both theoretical and practical importance. The study has further reaffirmed ANT as a means of inquiry, especially for exploratory and descriptive research studies. In response to the call to rethink PM, this study is a response and a starting point to explain the persistent IS project failures , while to the PM institutions, the research study provides an opportunity to reconsider and update the guidelines commensurate with the findings in this research study. To the practitioners, the findings provide a good number of lessons worth investing in.

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References

- Akrich, M. & Latour, B. (1992). A summary of a convenient vocabulary for the semiotics of human and non-human assemblies. In Bijker, W. E. and Law, J. (Eds.), *Shaping technology/building society: Studies in sociotechnical change* (pp. 259-264.) Manchester: MIT Press.
- Akrich, M. (1992). The description of technical objects. In W. E. Bijker and J. Law (Eds.), *Shaping technology/building society: Studies in socio-technical change* (pp. 205-224). Manchester: MIT Press.
- Alavi, M. & Carlson, P. (1992). A review of MIS research and disciplinary development. *Journal of Management Information System*, 8(4), 45 – 62.
- Alvesson, M. & Wilmott, H. (1992). On the idea of emancipation in management and organisation studies. *Journal of Management Information System* 17(3), 432 – 462.
- Atkinson, C. J. (2002). *The multidimensional systemic representation of Actor networks: modelling breast cancer treatment decision-making*. Proceedings of the 35th Hawaii International Conference on System Sciences, Hawaii. Retrieved December 18 th, 2008 from http://rds.yahoo.com/_ylt=A0geu9y.dHVJjlgBiyRXNyoA;_ylu=X3oDMTE0bzFscDVoBHNIYwNzcgRwb3MDMTAEY29sbwNhYzIEdnRpZANSMjA0XzEyMA--/SIG=12v1h3gvq/EXP=1232520766/**http%3a//csdl2.computer.org/comp/proceedings/hicss/2002/1435/04/14350099b.pdf
- Atkinson, R. (1999). Project Management: cost, time and quality, two best guesses and a phenomenon, it's time to accept other success criteria. *International Journal of Project Management*, 17(6), 337-342.
- Benbasat, I. & Weber, R. (1996). Research commentary: rethinking "diversity" in information systems research. *Information Systems Research*, 7(4), 389 – 399.
- Bijker, W. E., Hughes, T. P. & Pinch, T. J. (1987). *The social construction of technological systems: New directions in the sociology and history of technology*. Cambridge, MA: MIT Press.
- Blackburn, S. (2002). The project manager and the project network. *International Journal of Project Management*, 20(3), 199-204.
- Brockner, J. (1992). The escalation of commitment to a failing course of action: toward theoretical progress. *Academy of Management Review*, 17(1), 39-61.
- Bryant, A. (2002). Re-grounding grounded theory. *Journal of information technology theory and application*, 4(1), 25-42.

- Cadle, J. & Yeates, D. (2004). *Project Management for Information Systems*. (4th Ed.). Harlow, England: Prentice Hall.
- Cale, E. G., Jr., & Curley, K. F. (1987). Measuring implementation outcome: Beyond success and failure. *Information & Management* 3(1), 245–253.
- Callon, M. (1986a). Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay. In J. Law (Eds.), *Power, action & belief: A new sociology of knowledge?* (pp. 196 – 229). London: Routledge & Kegan Paul.
- Callon, M. (1986b). The sociology of an actor-network: The case of the electric vehicle. In M. Callon, J. Law and A. Rip (Eds.), *Mapping the dynamics of science and technology* (pp. 19-34). London: Macmillan.
- Callon, M. (1987). Society in the making: The study of technology as a tool for sociological analysis. In W. E. Bijker, T. P. Hughes and T. J. Pinch (Eds.), *The social construction of technological systems: New directions in the sociology and history of technology* (pp. 83-103). Cambridge, MA.: MIT Press.
- Callon, M. (1991). Techno-economic networks and irreversibility. In J. Law (Eds.), *A sociology of monsters: Essays on power, technology and domination* (pp. 132-161). London, Routledge.
- Callon, M. (1997). *Actor-network theory: The market test (draft)*. Actor Network and After Workshop. London: Centre for Social Theory and Technology (CSTT); Keele University, UK.
- Callon, M., & Latour, B. (1981). Unscrewing the big Leviathan: how actors macro-structure reality and how sociologists help them to do so. In K. Knorr-Cetina and A. V. Cicorel (Eds.), *Advances in social theory and methodology: Toward an integration of micro- and macro-sociologies* (pp. 277 – 303). London: Routledge & Kegan Paul.
- Carpenter, V. L. & Feroz, E. H. (2001). Institutional theory and accounting rule choice: an analysis of four US case governments' decisions to adopt generally accepted accounting principles. *Accounting, Organizations and Society* (26): 565 -596.
- Cassell, C. & Symon, G. (2004) *Essential guide to qualitative methods in organisational research: A practical guide*. London: Sage Publications.
- Charvat, J. (2003). *Project management methodologies*. New Jersey (NJ): John Wiley.
- Checkland, P. (1989). *Rational analysis for a problematic world*. Chichester: John Wiley & Sons, Ltd.
- Cicmil, S. & Hodgson, D. (2006). New possibilities for project management theory: A critical engagement. *Project management journal*, 37(3), 111-122.

- Cicmil, S. (2001, July 11th-13th). *Reconstructing the project management knowledge system: A multiple-perspective agenda*. A paper presented at the 2001 Critical Management Studies Conference, UMIST Manchester, UK.
- Cicmil, S. (2006). Understanding Project Management practice through interpretative and critical research perspectives. *Project management journal*, 37(2), 27-37.
- Cicmil, S., Williams, T. Thomas, J. & Hodgson, D. (2006). Rethinking Project Management: Researching the actuality of projects. *International Journal of project management*, 24(2006), 675-686.
- Collins, A. & Baccarini, D. (2004). Project success: A survey. *Journal of Construction Research*, 5(2), 211-231.
- Cook, T. D. & Campbell, D. T. (1979). *Quasi-experimentation: Design and analysis issues for field settings*. Boston: Houghton Mifflin.
- Cordella, A. & Shaikh, M. (2006). *From epistemology to ontology: Challenging the constructed truth and ANT*. Retrieved November 2, 2007, from <http://is2.lse.ac.uk/WP/PDF/wp143.pdf>
- Cordella, A. (2005). *Information infrastructure in action*. Retrieved November 2, 2007, from <http://is2.lse.ac.uk/WP/PDF/wp142.pdf>
- Crawford, L., Costello, K., Pollack, J. & Bentley, L. (2003). Managing soft change projects in the public sector. *International Journal of project management*. 21(2003), 443-448.
- Davis, F. D. (1986). *A technology acceptance model for empirically testing new end-user information systems: Theory and results*. PhD Thesis. Sloan School of Management, Massachusetts Institute of Technology. Retrieved August 24, 2008 from Massachusetts Institute of Technology Digital Theses.
- Drucker, P. F. (1999). *Management challenges for the 21st century*. New York: Harper Business.
- Dunning-Lewis, P. & Townson, C. (2004). *Using actor network theory ideas in information systems research: A case study of action research*. The Lancaster University Management School Working Papers series. Retrieved May 6 2008 from <http://www.lums.co.uk/publications>.
- Fishbein, M. (1967). Attitude and the prediction of behaviour. In M. Fishbein (Ed.), *Readings in attitude theory and measurement* (pp. 477-492). New York: Wiley.
- Flood, G. (2006). *Blueprint for project success*. Retrieved July 18, 2006, from. Business Source Premier <http://search.epnet.com/login.aspx?direct=true&db=buh&an=20578977>
- Galliers, R. D. (1991). Choosing appropriate information systems research approaches: A revised taxonomy. In H E. Nissen, H. K. Klein and R. Hirschheim (Eds.), *Information systems*

- research: *Contemporary approaches and emergent traditions* (pp. 327-345). North-Holland: Elsevier Science Publishers.
- Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*. Cambridge: Polity Press.
- Great Britain. Office of Government Commerce (2002): *Managing successful projects with PRINCE2*. London: Her Majesty's Stationery Office
- Great Britain. Office of Government Commerce (2005): *Managing successful projects with PRINCE2*. London: Her Majesty's Stationery Office
- Griffiths, M., Harrison, D., Hartell, M., Hay, G., Kent, A. & Messenger, S. (2000). *Using DSDM with PRINCE2*. London: DSDM Consortium. Retrieved July 17, 2006, from <http://www.agilealliance.org/articles/dsdmconsortiumusingds/file>.
- Guba, E. G. & Lincoln, Y. S. (1989). *Fourth generation evaluation*. Newbury Park: Sage.
- Hass, K. B. (2007). Tips and techniques: The blending of traditional and agile project management. *PM World Today*. IX (V).
- Hendricks, D. (2005). *An investigation into the consensus surrounding information systems project success*. Master of Business Science in Information Systems Thesis. University of Cape Town, Department of Information Systems.
- Herzberg, F. I. (1987). One more time: How do you motivate employees? *Havard Business review* 65(5), 109-120.
- Hirschheim, R. & Klein, H. K. (1994). Realizing emancipatory principles in information Ssystems development: The case for ETHICS. *MIS Quarterly*, 18(1), 83 – 109.
- Hirschheim, R., Klein, H. K. & Lyytinen, K. (1995). *Information systems development and data modelling: Conceptual and philosophical foundations*. Cambridge: Cambridge University Press.
- Hobday, M. (2005). The project-based organisation: An ideal form for managing complex products and systems. *Res Policy* 2000. 29(7–8), 871–93.
- Hodgson, D. E. (2002). Disciplining the professional: The case of project management. *Journal of Management Studies*, 39(6), 803-821.
- Holmström, J. & Stalder, F. (2001). Drifting technologies and multi-purpose networks: The case of the Swedish cashcard. *Information and Organization*, 11(3), 187-206.
- Huijbers, R., Lemmens, F. Senders, B., Simons, S., Spaan, B., van Tilburg, P. et al. (2004). *Software Project Management: Methodologies & Techniques*. Retrieved July 21, 2006, from <http://paul.luon.net/essays/SEP-essay-final.pdf>

