

**THE INFLUENCE OF STAKEHOLDER RELATIONS ON THE
IMPLEMENTATION OF INFORMATION SYSTEMS STRATEGY IN PUBLIC
HOSPITALS IN SOUTH AFRICA: AN ACTIVITY THEORY PERSPECTIVE**

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Dedication

“The Lord is just in all his ways and holy is all his works. The lord is near all who call upon him, to all who call upon him in truth...”

(Psalm 145: 17-18)

To You God Almighty: You are the Creator, You are the provider, You are and have always been there for us, You will always be there for us.

“HWABAMUNGU” (God is there, God exists).

To my departed parents, the late Inspecteur Césaire BOROTO KARHAMIKIRE and the late Maman Céline BOROTO NANKAFU M’MBAVU: dear dad, thirty two years after your last breath; dear mom, exactly a year after your last breath, this work is dedicated to you as it is the fruit of your discipline, your leadership, your many sacrifices, your love and most importantly your vision for the value of education.

“KALAMU KASOMA” (Education is key)

To all the BOROTO brothers and sisters: this thesis is dedicated to you for your brotherly and sisterly love, for the Ubuntu, for the “chinyabuguma” (togetherness) and your continuous support.

“ECHINYABUGUMA CHO CHI IRHA E’NGUI” (Together we can do more)

To my dearest wife Patricia NAMWEZI NDEKO: lastly but not least, this thesis is dedicated to you the love of my life, a true gift from God; for you gave me the strength to hold on, a reason not to give up on this difficult but fulfilling journey.

The LORD God said: “It is not good for the man to be alone. I will make a helper suitable for him.” (Genesis 2: 18)

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THE INFLUENCE OF STAKEHOLDER RELATIONS ON THE IMPLEMENTATION OF INFORMATION SYSTEMS STRATEGY IN PUBLIC HOSPITALS IN SOUTH AFRICA: AN ACTIVITY THEORY PERSPECTIVE.

ABSTRACT

Literature reveals that there exists a research gap between the development of information systems (IS) strategy and the implementation thereof. There is also a need for further research regarding the implementation of IS strategy in public hospitals in South Africa. The exploration of implementation in the context of public hospitals in South Africa, a country with many good policies and strategies that have been developed but that are not always implemented, is highly relevant.

In this study we undertook to explore the intricacies of stakeholder relations and the implications of these relations on the implementation of IS strategy in public hospitals in South Africa. This research was interpretive following a case study approach. Two provinces of South Africa were selected as cases: the Western Cape province and the Kwazulu Natal province. The Activity Analysis and Development (ActAD) framework, an enhanced form of activity theory, was used as the theoretical framework. Data was collected using semi-structured interviews, meetings, documents analysis and physical artefacts observation. The collected data was analysed using thematic analysis.

The findings of this study reveal that factors related to stakeholder relations include the situational stakeholder relations dynamics and the level and motive of involvement in IS strategic activities and IS strategy operationalization processes at the different hierarchical levels. These factors affect the implementation of the IS strategy in public hospitals in South Africa by influencing different elements of the IS strategy implementation activity system. In the end we developed a framework, the stakeholder relations' influence (SRI) framework which depicts the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa.

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ACRONYMS

| ACRONYMS | DEFINITIONS |
|-----------------|--|
| ActAD | Activity Analysis and Development |
| AT | Activity Theory |
| BSP | Business system planning |
| CAPI | Computer-Aided Personal Interview |
| CAQDAS | Computer Assisted Qualitative Data Analysis Software |
| CATI | Computer-Aided Telephonic Interview |
| CEI | Centre for E-Innovation |
| CHAT | Cultural-Historical Activity Theory |
| CIS | Clinical Information System |
| CISUR | Computer-Integrated Survey Research |
| CITCOM | Central IT Committee |
| CODSCI | Computer-Driven Self-Completion |
| CPOE | Computerised Physician Order Entry |
| CPR | Computer based Patient Record |
| CSCM | Computer-Supported Cooperative Work |
| DHIS | Distric Health Information Systems |
| DITCOM | Departmental IT Committee |
| DoH | Department of Health |
| DWR | Developmental Work Research |
| ECM | Enterprise Content Management |
| EMR | Electronic Medical Record |
| EPR | Electronic Patient Record |
| HCI | Human Computer Interaction |
| HIS | Hospital Information Systems |
| HISP | Health Information Systems Program |
| HIT | Health Information Technology |
| HIV/AIDS | Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome |

| | |
|----------------|---|
| HL7 | Health Level Seven |
| HMIS | Health Management Information Systems |
| ICT | Information and Communication Technology |
| IS | Information Systems |
| IPA | Interpretative Phenomenological Analysis |
| LIS | Laboratory Information Systems |
| MSP | Master System Plan |
| NHI | National Health Insurance |
| NHIS | National Health Information Systems |
| NSDA | National Service Delivery Agreement |
| OpenMRS | Open Medical Record Systems |
| PACS | Picture Archiving and Communication systems |
| PIS | Pharmacy Information Systems |
| PPP | Public Private Partnership |
| QDAS | Qualitative Data Analysis Software |
| RIS | Radiology Information Systems |
| SISP | Strategic Information Systems Planning |
| SLA | Service Level Agreement |
| SRI | Stakeholder Relations' Influence |
| SSP | Strategic Systems Planning |
| UCT | University of Cape Town |

CHAPTER 1: INTRODUCTION

1.1 Introduction

The aim of this study has been twofold: firstly, to investigate the influence of stakeholder relations on the implementation of Information Systems (IS) strategy in public hospitals in South Africa from an activity theory (AT) perspective and, secondly, to develop a theoretical framework depicting stakeholder relations' influence factors on the implementation of IS strategy in public hospitals in South Africa. This study has been an interpretive research (Walsham, 1995b) in which AT (Engestrom, Miettinen, & Punamaki, 1999) was used as the theoretical framework and lens for data collection and data analysis. The Activity Analysis and Development (ActAD) framework (Korpela, Soriyan, & Olufokunbi, 2000), an enhanced form of AT, provided the means to deeply explore the complexity of stakeholder relations and their implications on the implementation of IS strategy in public hospitals in South Africa.

The need for further IS research in the healthcare environment is advocated by scholars such as Atkinson, Eldabi, Paul, & Pouloudi (2002), Avgerou (2001) and Ndou (2004). In the specific context of the healthcare sector, Ojo (2006) reiterates the necessity of IS research on the African continent. In the context of South Africa, the importance of IS research in the healthcare sector is advocated by Kumalo (2006). In this regard the public healthcare sector of South Africa presents great IS research opportunities. There is a need for further research on the implementation of IS strategy (Bell, Dean, & Gottschalk, 2010) and the concept of stakeholder relations in IS implementation in the healthcare sector (Freeman et al, 2010). Hence this study's focus was on stakeholder relations and the implementation of IS strategy in the context of public hospitals in South Africa.