- Hyvâri, I. (2006). Success of projects in different organizational conditions. *Project Management Journal*, 37(4), 31-41.
- Icmeli-Tukel, O. & Rom, W. O. (2001). An empirical investigation of project evaluation criteria. *International Journal of Operations and Production Management*, 21(3), 400-416.
- Jaffee, S. M. (2003). Malawi's tobacco sector: Standing on one strong leg is better than on none. *Africa region working paper series No. 55*. Retrieved August 7, 2008 from worldbank.org.
- Jain, A., Hong, L. & Pankanti, S. (2000). Biometric identification. *Communications of the ACM*, 43(2), 90-98.
- Johnston, R. B. (2001, June 27-29). *Situated action, structuration and Actor-network theory: An integrative theoretical perspective*. Paper presented at the 9th European Conference on Information Systems, Bled, Slovenia. Retrieved October 26, 2007, from <http://www.informatik.uni-trier.de/~lev/db/conf/ecis/ecis2001.html>
- Kaplan, B. & Maxwell, J. A. (1994). *Qualitative research methods for evaluating computer information systems. in evaluating health care information systems: Methods and applications*. Thousand Oaks, CA: Sage.
- Karlsen, J. T., Andersen, J., Birkely, L.S. & Ødegård, E. (2006). An empirical study of critical success factors in IT projects. *International Journal of Management and Enterprise Development*, 3(4), 297-311.
- Kerzner, H. (2003). *Project management: A systems approach to planning, scheduling and controlling*. Ohio: John Wiley and Sons, Inc.
- Klein, H. K. & Myers, M. D. (1999). A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 23 (1), 67-94.
- Knights, D. & Murray, F. (1994). *Managers divided: Organisation politics and information technology management*. Chichester: John Wiley.
- Koppensteiner, S. & Udo, N. (2003). *Will Agile development change the way we manage software projects?: Agile from a PMBOK Guide perspective*. Retrieved February 20, 2007 from <http://www.projectway.com>
- Kreiner, K. (1995). In search of relevance: Project management in drifting environments. *Scandinavian Journal of Management*, 11(4), 335-346.
- Kvale, S. (1996). *Qualitative inquiry: The 1,000-page question*. Retrieved March 18, 2007, from <http://qix.sagepub.com/cgi/content/abstract/2/3/275>.
- Larsen, M. H., Pedersen, M. K. & Andersen, K. V. (2006). *IT governance: Reviewing 17 IT governance tools and analysing the case of Novozymes A/S*. Paper presented at the 39th

- Annual Hawaii International Conference on System Sciences, Hawaii. Retrieved July 21, 2006, from <http://csdl2.computer.org/comp/proceedings/hicss/2006/2507/08/250780195c.pdf>.
- Latour, B. (1986). The powers of association. In *Power, action and belief: A new sociology of knowledge?* (pp. 264-280). London, Routledge & Kegan Paul
- Latour, B. (1987). *Science in action: How to follow scientists and engineers through society*. Cambridge, MA: Harvard University Press.
- Latour, B. (1991). Technology is society made durable. In J. Law (Ed.), *A sociology of monsters: Essays on power, technology and domination*. (pp.103-131). London, Routledge.
- Latour, B. (1992). Where are the missing masses? The sociology of a few mundane artifacts. In W. E. Bijker and J. Law, (Eds.), *Shaping technology/building society: Studies in socio-technical change* (pp. 225-58). Cambridge, Mass.: MIT Press.
- Latour, B. (1993). *We have never been modern*. Hemel Hempstead: Harvester, Wheatsheaf.
- Latour, B. (1996). *Aramis; or, The love of technology*. Cambridge, Massachusetts, Harvard University Press.
- Latour, B. (1999). *Pandora's hope: Essays on the reality of science studies*. Cambridge, Harvard University Press
- Latour, B. (2005). *Reassembling the social: An introduction to Actor-network Theory*. Oxford: Oxford University Press.
- Law, J. & Callon, M. (1988). Engineering and sociology in a military aircraft project: A network analysis of technological change. *Social Problems*, 35(3), 284 – 297.
- Law, J. & Hassard, J. (1999). *Actor network Theory and after*. Oxford: Blackwell.
- Law, J. (1992). Notes on the theory of the actor-network: Ordering, strategy and heterogeneity. *Systems Practice* 5(4), 379-393.
- Law, J. (Ed.). (1991). *A sociology of monsters: Essays on power, technology and domination*. London: Routledge
- Lee, A. & Baskerville, R. (2003). Generalising generalisability in information systems research. *Information systems research*, 14(3), 221-243.
- Leybourne, S. A. (2007). The changing bias of project management research: A consideration of the literatures and an application of extant theory. *Project Management Journal*, 38(1), 61-73.

- Linde, A. & Linderoth, H. C. J. (2006). An Actor network Theory perspective on IT projects. In D. Hodgson & S. Cicmil (pp. 155-170), *Management, work & organisations: Making projects critical*. New York: Palgrave Macmillan.
- Linderoth, H. C. J. & Pellegrino, G. (2005). Frames and inscriptions: Tracing a way to understand IT-dependent change projects. *International Journal of Project Management*, 23 (2005), 415-420.
- Mahaney, R. C. & Lederer, A. L. (2006). The effect of intrinsic and extrinsic rewards for developers on information systems project success. *Project Management Journal*, 37(4), 42-54.
- Mähring, M., Holmström, J., Keil, M. & Montealegra, R. (2004). Trojan actor-networks and swift translation :bringing actor-network theory to IT project escalation studies. *Information Technology & People*, 17(2), 210-238.
- Malawi. The Tobacco Control Commission (2005). *The strategic plan*. [N.p:The Commssion).
- Manicas, P. T. & Secord, P. F. (1983). Implications for psychology of the new philosophy of science. *American Psychologist*, 38(4), 399-413.
- Marchewka, J. T. (2003). *Information technology project management*. Hoboken NJ: Wiley.
- Marshall, C. & Rossman, G. B. (1999). *Designing qualitative research*. California: Sage Publications.
- Mataya, C., Chulu, O., Khaila, S., Kumwenda, I., Machinjiri, C. & Mthindi, G. (1989). Country note for Malawi. In *2020 vision network for East Africa*:. Kampala, Uganda: *International Food Policy Research Institute*.
- Maxwell, J. A., Bashook, P. G. & Sandlow, L. J. (1986). Combining ethnographic and experimental methods. In D. J. Fetterman & M. A. Pitman (Eds.), *Educational Research: a case study in educational evaluation: Ethnography in theory, practice and politics* (pp. 21-143). Beverly Hills, CA: Sage Publications.
- McLeod, G. & Smith, D. (2003). *Managing information technology projects*. Inspired Press.
- McManus, J., & Wood-Harper, T. (2003). Information systems project management: The price of failure. *Management Services* 47(5), 16-19.
- Monteiro, E. & Hanseth, O. (1995). Social shaping of information infrastructure: on being specific about the technology. In W. J. Orlikowski, G. Walsham, M. R. Jones & J. DeGross (Eds.), *Information technology and changes in organisational work*. Proceedings of the IFIP WG8.2 Working Conference (pp. 325-343). London: Cambridge University, Chapman and Hall.

- Monteiro, E. & Hepsø, V. (2000). Infrastructure strategy formation: seize the day at Statoil. In Ciborra, C.U. et al. (Eds.), *From control to drift: The dynamics of corporate information infrastructure* (pp. 84-97). Oxford: Oxford University Press.
- Monteiro, E. (2000.) Actor-network theory and information infrastructure. In C. U. Ciborra and Braa, K A. et al. (Eds.) *From control to drift: The dynamics of corporate information infrastructures* (pp. 71- 83), Oxford: Oxford University Press.
- Morris, P. (2002). Science, objective knowledge and the theory of project management. *Civil Engineering Proc ICE*, 1(50), 82-90.
- Morris, P. W. G. & Jamieson, H. A. (2003). *Moving from business strategy to project strategy*. Drexel Heath, Pennsylvania: Project Management Institute.
- Mpazanje, F., Brown, I, & Sewchurran, K. (2008, September, 11-12). *The impact of PMBoK® tools, techniques and complementary factors on Information Systems project success*. Paper presented at the 2nd European Conference on Information Management and Evaluation, London, UK.
- Mpazanje, F., Chigona, W., & Roode, D. (2008, September 3-5). *Weblogging: A promising form of mass-to-mass communication?* Paper presented at the 10th Annual Conference on World Wide Web Applications, www2008, Cape Town, South Africa.
- Mutch, A. (2002). Actors and networks or agents and structures: Towards a realist view of information systems. *Organization* 9(3), 477-496.
- Myers, M.D (1997). Qualitative research in information systems. *MIS Quarterly Discovery*, 21(2), 241-242.
- Neal, R. A. (1995). Project definition: The soft systems approach. *International Journal of project management*, 13(1) 5-9.
- Nienaber, R. & Cloete, E. (2003, September 17-19). *A software agent framework for the support of software project management*. A paper presented at the 2003 annual research conference of the South African Institute of Computer Scientists and Information Technologists on Enablement through Technology, Johannesburg, South Africa. Retrieved July, 16, 2006, from ACM International Conference Proceeding Series; Vol.47.
- Nijland, (2004). Understanding the use of IT evaluation methods in organisations. PhD Thesis. Department of Information Systems, London School of Economics and Political Science
- Nocker, M (2006). The contested object: on projects as an emergent space. In D. Hodgson & S. Cicmil *Management, work & organisations: Making projects critical* (pp. 155-170). New York: Palgrave Macmillan.
- Nogeste, K. (2005). *Defining Intangible IS Project Products Using PRINCE2 Product Descriptions*. PhD Thesis. RMIT University, Melbourne. Retrieved July 17, 2006, from <http://www.pacis-net.org/file/2005/187.pdf>.

- Nyberg, A. & Henfridsson, O. (2001). *Going for the online customer: An interpretive case study of internetworked customer reach in online entertainment*. {Paper presented at the] Global Co-Operation in the New Millennium - The 9th European Conference on Information Systems, Bled, Slovenia.
- Orlikowski, W. J. & Baroudi J. J., (1991). Studying information technology in organizations: Research approaches and assumptions. *Information Systems Research* 2(1): 1-28.
- Packendorff, I. (1995). Inquiring into the temporary organisation: New directions for project management research. *Scandinavian Journal of Management*, 11 (4), 319-333.
- Parkin, J. (1996). Organizational decision making and the project manager. *International Journal of Project Management*, 14(5), 257-263.
- Pollack, J. (2007). The changing paradigms of project management. *International Journal of Project Management*. 25(2007), 266-274.
- Porsander, L. (2005). "My name is Lifebuoy": An Actor-network emerging from an Actor-Net. In B. Czarniawska & T. Hernes (Eds.), *Actor-network Theory and organising* (pp. 14-30).Sweden: Liber & Copenhagen Business School Press.
- Project Management Institute (2004). *A guide to the project management body of knowledge (PMBOK® guide)*. Newtown Square, PA: Project Management Institute.
- Robey, D. (1996). Research commentary: diversity in information systems research: Threat, promise, and responsibility. *Information Systems Research* 7(4), 400 – 408.
- Rogers, E. M. (1995). *Diffusion of innovations*. New York, Free Press.
- Rogers, E. M. (2003). *Diffusion of innovations*. New York, Free Press.
- Ross, J. & Staw, B. M. (1993). Organizational escalation and exit: Lessons from the Shoreham Nuclear Power Plant. *Academy of Management Journal*, 36 (4), 701-32.
- Saunders, M., Lewis, P. & Thornhill, A. (2003). *Research methods for business students*. Harlow, London: Pearson Education .
- Schwalbe, K. (2006). *Information technology project management*. Boston: Thomson Course Technology.
- Shenhar, A. J., Dvir, D., Levy, O. & Maltz, A. C. (2001). Project success: A multidimensional strategic concept. *Long Range Planning*, 34, 699-725.
- SIAST (2008). *About Malawi and Malawians*. Retrieved August 15, 2008 from <http://www.siastr.ca/international/malawietop/resources.htm>

- Silva, L. & Backhouse, J. (1997). Becoming part of the furniture: the institutionalisation of information systems. In A. S. Lee, J. Liebenau & DeGross, J. I. (Eds.), *Information systems and qualitative research* (pp.389- 414). London: Chapman and Hall.
- Singleton, V. & Michael, M. (1993). Actor-networks and ambivalence: General practitioners in the UK Cervical Screening Programme. *Social Studies of Science*, 23(2), 227 – 264.
- Spence, F. (2006). *An introduction to project management and PRINCE2*. Retrieved July 18, 2006, from <http://www.crazycolour.com/p2/0009.shtml>
- Standing, C., Guilfoyle, A., Lin, C. & Love, P. E. D. (2006). The attribution of success and failure in IT projects. *Emerald Group Publishing Limited, Industrial Management & Data Systems* 106(8), 1148-1165. Retrieved, November 21, 2006 from www.emeraldinsight.com/0263-5577.htm
- Stanforth, C. M. (2006). Using Actor-network Theory to analyze E-Government implementation in developing countries. *The Massachusetts Institute of Technology Information Technologies and International Development*, 3(3), 35–60.
- Statistics South Africa (2007). *Labour force survey*. Retrieved August 18, 2008 from <http://www.statssa.gov.za>.
- Staw, B. M. & Ross, J. (1987). Behavior in escalation situations: Antecedents, prototypes and solutions. *Research in Organizational Behaviour*, 9, 39-78.
- Strauss, A. & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park: Sage.
- Stretton, A. (2007). A short history of modern project management. *PM World Today* IX(X). Retrieved August 6, 2008 from <http://www.pmforum.org/library/second-edition/2007/PDFs/Stretton-10-07.pdf>
- Tatnall, A. & Burgess, S. (2002, June 17 - 19). *Using Actor-network Theory to research the implementation of a B-B Portal for regional SMEs in Melbourne, Australia*. Paper presented at the 15th Bled Electronic Commerce Conference. eReality: Constructing the eEconomy, Bled, Slovenia.
- Tatnall, A. & Gilding, A. (1999). Actor-network theory and information systems research. In *Proceedings of the 10th Australasian Conference on Information Systems*, 955-966. Wellington, NZ.
- Tatnall, A. (2000). *Innovation and change in the information systems curriculum of an Australian university: A socio-technical perspective*. PhD thesis. Education. Rockhampton, Central Queensland University.
- The Standish Group International Inc (2004). *The Chaos Report*. Retrieved April 30, 2006, from http://www.standishgroup.com/sample_research/index.php

- The World Bank (2007). Gross national income per capita 2007, Atlas method and PPP. Retrieved August 10, 2008 from <http://siteresources.worldbank.org/Resources/GPIPC.pdf>.
- Thie, L. & Fried, E. (2005, April 2-7): *Acclairism: questioning biometric technology through an airport security clearance system*. Paper presented at CHI 2005 Conference on Human Factors in Computing Systems, Portland, Oregon, USA. Retrieved June 10 2007 from <http://portal.acm.org/citation.cfm?doid=1056808.1056856>
- Trauth, E. (2001) Choosing qualitative methods in IS research: lessons learned. In E. Trauth, (ed.), *Qualitative research in IS: Issues and trends*, pp. 271–287. Idea Group Publishing, Hershey, PA, USA.
- Vaagaasar, (2006). *From tool to actor: How a project came to orchestrate its own life and that of others*. PhD Thesis. Department of Leadership and Organisation, BI Norwegian School of Management.
- Veraart, V. E. (2002). *Factors that impact on project success or failure*. Perth: Software Solutions. Computer Science Department, Murdoch University
- Walsham, G. & Sahay, S. (1999). GIS for district-level administration in India: problems and opportunities. *MIS Quarterly* 23(1), 39–66.
- Walsham, G. (1995). Interpretive case studies in IS research: nature and method. *European Journal of Information Systems* (4), 74–81.
- Walsham, G. (1997). Actor-network theory and IS research: current status and future prospects. In Lee, Liebenau & DeGross (Eds), *Information systems and qualitative research* (p p. 466–480). London: Chapman and Hall.
- Walsham, G. (2006). Doing interpretive research. *European Journal of Information Systems*, 15, 320–330.
- Wasserman, S. & Faust, K. (1994). *Social network analysis: Methods and applications*. Cambridge, MA: University of Cambridge Press.
- White, D. & Fortune, J. (2002). Current practice in project management: An empirical study. *International Journal of Project Management*, 20(1), 1–11.
- Wideman, R. M. (2002). *Comparing PRINCE2 with PMBoK®*. Vancouver: AEW Services. Retrieved July, 17, 2006, from <http://maxwideman.com/papers/comparing/comparing.pdf>
- William-Jones, B. & Graham, J. E. (2003). Actor-network theory: A tool to support ethical analysis of commercial genetic testing. *New Genetics and Society*, 22(3), 271 – 296.
- Winch, G. (2004, July). *Rethinking project management: project organizations as information processing systems?* A paper presented at the 2004 Project Management Institute research conference, London, United Kingdom.

Winter, M., Andersen, E. S., Elvin, R. & Levene, R. (2006b). Focusing on business projects as an area of future research: An exploratory discussion of four different perspectives. *International Journal of Project Management*, 24(2006), 699-709.

Winter, M., Smith, C., Morris, P. & Cicmil, S. (2006a). Directions for future research in Project Management: The main findings of a UK Government-funded research network. *International Journal of project management*, 24, 638-649.

Yeo, K. T. (1993). Systems thinking and project management: Time to reunite. *International Journal of Project Management*, 11(2), 111-7.

Yin, R. K. (1994). *Case study research, design and methods*. Newbury Park: Sage Publications.

Legislation

Laws of Malawi. The Tobacco Act 1972 (Chapter 6:2, Chapter 6:3 Governing the tobacco industry in Malawi).

Appendices

Appendix A: Ethics Approval form



UNIVERSITY OF CAPE TOWN

Commerce Faculty Ethics in Research Committee

Any individual in the Faculty of Commerce at the University of Cape Town undertaking any research that involves the use of human subjects, or research that may hold ethical consequences for the University of Cape Town, is required to complete this form. The completed form should be submitted to departmental Ethics Committee representatives for submission to the Commerce Faculty Ethics in Research Committee

1. PROJECT DETAILS	
Project title: <i>Towards improving understanding of as-lived experiences in Information Systems projects: An Actor Network Theory perspective.</i>	
Principal Researcher/s: <i>Flora Mpazanje</i>	Research Supervisor: <i>Mr. K. Sewchurran</i> <i>Senior Lecturer</i> <i>Department of Information Systems</i> <i>University of Cape Town</i> E-Mail Address: kosheek.sewchurran@uct.ac.za Telephone: +2721 6502280
E-Mail address: Flo_mpazanje@yahoo.com Cell Phone: +2721 844185349	
Brief description of the project: <i>The project seeks to explore and describe as-lived experience in Information Systems (IS) project using Actor Network Theory (ANT). This will provide an insightful understanding of a project process to practitioners as well as researchers. Understanding the project process is envisaged to be an initial task towards coming up with theory "For, In and About" IS project Management. It is also an initial task towards coming up with any formulae for IS project success. The research will be analysed using ANT.</i>	
Research methods and procedure: (please tick and explain procedure) ☐ Interviews ☐ Survey questionnaire ☐ Experiment ☐ Secondary data ☐ Observation ☐ Other (please specify): <i>Interviews, observations and secondary data from two case studies. As this is an exploratory study aimed at gaining a thorough understanding of an IS project process using ANT, there is no interview schedule as such. This will allow the participants to discuss whatever experience they have had. However, I intend to guide the interviews in five stages. The first stage for setting the scene by collecting demographic data. Second stage by collecting details pertaining to the project under discussion in relation to ANT. Third stage collecting details pertaining to the initiation of a project in relation to ANT's moments of translation: problematisation, intersement, enrolment and mobilization. Fourth stage will involve collecting data relating to the actual execution of the project in relation to problematisation, intersement, mobilization and persuasion. The last stage will involve collecting data relating to the end result of the project process.</i> <i>Observations and secondary data will back the interview agenda narrated above.</i>	
2. PARTICIPANTS	

Characteristics of participants:

Gender: *Either*

Race / Ethnicity: *N/A*

Age range: *Except minors*

Location: *Cape Town in South Africa and Nairobi in Kenya*

Other:

Affiliations of participants: (please tick)

☐ Company employees ☐ Hospital employees ☐ General public ☐ Military staff ☐ Farm workers ☐ Students ☐

Other (specify)

Participants in this study will include company employees and consultants if at all a project was comprised of such people. Children (aged 15 and below), mentally incompetent persons, or legally restricted groups of people will not be encouraged to participate in this study, should they by any means participate; their data will not be utilised in the analysis stage of the study. It will be ethically gotten rid off.