In this study we asked the following research question: *How do stakeholder relations influence the implementation of IS strategy in South Africa's public hospitals?* It emerged that there are different stakeholder relations factors that affect different

aspects of the implementation of IS strategy in public hospitals in South Africa. We developed a theoretical framework, the Stakeholder Relations' Influence (SRI) framework for IS strategy implementation in public hospitals in South Africa, which depicts stakeholder relations' influence factors on the implementation of IS strategy in public hospitals in South Africa. This framework can be useful in describing and assessing stakeholder relations and their influence on the implementation of IS strategy in public hospitals in South Africa. The proposed framework can also be useful in taking corrective measures to address issues of stakeholder relations and the implementation of IS strategy in South Africa's public hospitals. We suggest that the developed SRI framework for IS strategy implementation in public hospitals in South Africa can be relevant and applicable to other similar environments.

The rest of this chapter is structured as follow: the study background and motivation are presented, this is followed by the presentation of the theoretical framework used to achieve the research objectives and the presentation of the research question, the study delineation and contribution are then discussed followed by the presentation of the structure of the thesis and the conclusive section of the chapter.

1.2 Study background and motivation of the study

The healthcare environment presents great research opportunities to IS researchers for the exploration of the multidisciplinary nature of IS and the widening of the body of IS knowledge despite the complexity and peculiarities of the healthcare sector and the associated challenges for IS theory and IS researchers (Chiasson & Davidson, 2004). It is generally reported that information and communication technologies (ICTs) can play an enabling role in different sectors including healthcare delivery in developing countries (Avgerou, 2008; Azubuike, 1999; Heeks, 2002; Kanter et al., 2009; Kwankam, Mendez, & Kay, 2009; Lippeveld, Sauerborn, & Bodart, 2000; Ojo, 2006; Simba, 2004; Walsham & Sahay, 2006). Yet despite the many claimed benefits, the implementation of innovative ICTs in the health sector in many developing countries is still a challenge (Mars, 2010).

This is no exception for the South African public health sector (Littlejohns, Wyatt, & Garvican, 2003). The South African public sector has 331 public hospitals (Health, 2011) and provides healthcare services to more than 80% of the population (Coovadia, Jewkes, Barron, Sanders, & McIntyre, 2009). In the healthcare environment, Ndou (2004) notes that there is limited research on ICT use in the public sector. There is also limited research on the following aspects: the role of ICT in healthcare sector on the African continent (Ojo, 2006), the interests of stakeholders involved in ICT utilisation in developing nations (Hosman & Fife, 2008), the stakeholder relations concept in the implementation of IS in the healthcare sector (Freeman et al., 2010), and the implementation of IS strategy (Brown, 2005; Gottschalk, 1999). Hence this study aimed to explore the influence that stakeholder relations have on the implementation of IS strategy in South Africa's public hospitals.

Like most complex environments, the healthcare environment is constituted of various stakeholders with different values, interests, professional backgrounds and priorities (Atkinson et al., 2002; Korpela et al., 2004; Wickramasinghe & Goldberg, 2005). Atkinson et al. (2002) argue that these stakeholders ought to be a key consideration in health IS interventions. The relevance of stakeholders in the implementation of health IS is also advocated by Wickramasinghe and Goldberg (2005). They emphasise the necessity of understanding the various involved stakeholders as well as the interactions among the various stakeholders when any ICT for healthcare intervention (wired or wireless) is envisaged.

The first motivation of this study is the need for further research on the various aspects of IS use in the healthcare sector as advocated by Haux (2006). From the early years of IS use, there have been many challenges regarding the implementation of innovative ICTs (Cooper & Zmud, 1990). Ever since, research has been on-going to understand the factors that lead to successful or failed implementation and to develop strategies for more successful IS implementation (Cooper & Zmud, 1990). More IS research in the healthcare sector is needed (Atkinson et al., 2002).

The second motivation of this study lies in the need for further research on the implementation of IS strategy as emphasised by Bell et al. (2010) and Gottschalk (1999). IS strategy is an important component for the implementation of IS in organisations (Lederer & Salmela, 1996). Thus organisations often embark on strategic IS planning (SISP) processes with the aim of formulating and implementing their respective IS strategies.

The third motivation of this study is the need for further development and adoption of stakeholder theory for use in the public sector (Murdock, 2004), the need for further exploration of the concept of stakeholder relations in the implementation of IS in the healthcare in general (Freeman et al., 2010) and in the use of ICTs in developing countries in particular (Hosman & Fife, 2008).

The fourth motivation for this study is twofold : firstly, the necessity to understand the potential of ICT in South Africa' public healthcare sector (Banderker & Van Belle, 2006) in addressing some of the challenges that the public sector faces (Ojo, 2006); and secondly, the need to understand the challenges that affects the implementation of ICTs in the health sector in South Africa (Kumalo, 2006; Littlejohns et al., 2003).

In this study we therefore undertook to investigate the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa with the aim of developing a theoretical framework depicting the intricacies of stakeholder relations and their implications on the implementation of the IS strategy in public hospitals in South Africa.

1.3 Theoretical framework

The intricacies of stakeholder relations and the implementation of IS strategy in public hospitals in South Africa are of a socio-technical nature. The nature of this study necessitated the choice and use of a socio-technical theoretical exploratory lens. In this study we therefore used the ActAD framework, an enhanced form of AT

as the most appropriate theoretical framework. The ActAD framework was used to guide the data collection and the data analysis.

AT allows the exploration of the actions of individual or groups of actors in their respective contextual environment (Kaptelinin, 1996; Kaptelinin & Nardi, 2006; Kuuti, 1996; Nardi, 1996). Its principles can be summarised in the following five concepts: the principle of collective, artefact mediated and object-orientated activity system as the unit of analysis, the principle of multi-voicedness of activity systems, the principle of historicity, the principle of contradictions as the source of change and development, and the principle of expansive transformation in the activity system (Engestrom, 2001). AT has evolved over the past four decades from the basic and famous Vygotsky's triangle representation to its more complex and advanced theoretical representations such as Engestrom's extended activity framework and the ActAD framework (Korpela et al., 2000).