If your sample includes children (aged 15 and below), mentally incompetent persons, or legally restricted groups please explain on a separate page why it is necessary to use these particular groups

3. ORGANISATIONAL PERMISSION

If your research is being conducted within a specific organisation, please state how organisational permission will be obtained:

A letter requesting an organisation to permit me to conduct the research in their organisation has been attached. Only when permission is granted by the concerned organisation, will I conduct the research in the particular organisation. The letter attached does not specify the organisations in which the research may be conducted for two reasons: (1) permission has not been sought and granted (2) ethically the names will remain anonymous.

4. INFORMED CONSENT

What type of consent will be obtained from study participants?

- ☐ **Oral consent:** *Oral consent*
- ☐ **Written consent:** *Written consent.*
- ☐ Anonymous survey questionnaire (covering letter required, no consent form needed)
- ☐ Other (specify): _____

How and where will consent/permission be recorded?

A consent form has been attached. Participants will be asked to sign the form as proof of their consent. In cases where signing a form will not be favoured, oral consent will be sought. If permitted, the oral consent will be audio recorded. The attached consent form specifies that a participant is free to opt out of participation anytime they felt not comfortable at any stage of the study. Minors or mentally incompetent people will not be consciously opted for in this study. Should they participate and be discovered along the way, their data will be excluded from the analysis.

If subjects are minors or mentally incompetent, describe on a separate page how and by whom permission will be granted?

5. CONFIDENTIALITY OF DATA

What precautions will be taken to safeguard identifiable records of individuals? Please describe specific procedures to be used to provide confidentiality of data by you and others, in both the short and long run. This question also applies if you are using secondary sources of data.

Identifiable information will be masked during analysis and will not form part of the information that will be stored. It will be treated in strict confidence. As soon as the analysis is over, the information will be professionally and ethically disposed off.

6. RISK TO PARTICIPANTS

Does the proposed research pose any physical, psychological, social, legal, economic, or other risks to study participants you can foresee, both immediate and long range? (tick one)

No risks are foreseen in this study.

☐ Yes ☐ No

If yes, answer the following questions on a separate page:

1. Describe in detail the nature and extent of the risk and provide the rationale for the necessity of such risks
2. Outline any alternative approaches that were or will be considered and why alternatives may not be feasible in the study
3. Outline whether and why you feel that the value of information to be gained outweighs the risks

7. intended dissemination of research findings

Have you discussed authorship issues with your co-researchers or supervisor? (tick one)

☐ **Yes** ☐ **No. We have not discussed that.**

If yes, what did you agree?

- 1. A full copy of the research proposal**
- 2. Any consent form that will be signed by the participants or read to them (if any)**
- 3. Any interview schedules, cover letters, forms, instruction sheets, survey questionnaires or other material that will be used in the study.**

I certify that that the material contained herein is truthful and that all co-researchers and supervisors are aware of the contents thereof:

Applicant's signature: _____ **Date:** _____

For Ethics committee representative only

Recommendation:

Signature:

Date:

For Ethics committee CHAIRPERSON only

Recommendation:

Signature:

Date:

Appendix B: An Introductory letter



Department of Information Systems

Leslie Commerce Building
Engineering Mkt, Upper Campus
OR Private Bag Rondebosch 7700
(tel) 859-2284

Tel Add: 661-1111 Cape Town

Fax No: 852-19 65-0 2285

Dear Sir/Madam

Request to conduct a research study in your organisation

I am a post graduate student with the University of Cape Town, in the Department of Information Systems (IS). Currently, I am busy with a masters research project. The project is concerned with understanding IS projects. I am primarily interested in understanding how members within IS project teams are enrolled by the project mission.

The research project entails formulating an understanding of how the artifacts (project management process and project objectives) exist as an activity network. The research uses Actor Network Theory* to make sense of a project. Findings of the research will lead to improved understanding of:

- The effects various artifacts and processes have in enrolling participation and contributing to progressive elaboration of project objectives
- The IS project network as a whole alongside expected experiences

To progress I require a project setting to conduct my research project. Ideally, the project has not progressed beyond the initiation stage and is formulated as an Information Systems initiative. I pledge to keep all data and interviews confidential and anonymous. The name of the organisation will also not be disclosed. I also promise to make the findings of my research available to the organisation.

Should my request be accepted, please let me or my supervisor (contact details indicated below) know when the study may begin.

Yours faithfully

Elon Mpazane

Supervised by Mr K Sewchurran

If there are any queries, please direct them to:
Eg. mpazane@uct.ac.za
Cell: 2721 844185046

cc:

Supervisor

Mr K. Sewchurran

Senior Lecturer / Research Associate from Centre for IT and Innovation Development in Africa (CIDA)
UCT - Department of Information Systems
E-Mail: ksew@uct.ac.za Phone: +27(0) 8522280

Appendix C: Consent form



Department of Information Systems

Leslie Commerce Building

Engineering Mall, Upper Campus

OR Private Bag, Rondebosch 77001

Tel: 650-2261

Tel. Add: ALUMNI, Cape Town

Fax No: (021) 650-2280

Interview participation consent form

One of the requirements for completing a Master's degree in Information Systems in the Information Systems department, Faculty of Commerce at the University of Cape Town is the completion of a dissertation research project.

As one of the students pursuing the aforementioned degree, I am interested to study Information systems (IS) projects. I am, therefore, interested to conduct a study entitled "*Towards understanding as-lived experiences in Information Systems projects: An Actor Network Theory perspective*".

The research objectives of this study are exploring and describing:

1. As-lived experience in an IS project process.
2. How IS project objectives may be reshaped by the various actors.
3. The understanding and meaning attached to an IS project success and failure.

Research ethics is an issue of utmost importance to me, the IS department, the faculty of Commerce and the University of Cape Town at large. Consequently, I guarantee confidentiality and anonymity of the details and comments you will provide in this study. All comments and details will be treated in strict confidence and will be used strictly for the sole purpose of the aforementioned dissertation research project.

Your participation in this study is entirely voluntary. You may opt out of the study at any point in time without attracting any adverse consequences. If you opt to participate in this research project, please sign the consent form below or at least indicate to me that you are willing to participate orally.

PARTICIPANT CONSENT FORM

By signing this participant consent form, you are agreeing to participate in a research project entitled "*Towards understanding as-lived experiences in Information Systems projects: An Actor Network Theory perspective*" conducted by Flora Mpazanje as one of the requirement for the completion of a Masters degree in Information Systems. The researcher guarantees confidentiality and anonymity of the details and comments you will provide in this study. All comments and details will be treated in strict confidence and will be used strictly for the sole purpose of the aforementioned dissertation research project.

Signature_____Date_____

For any enquiries, please feel free to contact:

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OR

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Phone: +2721 6502280

Appendix D: The Interview guide

The interview guide

Section A: Demographics

1. Name of the organisation_____
2. Sector in which organisation operates_____
3. Short description of core business_____
4. Number of employees in the organisation_____
5. Department participant is employed under_____
6. Number of years in the organisation_____
7. Participant's designation_____
8. Number of years in career_____
9. Have you had any training in project management?
10. How many projects have you participated in your career life?

Section B: Project details

11. Name of the project under discussion_____
12. How big was the project team? _____
13. What were the initial project objectives?
14. What were the sub-goals of the project? (*How were they formulated? checking influences of actor associations and interactions*)
15. How long did it take the project to deliver its objectives?
16. In this project, what role(s) did you play?