Different IS scholars have used AT as a theoretical framework in IS research (Mursu, Luukkonen, Toivanen, & Korpela, 2007) particularly in Human Computer Interaction (HCI) research (Hedestig & Kaptelinin, 2002; Kaptelinin, 1996). The ActAD framework has been frequently used in IS development research (Korpela et al., 2004; Mursu et al., 2007). Mlitwa and Van Belle (2010) also used and adapted the ActAD framework into a framework for the exploration of the adoption of learning management systems in universities. We selected the ActAD framework as the theoretical framework in this study. We later provide a detailed account of AT and the ActAD framework in the theoretical framework chapter.

1.4 Research question

In this study we investigated the following principal research question: *How do stakeholder relations influence the implementation of IS strategy in South Africa's public hospitals?* This principal question was investigated in association with the following four sub-questions:

- (1) What current elements determine stakeholder relations and the influence of stakeholder relations on the implementation of IS strategy in South Africa's public hospitals?
- (2) What is the stakeholder landscape with regard to the implementation of IS strategy in South Africa's public hospitals?
- (3) What are the stakeholder relations factors that influence the implementation of IS strategy in public hospitals in South Africa?
- (4) What are the relationships between these stakeholder relations factors and the IS strategy implementation in public hospitals in South Africa?

1.5 Study delineation and terminologies used in the study

In this study we investigated the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa. For this purpose we followed a case study approach and selected the following two provinces of South Africa: the Western Cape and the Kwazulu Natal provinces. The selection of the case studies was guided by certain selection criteria which are later explained in the research methodology chapter. This study was limited to a deep exploration of these two case studies with a focus on the following research aspects only: stakeholder relations, the implementation of IS strategy in public hospitals in the selected case studies and the influence of the stakeholder relations on the implementation of the IS strategy in the selected case studies. We didn't undertake to investigate any other potential research phenomenon that could be associated to the context of this study or that could have emerged later in the course of this research investigation. At the end of this study we propose areas of further research or exploration in this regard. Moreover the nature of this study requires that clarification be made regarding certain key terminologies that are used in this study so as to avoid confusion. Hence we provide the following mini-lexicon of certain terminologies used.

Information systems (IS): is used in this study in a broad sense to include the various terms that are sometimes used interchangeably to allude to the use of information and communication technology (ICT)-based solutions in organisations.

IS strategy: encompasses the different terms such as ICT strategy, IS master plan, IT plan that are generally used to refer to the strategy for information and communication technology (ICT)-based solutions in organisations.

IS Implementation: is taken to be the process (and associated sub-processes) through which a developed IS plan or strategy is executed.

Stakeholder relations: implies the bonding and the extent of bonding that emanate from the interactions between the different stakeholders from a professional perspective.

Stakeholder landscape: the group of stakeholders and stakeholder groups/actors who are constituents of the network of stakeholders.

Public hospital: a hospital that is owned and managed by the government. In contrast to private hospitals, public hospitals generally provide free healthcare service to the greater population mass.

1.6 Contribution of the study

This study's significance and contribution has been at three levels: the methodological, the theoretical and the practical levels. At a methodological level, the ActAD framework-based data analysis framework provides a means to explore IS strategy implementation practice of individual/groups actions in the context of public hospitals. At a theoretical level, the theoretical SRI framework provides a better explanation of the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa than the current existing explanations. At a practical level the detailed SRI framework is a tool that can be used to investigate and assess stakeholder relations and their implications on the implementation of IS strategy in public hospitals in South Africa and to take corrective measures when and where applicable. The framework is applicable to other organisations in similar environments.

1.7 Thesis structure

This thesis consists of nine chapters structured in 5 parts as illustrated in Figure 1.1.

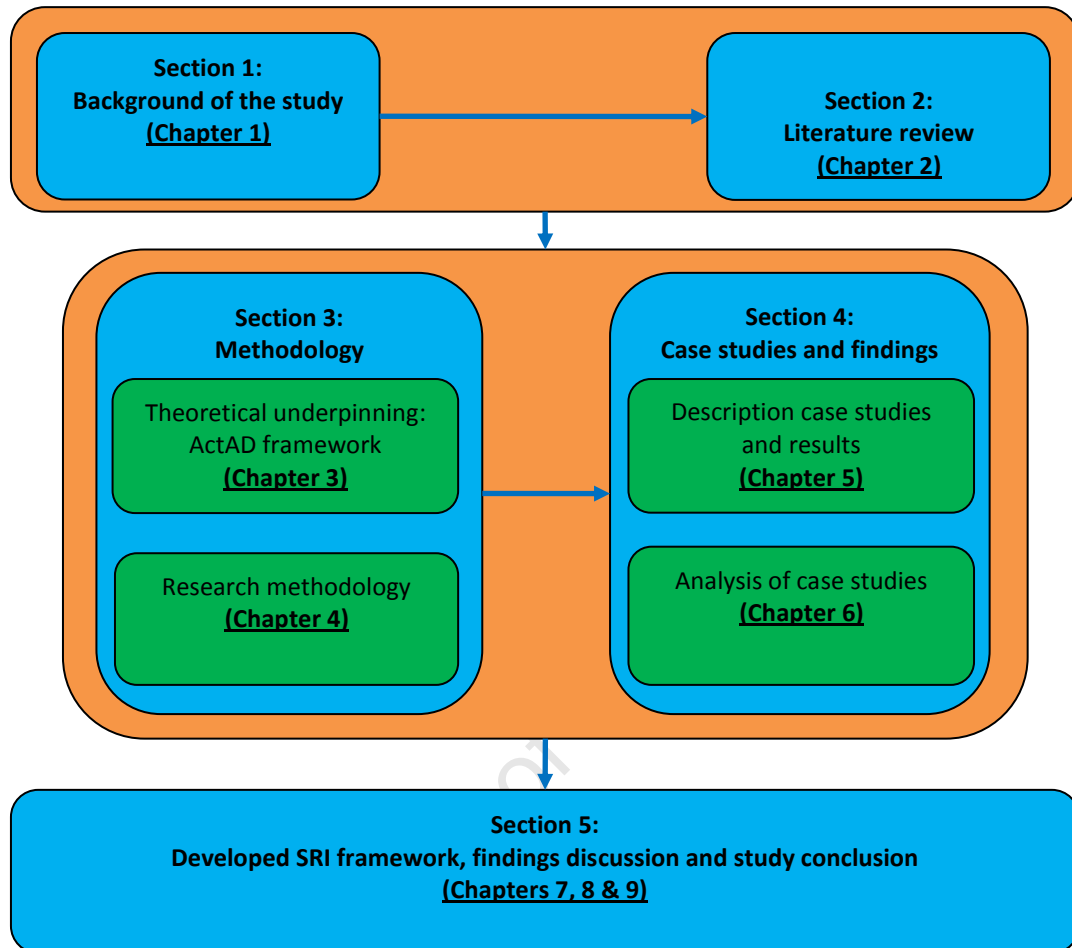


Figure 1.1: Structure of the thesis

- (1) The first part provides the background of the study and an overview of the study motivation, the theoretical framework, the research questions and the contribution of the study. This is done in Chapter 1 of this study.
- (2) The second part provides a deep review of the literature in the second chapter of this study. The following concepts are covered in the review of the literature: IS implementation, the concept of IS strategy and IS strategy implementation, IS implementation in the healthcare sector, IS in South Africa's public healthcare sector, stakeholders and stakeholder theory.
- (3) The third part, chapters 3 and 4, describes the theoretical framework, the philosophical underpinning and the research methodology of this study. We

discuss AT in general and ActAD framework in particular, the relevance and use of AT and the ActAD framework in IS research and the use the ActAD framework in this study. We also present the research methodology and discuss the qualitative interpretive research and the case studies that we conducted in this study.

- (4) The fourth part, chapters 5 and 6, presents the case study results and analysis. We present the findings of the Western Cape province, the findings of the Kwazulu Natal province case study, the integrated findings of the two case studies and the theoretical SRI framework for IS strategy implementation in public hospitals in South Africa.
- (5) Lastly the fifth part, chapters 7, 8 and 9, describes the detailed practical SRI framework for IS strategy implementation in public hospitals in South Africa and discusses the implications of the study's findings and the finality of the study. We describe the elements of the SRI framework for IS strategy implementation in public hospitals in South Africa and discuss the contributions of the study and the potential future research areas.

1.8 Chapter summary and conclusion

In this chapter we presented an overview of this study. We presented the aim of the study and the research gap that the study addressed. We highlighted the relevance of investigating the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa. We presented the formulated research questions. We provided an overview of the theoretical framework that guided this investigation. We presented the contribution of this study and the relevance of the developed SRI framework for IS strategy implementation in public hospitals in South Africa, a theoretical framework depicting the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa. In the end we presented the structure of the thesis.

CHAPTER 2: LITERATURE REVIEW AND THEORETICAL FOUNDATION

2.1 Introduction

This chapter presents the literature review related to stakeholder relations and the implementation of IS strategy in public hospitals in South Africa. We also present areas of further research that have been identified and the research gap that this study addressed.

This chapter is structured in seven sections. The first section presents an overview of IS implementation. The second section explores IS implementation in the context of the healthcare environment. The third section provides an overview of IS strategy implementation with a focus on SISP. The fourth section explores ICTs in the context of the South African public health sector. The fifth section discusses the concept of IS strategy in the context of public hospitals in South Africa. The sixth section provides an overview of the notions of stakeholder in the context of ICT in the healthcare sector. The last section describes the identified research gap.

2.2 Information systems implementation

2.2.1 Generalities

IS have been implemented in various industries to improve efficiencies in production and operation. In this regard, Zorn (2002, p. 25) suggests that organisations have been implementing IS for “e-commerce”, “e-business” and “e-organising” purposes. In its broad sense IS implementation is a continuous all-inclusive process – consisting of the initiation phase, the acquisition phase and the rollout phase - that leads to the deployment of IS; IS implementation is not restricted to the last phase of the process (Lucas, 1981). IS implementation is also associated with three concepts: IT diffusion, change management, and learning and knowledge sharing (Peansupap & Walker, 2005). IS implementation is a broad and complex research area that has received much research attention (Kwon & Zmud, 1987). IS implementation studies have generally focused on three different aspects: theories or approaches to

implementation, factors affecting implementation, and processes of IS implementation (Lucas, 1981).

Some studies in the IS implementation area have led to the development of models for IT implementation such as Zmud and Apple (1989, p. 24) staged model. This model consists of the following stages: initiation, adoption, adaptation, acceptance, routinization and infusion. The model is a modification of the Kwon and Zmud (1987, p. 24) staged model which in turn is based on Lewin's (1952, p. 25) change model (Cooper & Zmud, 1990). Some studies have focused on IS diffusion, IS adoption, and IT acceptance. Other studies have focused on the development of strategies for successful IS implementation and have led to the development of theories such as strategic information system planning theory (Lederer & Salmela, 1996). SISP studies have highlighted the relevance of developing, implementing and monitoring adequate IS strategies for the deployment of IS and for the strategic role of ICT. However there is still need for further research on the implementation of IS strategy in the healthcare sector.

2.2.2 The complexity of information systems implementation

There are many factors that affect IS implementation. Belassi and Tukel (1996, p. 25) suggest that these factors are termed critical success/failure factors. They propose a classification of these factors into the following four groups: factors related to the project, factors related to the project manager and the team members, factors related to the organisation, and factors related to the external environment. Regarding ICT projects, Fowler and Walsh (1999, p. 25) identified the following success/failure factors: the need for change and its organisational impact; business alignment; power, politics and communication; senior management involvement, scepticism at business unit level; centre and business-unit communications; overselling; requirement specification and user-involvement; flexibility; user participation, system design and delivery; interfacing, implementation approach; resourcing; operational deadline and change over procedure; training and support; and post-implementation support.

Despite organisational efforts to invest in ICTs, not all ICT implementations are successful. It is generally reported that many ICT implementation projects fail (Wateridge, 1998). However, it should be noted that successful or failed implementation means different things for different actors' groups (Fowler & Walsh, 1999). For successful implementation, Millis and Mercken (2002, p. 25) propose that the following should be taken into consideration: ICT project good selection and justification, project definition, project planning, involvement and support of management, selection of project team, managing change, appropriate resources allocation, and relationships management. Despite the many years of experience and research on ICT implementation, there are still many unanswered issues around ICT implementation. Recent studies for example have revealed that the lack of top management support does not always lead to a failed implementation – some implementations succeed in the absence of top management support (Ngwenyama & Norbjerg, 2010).

In its complexity and as a process, implementation does not only deal with the technology acquisition and deployment aspects. ICT implementation also deals with “the needs, values and interests” of the different stakeholders who are involved in and are affected by the implementation of ICTs (Kaplan & Shaw, 2004). The complexity of the implementation of IS, the involvement of various stakeholders with different values, needs, capabilities is also reiterated by Gal and Berente (2008). They suggest the use of socio-cognitive approaches in the study of IS implementation. The influence of these stakeholders is not always well understood, particularly in the public healthcare sector of developing countries.