Section C: Project initiation

17. How was this project conceived? (*Who initiated it? What is their designation? How did the project proceed to its initiation phase?*)
18. Who were invited to attend the first initiation meeting of the project? (*Why was it important for them to attend this first meeting?*)
19. How was the initial vision/objective of the project presented at the initiation session? (*How was it presented? formulation of question to provoke interessement OPP?*).
20. What were the reactions of the participants from this first presentation of the project vision? (*To check successfulness of interessement*).
21. What benefits were envisaged that the project would offer to the project team, stakeholders and the rest of the stakeholders inclusive of users?(*To check problematisation*)

Section D: Project execution

22. What were the tools, techniques and methods used to bring out a common vision and understanding of the project objective?*(To check for problematisation, intereseement, mobilisation and persuasion)*
23. How were these tools, techniques, methods and processes viewed by the rest of the project team? *(Why this view? To check problematisation, intereseement, enrolment and mobilization by Project Management body of knowledge)*
24. How were progress meetings conducted? *(At what intervals? Who attended the meetings? What reports were they supposed to present? How did the rest of the team get informed of the outcomes of the meeting? To check reinforcement of the network and mobilisation as well as networks of power)*
25. What other form of communication was prevalent in the project network? *(What impact did they have? Who was in the lead? To check mobilization and networks of power).*

Section E: Project closure (if closed)

26. How can you describe the outcome of this project? *(Success? Failure? Challenged? What are the indications for this outcome? Why this outcome?)*
27. May you discuss your experience and describe how your objectives have been met or not by the project process? *(What went wrong? What went right? Why? Lessons learned?).*
28. Who else were involved in this project network? *(How were they involved? What were their respective roles? How did they go about their responsibilities? How were their interests addressed? At what stage of the project were they involved?).*

Appendix E: A Sample of transcripts

<u>Interview transcriptions</u>	<u>ANT Analysis</u>
<u>Case 1</u>	
<u>Organisation: The Tobacco Marketing and Monitoring Company</u>	
<u>Project Name: Tobacco grower registration system</u>	
<u>Interview 1: Chief Executive</u>	
<i>Could you please tell me about yourself and this organisation?</i>	
That's a bit difficult but I will try to give as much background as possible. This organisation which I head is known as The Tobacco Marketing and Monitoring Company (TMMC). It is a regulatory government institution that was established to regulate growing and selling rather marketing of tobacco in this country. Tobacco in this country is regulated even though we are in a liberalised economy because the crop is of strategic importance to the economy of this country. Through an act of parliament, this organisation was established to oversee the businesses of the entire tobacco industry. We register growers, selling floors, buyers, tobacco transporters commercial graders and all such people and organisations that put their hands on tobacco. We also ensure orderly sales on all tobacco selling floors. Because of that mandate, we arbitrate all disputes that might ensue between buyers and sellers if there is any disagreement concerning either grades, condition of tobacco and even prices. We also arbitrate on disagreements that might ensue between growers and anybody who handles their tobacco. All statistics regarding tobacco in this country is collated by this institution so another mandate and core business of this organization is to collate and disseminate accurate information on tobacco for the consumption of the whole world. For buyers to bid at informed prices, this organization labels all tendered tobacco with appropriate grades. I said earlier that tobacco is of strategic importance in this country; it actually brings 60% of total forex and contributes quite a bit towards the nation's GDP.	Justification for initiating the project Inscription for the project idea
Since 3rd August 1973 I have been working in various organisations but all in the tobacco industry. I have worked as a researcher on the same crop and have risen through the ladders. Since 1987, I have been working as a chief executive in various tobacco companies. I have a	An executive officer. Their voice is of a very strong command. He
Since 3rd August 1973 I have been working in various organisations but all in the tobacco industry. I have worked as a researcher on the same crop and have risen through the ladders. Since 1987, I have been working as a chief executive in various tobacco companies. I have a	An executive officer. Their voice is of a very strong command. He

	responsibility
I have worked on many projects throughout my 34 years in employment. I have initiated many projects as well, and in the project we will talk about I am both the initiator and a sponsor to some extent although a final "go ahead" was given by my board. I have worked in this organization as a chief executive for 11 years now continuously. If you want it I was born some 59 years ago. I got my first degree in 1973 with biology and Physics as my majors. I got my Msc two years later in 1975. And in 1983 I got my doctorate degree in plant bleeding and plant pathology. That's if you need that information at all.	
TMMC is a service rendering organization. It therefore does not have a huge staff base although its duties and mandate are huge. The work that this organisation does is probably worth to be accomplished by a thousand or so employees, however it is carried out by 160 employees both permanent and those on contract.	
Yes the tobacco market is liberalised, but we still have to produce it according to principles of demand and supply as well as according to the quality and grades the market requires, hence the regulating and monitoring.	
The project I would like you to study is what we are calling "Biometric based grower registration system". This is a big project for this organization as we are spending over MK140, 257,000.00 which is slightly over US\$ 1,000,000.00. The smart cards alone will cost us some US\$490,000.00	justification that the project is big
<i>May you please let me know the background to this project?</i>	
Okay background to this project is this: As I have told you that I have worked in the tobacco industry for 34 years now, I have seen marketing of the crop grow from infancy to maturity. And I have seen the production of the crop growing to near overproduction and thereafter declining in both quantity and quality. The decline is due to lack of farm inputs on the part of growers. Farm inputs like fertilizers, chemicals, seedlings, labour to work on the farms and related equipment. Our farming here is not even mechanized because farmers do not have money to finance such investments.	
You see the bulk of the tobacco crop is sold through auctioning. We therefore have three main Okay background to this project is this: As I have told you that I have worked in the tobacco industry for 34 years now, I have seen marketing of the crop grow from infancy to maturity. And I have seen the production of the crop growing to near overproduction and thereafter declining in both quantity and quality. The decline is due to lack of farm inputs on the part of growers. Farm inputs like fertilizers, chemicals, seedlings, labour to work on the farms and related equipment. Our farming here is not even mechanized because farmers do not have money to finance such investments.	
You see the bulk of the tobacco crop is sold through auctioning. We therefore have three main tobacco auctioning floors and about four side markets which also take a form of auctioning. Each tobacco bale is sold in about 6 seconds. In a five hour day from 7:30 am to 12:30 pm continuous we sell a total of about 30,000 bales of tobacco. So you can see the process is fast	

organised, we will see ourselves selling the 160 million KGs we produce throughout the year and a farmer cannot afford that as they have to go back to the farm to start production process for the next crop. The crop is therefore sold between April and September every year.

To facilitate the orderly marketing, farms are registered and are given unique registration numbers. Each bale is labelled with this registration number which connects the bale to a farmer and their bank account. Such that once a bale is sold, its proceeds are paid straight into the farmer's bank account. Take note that a registration number is issued to a farm and not to a farmer. If A farmer has more than two farms, they can have more than one registration numbers to their name. Take note as well that the country does not have national identities so a person may be identified by one name in one community and with yet another in another community if they answer to several names for example some farmer may have 'James Anderson Gwedezeni Chisale'. At school he might give his name as James Gwedezeni. In the village he may answer to the name 'James Ochisale' or indeed just 'Ochisale' so if you ask the village community who 'James Anderson Gwedezeni Chisale' is, they would not be able to know him. At church this person may answer to the name Anderson Chisale since his Christian name is Anderson. The same applies when we record or capture farmers' names. A farmer may have three pieces of land (Farms) he may wish to register them using different names which is legally okay. One farm is owned by James Gwedezeni, the other one is owned by Anderson Gwedezeni and the third one is owned by James A. G. Chisale. Legally these names are considered identifying three different people registering their farms. The farms are registered and all the procedures for selling tobacco are followed. I hope it is now understood that a farmer can own more than one farm and register them using different owner names while its physically one person owning them.

Once a new farm has been registered, the owner is issued with a grower's license that displays particulars for the farm and the grower as well as conditions for growing and selling. The farmer is also advised to open a bank account for that farm. For a bank to open an account for a farmer, the farmer must show a grower's license as proof that they own a licensed to grow and sell tobacco through the industry's tobacco marketing system. Notice here that the farmer identification procedure is poor. The farmer is identified by a grower's license which in the first place the owner used a name different to their previous one which might have been used to register another piece of land. Remember that most growers do not register more than one farms on the same day, they are clever. They either come the following year or after some months. This may end up having one physical farmer having two licenses in two different names and having two bank accounts. Before the onset of the tobacco selling season, every grower is asked to confirm the bank account they want their tobacco sales proceeds to be

to learn these techniques when you get to my position. [redacted] This time I really knew that I had to be careful with my tactics. [redacted] Just to make sure that my ideas were not weird, I started out with pure corridor salesmanship. Whenever I got a chance to speak to some decision maker of an organization that has some interest in the affairs of tobacco I introduced my ideas and sought consent. Mind you I basically talked to decision makers, Chief executives mostly. [redacted]	[redacted] [redacted] Formulation of inscription motivated by accreditation. Being strategic
The corridor salesmanship gave me an indication that the idea is likely to be supported by 80% of my board. Mind you my board is comprised of buyers, and sellers and a few neutral individuals and they are 11 in total inclusive of ex-officials from government ministry of agriculture which is our parent ministry and Department of statutory cooperation as our administrative masters from the government side. Buyers are represented by two people from tobacco exporters association one of these people is a finance guru who seems to be a heavyweight as far as finances are concerned. Buyers and sellers have an interest in the affairs of TMMC because they contribute half-half in monetary terms to finance the organization so they are my masters as far as money issues are concerned.	Lobbying as a method of inscription
After corridor salesmanship, and after I was sure of more support than opposition I Sold the idea to my departmental managers. I started with the departmental head whose department is the anchor of the organization. When I managed to convince him of the viability of the idea I then convened a management meeting. Among the agendas of the meeting was this Biometrically based registration system. Thereafter, I took the issue to board. [redacted] this corridor salesmanship was to minimize opposition since most of the people I sold the idea to sit in my board and the managers who are usually present at my management meetings are also present in board meetings. So from my managers I would get full backing. We would all speak the same language on the issue. [redacted] in principle. However the corridor salesmanship that I did allowed all the board members who knew the idea to come up with their own objectives for the project which I liked very much-it helped me to score more because the project is now looked at as an industry project taking concerns of all players on board. We reformulated the project objectives without deviating from the original objective. We however agreed that these objectives were simply guidelines not	Strategy of inscription script Strategy of inscription script script

be changed or polished when need arose. It was easy to reformulate the objectives, after all I had done the groundwork already. After the approval, I prepared a seminar paper and presented the issue at a tobacco industry seminar which we have once a year. At such a seminar there are high powered delegates who are basically policy makers in their organisations. A decision to gazette this form of registering growers was made and the government endorsed and accepted and committed itself to facilitate the gazetting of the same. As we are talking now, biometrically based tobacco grower registration system is gazetted and is now a legal requirement for every grower to be registered for growing and selling their tobacco through this system.	
removes the information from all these people. I did consider asking them for and to test them how the project would be situation hence easy and faster buy-in	Problematic
<i>What was the original objective of this project if you may explain?</i>	
The main objective of this project is to improve profitability of a tobacco farmer and with it come Ease for the government to collect taxes such as land lent and withholding taxes, traceability for tobacco which is one of the requirements of the international market. When aflatoxins are found in some tobacco we should be able to trace that tobacco back to the farm it came from. In this system we have geo-coordinates and geo-positioning of the every farm that has been registered. This feature assists with the traceability issue of the industry, so you see I won there on the part of the tobacco buyers. They could not have afforded to reject this system as it was addressing one of their objectives as well. The government would not have rejected it because the system is facilitating tax collections for the development of the nation. The government is actually looking at this system as a starting point for national identification system. Other objectives that come with the main objective include facilitating Good Agricultural Practice (GAP) which is also one of the mandates and objective for international tobacco buyers. We will also be able to carry out our tobacco estimates for the economy's planning more easily and in a cost effect manner. This system will cut down most overheads for various organisations and the end result will be improved profitability for the farmer. It was the farmer who paid for all the inefficiencies and overheads in the system. This time the farmers' profitability will improve. Besides that farmers are a registering entity or unit if you like. So if they have more than one farm, all farms will be marked by the farmer's biometric system. Other objectives that come with the main objective include facilitating Good Agricultural Practice (GAP) which is also one of the mandates and objective for international tobacco buyers. We will also be able to carry out our tobacco estimates for the economy's planning more easily and in a cost effect manner. This system will cut down most overheads for various organisations and the end result will be improved profitability for the farmer. It was the farmer who paid for all the inefficiencies and overheads in the system. This time the farmers' profitability will improve. Besides that farmers are a registering entity or unit if you like. So if they have more than one farm, all farms will be marked by the farmer's biometric identification and proceed from all tobacco sales will be linked to the one registration number. All proceeds for a farmer will now be banked with a single bank and with a single bank account	Inscription in objectives, translation of objectives in the

<i>From the background of the project, it appears that the main object of this project is prevent farmers from having more than one registration number to prevent them from defaulting on loans that are given to them to finance their farming business. And the rest of what you are calling objectives are side effects discovered along the way. What can you say on that one?</i>	
No no no no!!! The main objective is to improve farmer profitability first and far most and of course the rest that I have already told you about.	
<i>What motivated you to initiate this project?</i>	
It was the desire to improve the farmer situation in this country so that loan facilities can restart trusting farmers and lend them funds to finance various farming businesses which may in turn improve the quality of tobacco farmers offer for sale to entice the buyers to pay more for the commodity. This will definitely improve farmer profitability. And for sure will improve their livelihood. It will eventually face lift the nation because tobacco brings about 60% of the much needed forex. And about 60% the entire Malawi population is directly or indirectly employed in the tobacco industry either self employed or otherwise.	Enrolled himself
This project is of national importance, when I go from here, I will leave this institution a very happy, proud of myself and satisfied person. Off course I already have the recognition for championing what has been bothering several people's minds. I have found the solution for them. It actually feels good. Everyone who knows and understands the problems we had, looks at me as a hero now. I guess I am because I have never heard of any country that has implemented such a system.	and enrolment
<i>It sounds a bit weird that the old system was benefiting growers, this one will prevent them from defaulting on loans yet from what you are saying, they still supported you and have actually approved the entire expensive project through a representative who sits on your board and at the seminar where you presented the seminar paper on the project. Exactly how did you go about convincing them "Bio-Reg system" as you are fondly calling it, is the way to go?</i>	
My corridor salesmanship was not extended to individual growers, but I only talked to policy makers in the grower associations. With these people we shared the concerns of the industry as we have the interest of tobacco sustainability in Malawi at heart. However just to jump the gun maybe, I have now informed growers through newsletters of their various associations of what we are doing and have talked to multitudes of them last year and repeated the message this year as well as we were going around the country in a one month long area meetings where all	
My corridor salesmanship was not extended to individual growers, but I only talked to policy makers in the grower associations. With these people we shared the concerns of the industry as we have the interest of tobacco sustainability in Malawi at heart. However just to jump the gun maybe, I have now informed growers through newsletters of their various associations of what we are doing and have talked to multitudes of them last year and repeated the message this year as well as we were going around the country in a one month long area meetings where all	script inscription using

In this system the farmers will have their particulars and their facial and finger print images on a smart card. The card will also be used as a debit card such that their tobacco proceeds will be accessed using that smartcard. So the Smart Card is both an identity card and a debit card. So farmers have liked the idea and have actually agreed to finance their own card at US\$10.00 per farmer for an initial card and a little more for a replacement card.	well as all industry players Translation Script/ /enrolme nt agent
You see many of the growers have good intensions but it was a few dishonest growers who wanted to destroy the industry. Most of which have fallen out of favour with the system and have quit farming because they were not serious farmers who are business minded. So yes I have the support from farmers too.	
<i>May you please describe the project itself?</i>	
The project started in 2004 that is post corridor salesmanship. We tendered for a consultant and recruited a consulting firm. The firm helped us through with the type of software, hardware and interfaces and the like. On the consultancy part we had six people including myself as a sponsor and champion of the project from our organisation in the project team while on the consultants' side we had four people including the firm's managing director. After feasibility study we identified executing firm to execute our dreams and plans. We have meetings every two months to review the project. In that project team, there are eight from this institution, ten from other players in the industry such as grower associations and Fertilizer revolving fund, nine from the outsourced firm. We have a project manager from the outsourced firm who liaises with our technical man here. In total the team that meets to discuss progress of the project has 27 members. So far all the three offices of the institution are networked through Wide area network but we are using VPN. This should tell you that we have already secured some of the hardware for the system. We are procuring card readers soon so am happy with the progress. The interface is being developed, some software such as the database i.e. oracle. Sometime in May the developed interface will be delivered to us. We will then implement it. We will have to transfer the current data from the old databases on to the new database. We will have to test everything. We will thereafter start collecting fresh grower information that will require each grower to bring to us their deed or their offer of lease letter which will include a certified copy of the sketch plan for the piece of land that they want to register. This document and the deed display geo-coordinates of the piece of land as well as the exact area	

others, but this one kind of had several mixes. When I say there is progress, not many people can see that progress because it's not like in construction where you are able to tell people "we are now on window level". Here we are talking of developing interfaces and soft ware and buying soft ware which my board can see and tough. You see. And when we visit our developers all they show us is what we cannot understand even if they show us the programmes. So in this game its developers past experience and trust that we are working with. Even during our short listing for developers we used past experience using Murphy's Law. If they failed to deliver at some point they might as well fail to deliver ours hence eliminate them from our list.	progress in software projects History as script
But at the end of the day there is a lot of ground work where you have to get the screen very very carefully and right. There is a lot of politics that goes on behind the scene. The project is where it is today partly because it is my a head of an institution who initiated it and I have very good experience with public relations and company politics. I really did a lot and heavy ground work for the project to succeed. I am saying succeed because where we are now we can never fail. Yes I foresee some challenges when it comes to actually getting the system but I will work out how to deal with it. Some of my employees benefited from the experience of the old system so this new one is closing some loopholes in which some of my employees were failing. But I will work my way out. It's all about studying the situation and bringing in proper solutions. A little intimidation might work for me as I am the CEO of this organisation. If they do not comply and deliver on the new system I will tell them shape up guys or ship out. After that if one is really causing problems, I will definitely fire them so you know getting a job these days in Malawi is a nightmare, you can't risk the one you have especially if you have dependants.	Politics as part of implementation Irreversible App. culture of resistance
In this project I have discovered that accurate and proper communication with the right people works miracles. This project would be impossibility if there was no proper communication and communication at a right time and with proper people. Communication was a catalyst in this project I can assure you.	
Would you have any additions to any of the topics we have discussed?	
No. actually this was one of the longest interviews I have ever allowed to have in years.	
In this project I have discovered that accurate and proper communication with the right people works miracles. This project would be impossibility if there was no proper communication and communication at a right time and with proper people. Communication was a catalyst in this project I can assure you.	
Would you have any additions to any of the topics we have discussed?	
No, actually this was one of the longest interviews I have ever allowed to have in years.	
Thanks, no more to add.	

Appendix F: Sample of PRINCE2 documentation templates

THE BUSINESS CASE

Project:

Release:

Date:

PRINCE2

Author:

Owner:

Client:

Document Ref:

Version No:

1 Business Case History

Document Location

This document is only valid on the day it was printed.

The source of the document will be found on the project's PC in location.

Revision History

Date of this revision:

Date of Next revision:

Revision date	Previous revision date	Summary of Changes	Changes marked
		First issue	

Approvals

This document requires the following approvals.

Signed approval forms are filed in the Management/Specialist/Quality section of the project files.

Name	Signature	Title	Date of Issue	Version

Distribution

This document has been distributed to:

Name	Title	Date of Issue	Version

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5 Options	
6 Benefits Expected	
7 Risks	
8 Cost	
9 Timescales	
10 Investment Appraisal	

Business Case

3 *Purpose*

[To document the justification for the undertaking of a project based on the estimated cost of development and the anticipated business benefits to be gained. The Business Case is used to say why the forecast effort and time will be worth the expenditure. The on-going viability of the project will be monitored by the Project Board against the Business Case]

4 *Reasons*

[An explanation of the reasons why the project outcome is needed]

5 *Options*

[Brief description of the different options considered for the project]

6 *Benefits Expected*

[Expressed in measurable terms against today's situation]

7 *Risks*

[Summary of the key risks of the project]

8 *Cost*

(extracted from the Project Plan)

9 *Timescales*

[Summary of the Project Plan]

10 *Investment Appraisal*

[Illustrates the balance between the development, operational, maintenance and support costs against the financial value of the benefits over a period of time]

THE PROJECT INITIATION DOCUMENT (PID)

Project:

Release:

Date:

PRINCE2

Author:

Owner:

Client:

Document Ref:

Version No:

1 Project Initiation Document History

1.1 Document Location

This document is only valid on the day it was printed.