2.3 Information systems strategy implementation

The concept of IS strategy implementation is characterised by the intertwinement of conceptual terminologies such as IS, strategy, and implementation. The use of these terminologies and other similar terms frequently leads to etymological challenges which frequently result in differing terminological use and meaning. It is therefore important to contextualise the concept of IS strategy implementation. First, we

explore the concept of strategy in general. Second, we discuss strategy implementation and the challenges to its implementation. Third, we discuss the concept of IS strategy from an SISP perspective. Fourth, we present the concept of IS strategy planning within an IS planning process in the healthcare environment. Lastly, we discuss the concept of IS strategy and IS strategy implementation.

2.3.1 Strategy and strategy implementation: generalities

What are strategy, implementation and strategy implementation? Bell et al. (2010) note that etymological confusion regarding the use of these terms is generally encountered in the literature. They further highlight the fact that this confusion is exacerbated by the different “schools of thought” on organisational competitiveness. Bell et al. (2010, pp. 344-345) provide the following definitions of strategy and implementation: “a strategy can simply be defined as principles, a broad-based formula, to be applied in order to achieve purpose; implementation is a procedure directed by management to install planned change in an organisation, the process of gaining targeted organisational members’ appropriate and committed use of an innovation, the extent to which an innovation becomes ingrained within organisational behaviours”. Hence strategy implementation can be defined as the process through which these principles and/or broad-based formula “become ingrained within an organisation’s behaviours”.

Strategic planning consists of three major processes - formulation, implementation and monitoring - which can be decomposed into the following nine steps: formulation of goals, analysis of the environment, assigning quantitative values to the goals, the micro-process of strategy formulation, the gap analysis, strategic search, selecting the portfolio of strategic alternatives, implementation of the strategic program, and measurement, feedback and control (Cohen & Cyert, 1973).

The relevance and usefulness of a strategy and strategy development is emphasised by Freedman (2003, p. 27) as follows: “organisations must have a clear, robust and motivating strategy, formulated using proven process”. As a result, organisations

have engaged in complex processes of IS planning not only to develop IS strategy but also to ensure that the developed IS strategy is in line with the business strategy (Bartenschlager & Goeken, 2009). The complexity of IS planning process and the interplay between successful IS and the extent to which organisation engage in complex IS strategy planning process are contributors to the emergence of the concept of IS strategy planning sophistication (Rajiv, 1999).

Strategic planning processes are categorised into three major process groups: formulation, implementation and monitoring (Cohen & Cyert, 1973). Many scholars have focused more on the strategy formulation and less on the implementation of the strategy (Freedman, 2003). Yet a good strategy is nothing without being implemented. Freedman (2003, p. 27) suggests the following five precursors to the implementation of a strategy: communicating the strategy, driving the planning process, aligning the organisation, reducing complexity, and installing an issue resolution system.

Implementation of the strategy is frequently not attained due to the following challenges as observed by Freedman (2003, p. 28): strategic inertia, lack of stakeholder commitment, strategic drift, strategic isolation, failure to understand progress, initiative fatigue, impatience and not celebrating success. Some of the most common challenges to strategy implementation, referred to by Beer and Eisenstat (2000, pp. 31-32) as “the six silent killers”, are: (1) top-down or laissez-faire senior management style, (2) conflicting priorities, (3) ineffective senior management team, (4) poor vertical communication, (5) poor coordination, and (6) inadequate down-the-line leadership skills and development. Figure 2.1 illustrates these challenges and their interrelations.

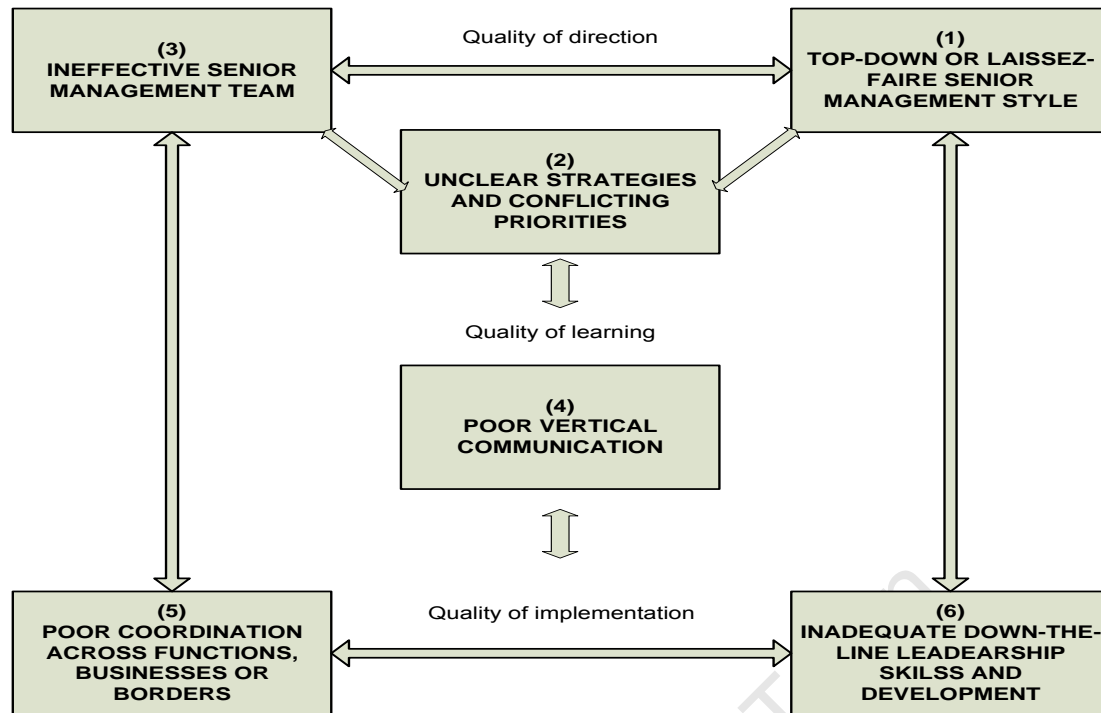


Figure 2.1: Six strategy killers and their interaction (Beer and Eisenstat, 2000: 32)

2.3.2 Information systems strategy: a SISP perspective

IS play an important operational and sometimes strategic role in different organisations. Hence many organisations have raised the importance of IS planning (Brown, 2008; Khani, Mor, & Bahrami; Rajiv, 1999; Segars & Grover, 1998) and IS strategy process (Ward & Peppard, 2002). According to Ward and Peppard (2002, pp. 118-119), an IS strategy process is important to organisations for the attainment of the following four objectives: “alignment of IS with the business to identify where IS/IT contributes most, and the determination of priorities for investment; gaining competitive advantage from business opportunities created by using IS; building a cost-effective, yet flexible technology infrastructure for the future; and developing the appropriate resources and competencies to deploy IS/IT successfully across the organisation.”