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1.2 Revision History

Date of this revision:

Date of Next revision:

Revision date	Previous revision date	Summary of Changes	Changes marked
		First issue	

1.3 Approvals

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1.4 Distribution

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Name	Title	Date of Issue	Version

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3	Purpose of Document	
4	Background	
5	Project Definition	
5.1	Project Objectives	
5.2	Defined Method Approach	
5.3	Project Scope	
5.4	Project Deliverables and/or Desired Outcomes	
5.5	Exclusions	
5.6	Constraints	
5.7	Interfaces	
5.8	Assumptions	
6	Project Organisation Structure	
6.1	Project Management Team Structure	
6.2	Job Descriptions	
7	Communication Plan	
8	Project Quality Plan	
9	Project Controls	

10 Initial Business Case

11 Initial Project Plan

12 Initial Risk Log

Project Initiation Document

3 Purpose of Document

The purpose of this document is to define the project, to form the basis for its management and the assessment of overall success.

4 Background

[Explaining the context of the project and how we have arrived at the current position of requiring a project]

5 Project Definition

5.1 Project Objectives

[Specifically what is required to be achieved by the project expressed, wherever possible, in measurable terms. It is often helpful to identify separate objectives for the project itself (e.g. target dates, expenditure profiles) and the project outcome (what the end-product is required to deliver during its life)]

5.2 Defined Method of Approach

[Which is how the work of the project is going to be approached e.g. if the project will be managed using the PRINCE2 methodology; will the solution be to buy 'off the shelf', 'made to measure', developed in-house etc]

5.3 Project Scope

[Essentially what is 'in' and what is 'out' of the project. A simple "scoping diagram" may be appropriate]

5.4 Project Deliverables and/or Desired Outcomes

[A list of the expected and required Deliverables/Products/Outcomes that the proposed project must create or acquire]

5.5 Exclusions

[What is not included in the project]

5.6 Constraints

[Restrictions on time, resources, funding and/or the eventual outcome – a statement of the 'no-go' areas for the project]

5.7 Interfaces

[If the project is part of a programme what impact will it have on that programme and vice versa]

5.8 Assumptions

[Similar to Constraints but more 'expectation' than 'restriction']

6 *Project Organisation Structure*

6.1 Project Management Team Structure

6.2 Job Descriptions

7 *Communication Plan*

[See separate Communication Plan Template]

8 *Project Quality Plan*

[See separate Project Quality Plan Template]

9 *Project Controls*

[Laying down how control is to be exercised within the project and the reporting and monitoring mechanisms that will support this; it will include the exception process]

10 *Initial Business Case*

[Explaining why the project is being undertaken]

11 *Initial Project Plan*

[Explaining how and when the activities of the project will occur. See separate Product Description Template]

12 *Initial Risk Log*

[Documenting the results of the risk analysis and risk management activities]

PRODUCT DESCRIPTION

Project:

Release:

Date:

Product Title:

Identifier: [Unique key, probably allocated by configuration management method used]

PRINCE2

Author:

Owner:

Client:

Document Ref:

Version No:

1 Product Description History

1.1 Document Location

This document is only valid on the day it was printed.

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1.2 Revision History

Date of this revision:

Date of Next revision:

Revision date	Previous revision date	Summary of Changes	Changes marked
		First issue	

1.3 Approvals

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Name	Signature	Title	Date of Issue	Version

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3 Purpose	
4 Composition	
5 Derivation	
6 Format and Presentation	
7 Allocation	
8 Quality Criteria	
9 Quality Method	
10 Quality Check Skills Required	

Post-Project Review Plan

3 Purpose

[To understand the detailed nature, purpose and function of the product

To identify the sources of information or supply of the product

To describe the required appearance of the product

To identify the level of quality required of the product

To enable activities to develop and quality control the product to be identified

To define the people or skills required to develop and check the product]

4 *Composition*

[This is a list of the parts of a product. E.g. if the product were a document, this would be a list of the expected chapters or sections]

5 *Derivation*

[What are the source products from which this product is derived? E.g.

a design is derived from a specification

a product is bought from a supplier

a statement of the expected benefits are obtained from the user

a product is obtained from another department or team]

6 *Format and Presentation*

[Any standard appearance to which the product must conform]

7 *Allocation*

[The person, group or skill type needed to create this product]

8 *Quality Criteria*

[To what quality specification must the product be produced and what quality measurements will be applied by those inspecting the finished product? This might be a simple reference to one or more common standards that are documented elsewhere or it might be a full explanation of some yardstick to be applied.

9 *Quality Method*

[What kind of quality checking e.g. test, inspection or review, is to be used to check the quality or functionality of the product?

10 *Quality Check Skills Required*

[Either identification of the people who are to check the quality, an indication of the skills required to do so or a pointer to which area(s) should supply the checking resources. Identification of the actual people may be left until planning the stage in which the quality check is to be done]

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ACCEPTANCE CRITERIA

Project:

Release:

Date:

PRINCE2

Author:

Owner:

Client:

Document Ref:

Version No:

1 Acceptance Criteria History

Document Location

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The source of the document will be found in.....

Revision History

Date of this revision:

Date of Next revision:

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3	Purpose	
[The following may vary according to type of product and so are suggested inclusions]		
	Target Dates	
	Major Functions	
	Appearance	
	Personnel level required to use/operate the product	
	Performance levels	
	Capacity	
	Accuracy	
	Availability	
	Reliability	
	Development Cost	
14	Running Costs	
15	Security	
16	Ease of Use	
17	Timings	

3 *Purpose*

[A definition in measurable terms of what must be done for the final product to be acceptable to the Customer and staff who will be affected]

4 *Target Dates*

5 *Major Functions*

6 *Appearance*

7 *Personnel Level Required To Use/Operate The Product*

8 *Performance Levels*

9 *Capacity*

10 *Accuracy*

11 *Availability*

12 *Reliability*

[Mean/Maximum Time To Repair, Mean Time Between Failures]

13 *Development Cost*

14 *Running Costs*

15 *Security*

16 *Ease of Use*

17 *Timing*

COMMUNICATION PLAN

Project:

Release:

Date:

PRINCE2

Author:

Owner:

Client:

Document Ref:

Version No:

1 Communication Plan History

1.1 Document Location

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1.2 Revision History

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3 Purpose	
4 Interested Parties	
5 Information Required	
6 Information Provider	
7 Communication	
7.1 Communication Frequency	
7.2 Communication Method	

Communication Plan

3 Purpose

[To define all parties with an interest in the project and the means and frequency of communication between them and the project]

4 Interested Parties

[For example; stakeholders, accounts staff, user forum, internal audit, quality assurance]

5 Information Required

6 Information Provider

7 *Communication*

7.1 Communication Frequency

7.2 Communication Method

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END PROJECT REPORT

Project:

Release:

Date:

PRINCE2

Author:

Owner:

Client:

Document Ref:

Version No:

1 End Project Report History

1.1 Document Location

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1.2 Revision History

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3 Purpose	
4 Achievement of Project Objectives	
5 Performance	
6 Effects	
7 Change Issue Statistics	
8 Total Impact	
9 Quality Statistics	
10 Post-Project Review	

End Project Report

3 *Purpose*

[This report is the Project Manager's report to the Project Board (who may pass it on to corporate or programme management) on how well the project has performed against its PID, including the original planned cost, schedule and tolerances, and revised Business Case and final version of the Project Plan]

4 *Achievement of Projects Objectives*

5 *Performance*

[Performance against the planned target time and cost]

6 *Effects*

[The effect on the original Project Plan and Business Case of any changes that were approved]

7 *Change Issue Statistics*

[Final statistics on change issues received during the project]

8 *Total Impact*

[of approved changes]

9 *Quality Statistics*

[Statistics for all quality work carried out]

10 *Post-project Review*

[Date and plan]

EXCEPTION REPORT

Project:

Release:

Date:

PRINCE2

Author:

Owner:

Client:

Document Ref:

Version No:

1 *Exception Report History*

1.1 Document Location

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3 Purpose	
4 Deviation Description	
5 Consequences	
6 Options	
7 Effects	
8 Recommendations	

End Stage Report

3 Purpose

[An Exception Report is produced when an approved Stage Plan is forecast to exceed tolerance level set. It is prepared by the project Manager in order to inform the Project Board of the adverse situation.

An Exception Report will normally result in the Project Board asking the Project Manager to produce an Exception Plan]

4 *Deviation Description*

[A description of the cause of a deviation from the Stage Plan]

5 *Consequences*

[Of the deviation]

6 *Options*

[A review of the available options]

7 *Effects*

[The effect of each option on the Business Case, risks, project and stage tolerances]

8 *Recommendations*

[The Project Manager's recommendations]

LESSONS LEARNED REPORT

Project:

Release:

Date:

PRINCE2

Author:

Owner:

Client:

Document Ref:

Version No:

1 Lessons Learned Report History

1.1 Document Location

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1.2 Revision History

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4 Management/Quality Process Assessment	
5 Deviations	
6 Method/Tool Assessment	
7 Project Issues	
8 Recommendations	
9 Measurements of Effort	
10 Statistics	
Lessons Learned Log	

3 *Purpose*

[The purpose of the Lessons Learned Report is to pass on any lessons that can be usefully applied to other projects.

The data in the report should be used by a corporate group, such as quality assurance, who are responsible for the quality management system, in order to refine, change and improve the standards. Statistics on how much effort was needed for products can help improve future estimating]

4 *Management/Quality Process Assessment*

[What management and quality processes:

went well

went badly

were lacking]

5 *Deviations*

[A description of any abnormal events causing deviations]

6 *Method/Tool Performance*

[An assessment of technical methods and tools used]

7 *Project Issues*

[An analysis of Project Issues and their results]

8 *Recommendations*

[Recommendations for future enhancement or modification of the project management method]

9 *Measurements of Effort*

[Useful] measurements on how much effort was required to create the various products]

10 *Statistics*

[Statistics on how effective quality reviews and other tests were in error trapping (e.g. how many errors were found after products had passed a quality review or test)]

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PROJECT APPROACH**Project:**

Release:

Date:

PRINCE2

Author:

Owner:

Client:

Document Ref:

Version No:

1 Project Approach History**1.1 Document Location**

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1.2 Revision History**Date of this revision:****Date of Next revision:**

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3 Purpose	
4 Project Approach Description	
5 Type of Solution	
6 Reasons for the Approach	

Project Approach

3 *Purpose*

[To define the type of solution to be developed by the project and/or the method of delivering that solution. It should also identify any environment into which the solution must fit.]

4 *Project Approach Description*

5 *Type of Solution*

[For example:

bespoke

contracted out

current product modified

design from scratch

use company staff

hire in contract staff

buy a ready-made solution]

6 *Reasons for the Approach*

[e.g. part of programme approach]

PROJECT MANDATE

Project:

Release:

Date:

PRINCE2

Author:

Owner:

Client:

Document Ref:

Version No:

1 Project Mandate History

1.1 Document Location

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1.2 Revision History

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5 Background	
6 Project Objectives	
7 Scope	
8 Constraints	
9 Interfaces	
10 Quality Expectations	
11 Outline Business Case	
12 Associated Documents	
13 Proposed Project Executive and Project Manager	
14 Customer and Users	
15 [Other Information]	

Project Mandate

3 *Purpose*

[The information in the Mandate is used to trigger *Starting Up a Project (SU)*. It should contain sufficient information to identify at least the prospective Executive of the Project Board and indicate the subject matter for the project. It will be used to create the Project Brief]

4 *Authority Responsible*

[State the Authority responsible for authorising cost and resource usage]

5 *Background*

[Explain the context of the project and what it was that suggested the need for it. State whether the project will be a stand-alone activity to fulfil a particular business requirement or whether it is part of a bigger programme]

6 Project Objectives

[Explain what the project is trying to achieve by stating its objectives which should be measurable and defined in terms of the projects major deliverables, effort, cost, tolerances and business benefits expected]

7 Scope

[Describe the major deliverables of the project along with specific products, which are NOT part of the project. Describe the major dependencies (which impact on the project during its life) and interdependencies, which will exist after implementation]

8 Constraints

[Describe the constraints within which the project must operate, e.g. there may be constraints on the amount of resources available to the project or the location of the project team]

9 Interfaces

[Describe any interfaces with the project both internal and external to the organisation including any links to other projects or programme(s) of projects]

10 Quality Expectations

[Define the Customers Quality Expectations with reference to the relative importance of time, cost and quality of the product so that future decisions may be based on what factor is paramount to the project's success]

11 Outline Business Case

[State here the business justification for doing the project]

12 Associated Documents

[Make reference to any other earlier work that may include useful information, such as an estimate of the project size and duration, a view of the risks faced etc]

13 Proposed Executive and Project Manager

14 Customers and Users

[Insert the names of all known users, customers and any other interested parties]

15 Other Information

[If the Project Mandate is based on earlier work, there may be other useful information]

PROJECT PLAN

Project:

Release:

Date:

PRINCE2

Author:

Owner:

Client:

Document Ref:

Version No:

1 Project Plan History

1.1 Document Location

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5	Prerequisites
6	External Dependencies
7	Planning Assumptions
8	Project Plan
8.1	Gantt or Bar Chart
8.2	Product Breakdown Structure
8.3	Product Flow Diagrams
8.4	Product Descriptions
8.5	Activity Network
8.6	Financial Budget
8.7	Change Budget
8.8	Resource Requirements
8.9	Specific Resources
8.10	Tolerance
8.11	Contingency Plans

Project Plan

3 Purpose

[The Project Plan is a mandatory plan that provides a statement of how and when a project's objectives are to be achieved, by showing the major products, activities and resources required on the project.

It provides the Business Case with planned project costs and it identifies the management stages and other major control points

It is used by the Project Board as a baseline against which to monitor project progress and cost, stage by stage]

4 Plan Description

[A brief description of what the plan covers]

5 Prerequisites

[Describe any fundamental aspects which must be in place at the start of the project and which must remain in place for the project to succeed]

6 Dependencies

[A description of any external factors, products or processes that the progress and success of the project depends on]

7 Assumptions

[Refer to Project Initiation Document (PID). List any assumptions being made that will affect the projects progress or success]

8 Project Plan

8.1 Gantt or Bar Chart

[with identified management stages]

8.2 Product Breakdown Structure

8.3 Product Flow Diagrams

8.4 Product Descriptions

8.5 Activity Network

8.6 Financial Budget

8.7 Change Budget

8.8 Resource Requirements

[Project level table of resource requirements]

8.9 Specific Resources

[Requested/assigned specific resources]

8.10 Tolerance

[e.g. time and budget]

8.11 Contingency Plans

[Explain how it is intended to deal with the consequences of any risks that materialise]

Appendix H: Glossary and abbreviations

Term/Abbreviation	What it implies/means/stands for
Actor	An actor is whatever acts, makes action shift or is acted upon by another (Callon & Latour, 1981)
Actor-network	Heterogeneous network of aligned interests (Callon & Latour, 1981)
Aflatoxin	It is the ultimate fungal carcinogen which contaminates tobacco products post-harvest. Aflatoxin is the most potent carcinogen known and has been shown to mutate the p53 tumour-suppressor gene, found in 60 percent of all cancers including lung, colon, breast, prostate and others.
AICF	Agro-Input Credit Fund
ANT	Actor-Network Theory
APA	American Psychological Association, a referencing style followed in the thesis
APMBoK	Association of Project Management Body of Knowledge
As-lived experience	Experiences narrated by practitioners who do the hands on in IS projects
Black box	
Business case	A document detailing the justification for starting a project. It describes the benefits, costs and impacts, plus a calculation of the financial case.
Change Control	The practice of identifying, documenting, approving and implementing changes within a project.
Critical Path Method (CPM)	A technique used to predict project duration by analysing which sequence of activities has the least amount of scheduling flexibility.
Critical Success Factor	A factor identified as essential to the achievement of a successful project
Deliverable	A tangible or intangible object t produced as a result of project execution. A deliverable can be created from multiple smaller deliverables.
DH	Developer House
Earned Value Measurement (EVM)	An approach for monitoring the project plan, actual work and work-completed value to see if a project is on track. EVM indicates how much of the budget and time should have been spent, with regards to the amount of work done to date.
Enrolment	A situation when actors accept interests defined for them by the focal actor (Callon, 1986)
Focal actor	Any element which bends space around itself, makes other element dependent upon itself and translates their will into the language of its own (Callon & Latour, 1981)
Gantt Chart	A type of bar chart aimed at showing the timing of tasks or activities as they occur over time
GAP	Good Agricultural Practice
Inscription	A process of creation of technical artifacts that would ensure the

Term/Abbreviation	What it implies/means/stands for
	protection of certain interests (Atkinson, 2002)
Intéressement	A process of convincing actors to accept definition of the focal actor (Callon, 1986)
IPMA	International Project Management Association. A PM association in Europe
Irreversibility	Degree to which it is subsequently impossible to return to a point where alternative possibilities exist (Atkinson, 2002)
IS	Information system
ISP	Internet service provider
Jobber	A company or an individual who acts as a middleman in merchandise such as tobacco buying and selling
Knowledge areas	Knowledge areas describe the key competencies that Project Managers must develop to successfully manage projects
Lens	A metaphor for a point of view
OPP	Obligatory passage point- A situation that has to occur for all of the actors to be able to achieve their interests, as defined by the focal actor (Callon, 1986)
PBS	Product breakdown structure
PERT Chart	A tool used to schedule, organise and co-ordinate tasks within a project. PERT stands for Programme Evaluation Review Technique. PERT was developed by the United States Navy in the 1950s to manage the Polaris submarine missile programme.
Phytosanitary inspection	An inspection conducted on the tobacco leaf being sold
PID	Project initiation document
PM	Project Management =application of knowledge, skills, tools, and techniques to project activities to meet project requirements
PMBok	A collection of processes and knowledge areas generally accepted as best practice within the Project Management discipline. It is owned by the Project Management Institute (PMI). It stands for Project Management Body of Knowledge.
PMI	Project Management Institute.
Portfolio Management	The co-ordinated management of a portfolio of projects to achieve a set of business objectives.
PRINCE2	The UK de-facto standard for Project Management developed by the Government and used in both the public and private sectors. The acronym stands for PROjects IN Controlled Environments Version number 2
Problematisation	The first moment of translation during which a focal actor defines identities and interests of other actors that are consistent with its own interests, and establishes itself as an obligatory passage point (OPP), thus rendering itself indispensable (Callon, 1986)
Production quota	Amount of tobacco that a grower is permitted to produce in a growing season
Project	A temporary endeavour undertaken to create a unique product, service or result
Project Charter	A project charter is a document that formally recognises the existence of a project and provides direction on the project's

Term/Abbreviation	What it implies/means/stands for
	objectives and management
Project Manager	The person who has the overall responsibility for planning, execution and closure of a project.
Prototype	Reminiscence of the real artefact
PU	Performance Unit
RA	Revenue Authority
Risk	It refers to the combination of the probability of an event occurring and the impact the event will have on the project if it occurs. If the combination of the probability of the occurrence and the impact to the project is too high, then the event needs to be identified as a risk.
RUP	Rational Unified Process
Scope	The overall definition of what the project is supposed to accomplish and a specific description of what the end result should be.
Smallholder club	A group of tobacco growers whose individual pieces of land does not exceed 10 hectares. These growers sell their tobacco as one entity.
Sponsor	The person who has authority over the project and provides funding, approves scope changes, provides high-level direction and champions the project within an organisation.
Stakeholder	Anyone, internal or external to an organisation that has an interest in a project or will be affected by its deliverables or outputs.
TEA	Tobacco exporters association
TGRS	Tobacco grower registration system
TMFL	Tobacco marketing floors landlord
Tobacco proceeds	Income from tobacco sales
Tobacco registration number	A number allocated to tobacco growers which is used for selling tobacco in all formal tobacco markets in Malawi
UML	Unified Modelling Language
USP	Ultimate solutions provider
World tobacco Market	A market where all the intermediary tobacco buyers sell the tobacco bought from various countries.