There is often various terminologies that are interchangeably used to refer to the process of strategic IS planning and terminologies such as the following are frequently used: strategic IS planning (SISP), IS planning (ISP), IS strategy planning

(ISSP), business systems planning (Ward & Peppard, 2002). Pollack (2010) suggests that a SISP process is an iterative process consisting of five process – strategic business planning, IS assessment, IS vision, IS guideline and strategic initiatives – that leads to the development of an IS strategy. Pollack (2010) further suggests that the IS strategy itself consists of the information strategy, information technology strategy, the information management strategy, and the change management and implementation strategy. An IS strategy is generally the outcome of information system planning process. Lederer and Salmela (1996) note that the outcome of this process is an IS strategy that provides guidelines for the implementation of new IS as illustrated in Figure 2.2.

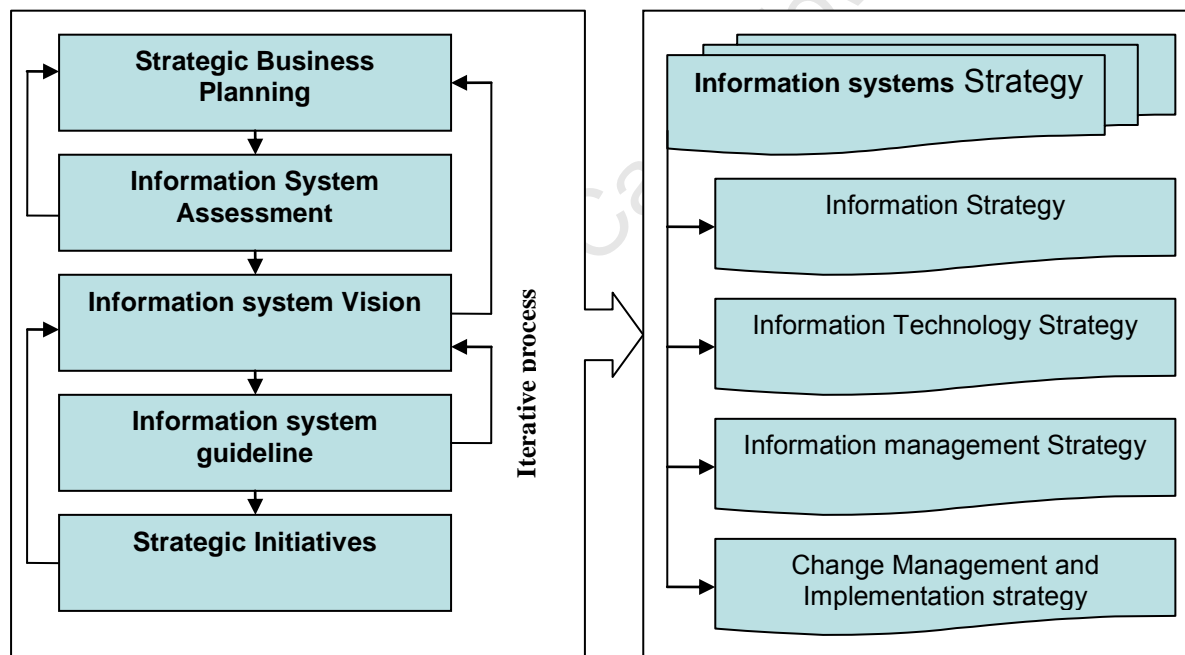


Figure 2.2: SISP process and outcome (adapted from Pollack 2010).

The relevance of the IS strategy is generally captured in the literature on strategic IS planning. It is also captured in the findings of research on the implications of the lack of IS strategy. Ward and Peppard (2002) for example identifies the following implications of the lack of IS strategy as illustrated in Table 2.1.

Table 2.1: Consequences of not having an IS strategy (Ward & Peppard, 2002, pp. 47-48)

| CONSEQUENCES OF NOT HAVING AN IS/IT STRATEGY |
|--|
| <ul style="list-style-type: none"> • Systems investments are made that do not support business objectives • Loss of control of IS/IT, leading to individuals often striving to achieve incompatible objectives through IS/IT • Systems are not integrated. This can also lead to duplication of effort and data leading to inaccuracy and no coherent information resource • No means setting priorities for IS projects/resources and constantly changing plans leading to lower productivity, etc. • No mechanisms for deciding optimum resource levels or the best means of supplying systems • Poor management information; it is either not available, inconsistent, inaccurate or too slow • Misunderstanding between users and IT specialists leading to conflict and dissatisfaction • Technology strategy is incoherent and constrains options • Inadequate infrastructure investments made • All projects caused by IS/IT investments can become a source of conflict between parts of the organisation • Localised justification of investments can produce benefits that are actually counterproductive in the overall business context • Systems, on average, have a shorter than expected business life and require, overall, considerable greater IS/IT spending to redevelop more frequently than should be necessary. |

SISP is “the process of identifying a portfolio of computer-based applications that will assist an organisation in executing its business plans and realizing its business goals” (Lederer and Salmela, 1996 quoting Lederer and Sethi). The endeavour of developing an IS strategy has some pre-requisite such as the following proposed by

(Ward & Peppard, 2002). They propose a framework to assess the environments of IS/IT strategy as illustrated in Figure 2.3.

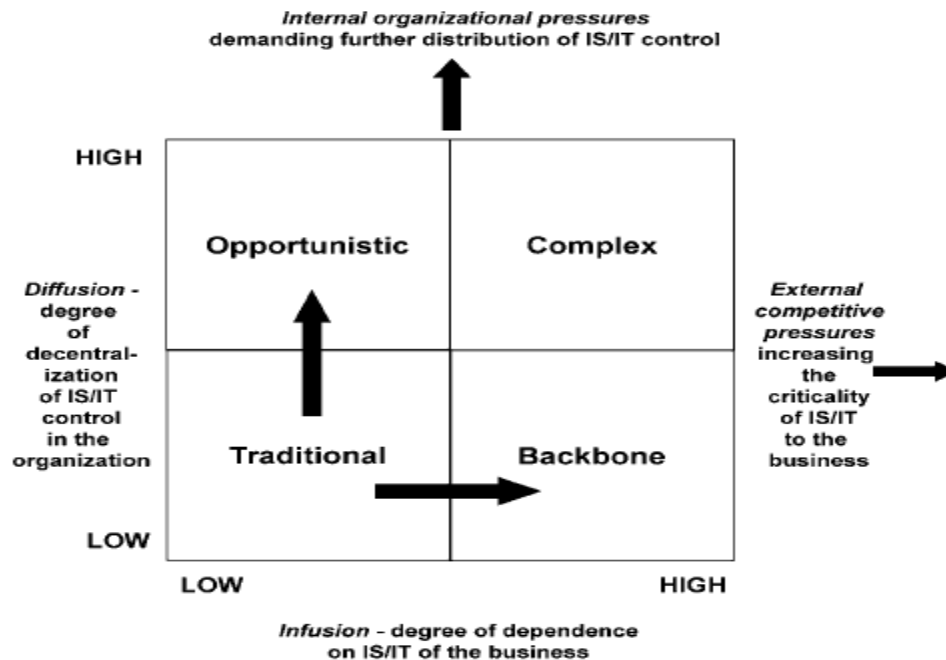


Figure 2.3: Environments of IS/IT strategy

Although research has been extensively conducted in the area of SISP, these studies have been focused more on procedures and factors and less on the implementation of IS strategy (Bell et al., 2010; Gottschalk, 1999). Hence, questions around the implications between stakeholder relations, the implementation of IS strategy, and the introduction of IS in the South African public hospital environment can be explored. As argued by Newkirk and Lederer (2006), an analysis of the environment within which implementation is envisaged is essential to the development of knowledge which in turn is likely to be conducive to the formulated strategy implementation and possible successful SISP.

There are some challenges associated with the IS strategy process. Ward and Peppard (2002, p. 128) highlight the following major challenges as illustrated in Table 2.2.

Table 2.2: Challenges in the IS strategy process (Ward & Peppard, 2002, p. 128)

| Problems in launching the IS strategy process | Problems with the is strategy process |
|---|---|
| <ol style="list-style-type: none"> 1. Failing to get top management support 2. Not having free communication and commitment to change throughout the organisation 3. Being unable to obtain sufficiently qualified personnel to do a proper job 4. Delegating responsibility to an individual without sufficient experience, influence or time to do a thorough job 5. Not investing sufficient “front-end” time to ensure that all strategy and plan tasks and individual responsibilities are well understood 6. Not having a steering committee that is highly committed 7. Not having a clear-cut business strategy to guide the IS strategy effort 8. Failing to anticipate developments in It that might affect the strategy 9. Ignoring the people and politics side of strategy formulation and planning | <ol style="list-style-type: none"> 1. Failing to involve top management sufficiently 2. Ignoring business objectives 3. Failing to translate business objectives and strategies into action plans 4. Failing to involve users sufficiently 5. Relying exclusively on users “wish list” for application ideas 6. Neglecting to assess realistically internal weaknesses of the IS function in determining capabilities to implement the recommended strategy 7. Not performing a top-down analysis to identify critical functional areas that the IS strategy has to support 8. Failure to consider and explicitly evaluate alternative IS strategies in order to give top management a meaningful choice 9. Failing to review the Is strategy with all managers so as to obtain support and cooperation for its implementation |

2.3.3 IS strategy and IS strategy implementation

The concept of IS strategy has been a focal theme in the following three literature stream: SISP, IS alignment and IS for competitive advantage (Chen, Mocker, Preston, & Teubner, 2010). The term IS strategy is frequently and, in certain cases, inconsistently referred to using a variety of terminologies such as information strategy, IT strategy, IS/IT strategy, strategic information plan (Mocker & Teubner, 2005). Chen et al. (2010, p. 237) define IS strategy as “the organisational perspective on the investment in, deployment, use, and management of IS”.

There are differing views of what IS strategy is. Earl's 1989 view of information strategy has received great attention. Earl (1989) proposed the following three domains of information strategy: information system technology, information technology and information management strategy. However this view has since been extended and modified. Mocker and Teubner (2005) proposed a more comprehensive model of Information strategy consisting of two major domains as illustrated in Figure 2.4: information infrastructure strategy and information function strategy. Information infrastructure strategy consists of three layers; information technology infrastructure (IT), Information and communication systems (IS), and information resource supply.

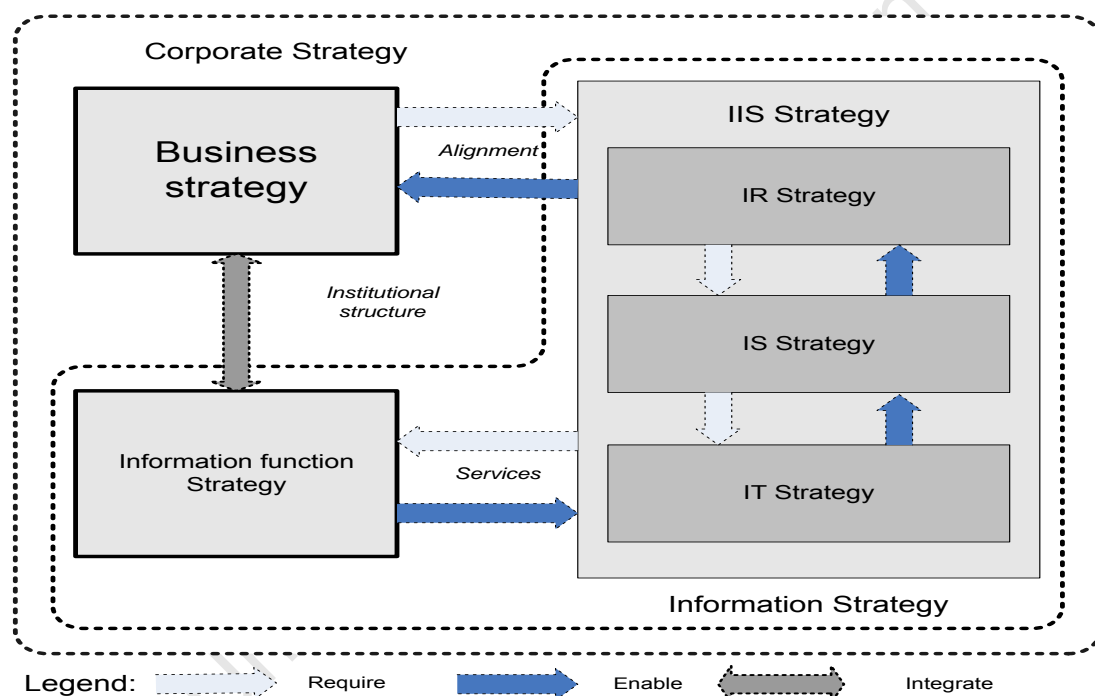


Figure 2.4: Extended information strategy model (Mocker and Teubner, 2005: 10)

IT is seen “as addressing strategic decisions on the prerequisites needed to enable effective and efficient information and communication in a company’s business processes” while information function is seen “as addressing strategic decisions on the services required to build, maintain and enhance these prerequisites” (Mocker & Teubner, 2005, p. 8). This points to the complexity of IS strategy and its development. In this regard Ward and Peppard (2002) propose a framework that can

be assistive in managing the complexity of developing a business IS strategy as illustrated in Figure 2.5 below.

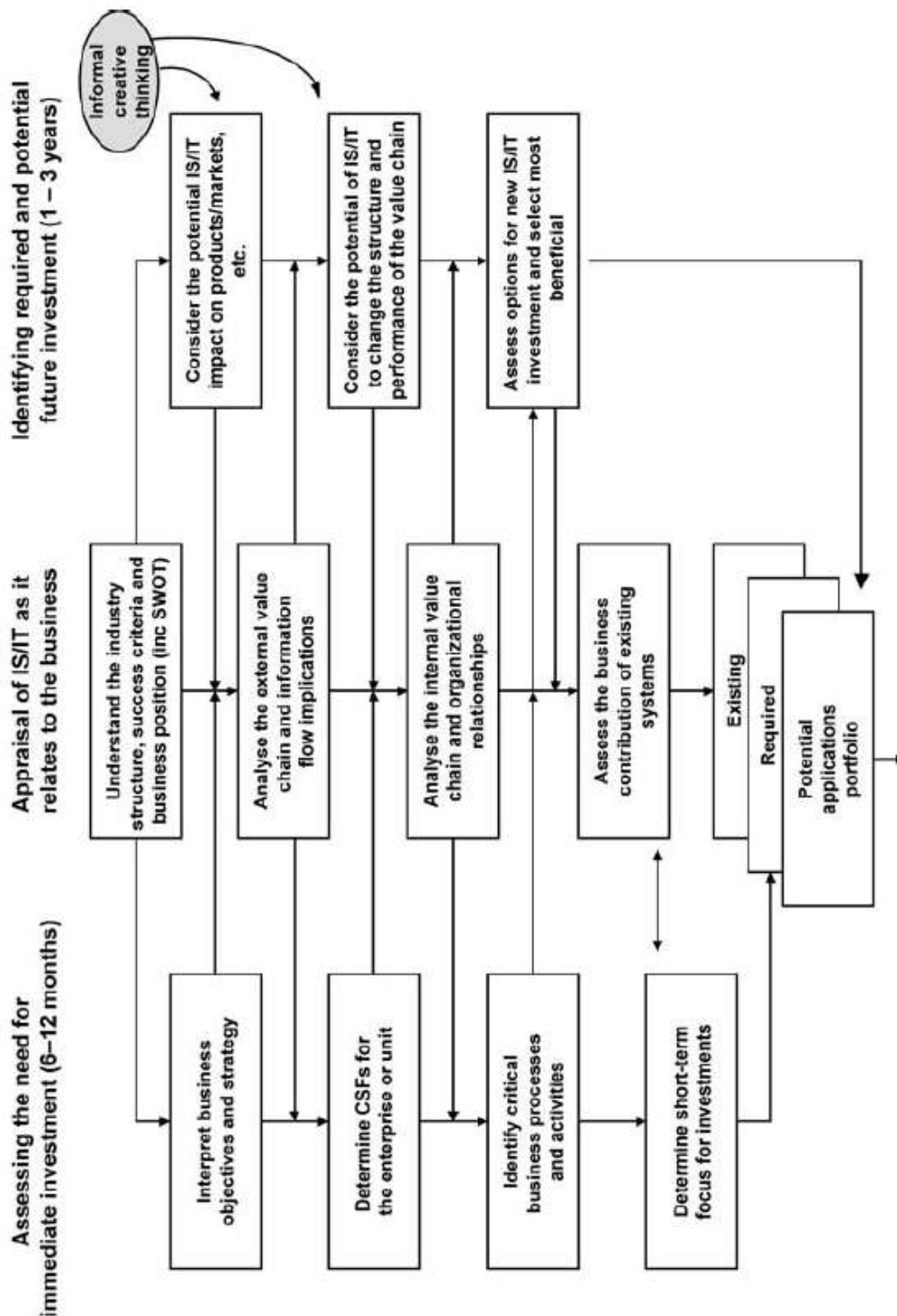


Figure 2.5: Framework for determination of the business IS strategy (Ward and Peppard, 2002)

There are different views of IS strategy. Mocker and Teubner (2005) for example, identify four established views of information strategy: information strategy as a functional departmental strategy, application portfolio as the core of information strategy, information strategy as an enumerative list, and information strategy as a system of plans. Similarly, Chen et al. (2010) identify the following three conceptions of IS strategy: IS strategy as the use of IS to support business strategy, IS strategy as the master plan of the IS function, and IS strategy as the shared view of the IS role within the organisation.

IS strategy is developed following different strategy formulation methodologies. Lederer and Sethi (1988) note that there are different IS strategy development methodologies; and that organisations may borrow from the various methodologies to develop their own hybrid methodology. They identify the following commonly used methods: Business system planning (BSP), Strategic Systems Planning (SSP) and Information Engineering (IE). They also suggest the following alternative methodologies: Method/1, information quality analysis, business analysis and integration techniques, ends/means analysis, Nolan Norton methodology, portfolio management, strategy set transformation, value chain analysis, and the customer resource life cycle.

Lederer and Salmela (1996) caution that although an IS strategy can be developed, this does not always result in its implementation or the implementation of a new IS. They argue that the IS strategy affects the implementation of its recommendations. They further argue that although conducting a formal strategy formulation process is common practice, some organisations follow a rather informal approach of contextual adjustment and resources allocation in response to eventual environmental changes. It should further be noted that the implementation of IS strategy is not immune to the common concerns regarding IS implementation. This has been confirmed in Brown and Brown's (2011) investigation of contextual factors affecting the implementation of IS plans. There are some challenges in the implementation of an IS strategy. Lederer and Salmela (1996) for example emphasise that the development process can be lengthy and sometime results in obsolete

strategies due to environmental and organisational changes that will have occurred before the strategy is implemented. Segars and Grover (1998) note that lack of cooperation among different stakeholders is problematic to the implementation of formulated strategy. Cooperation among the different parties is also reported to be critical for successful IS strategy implementation (Newkirk & Lederer, 2006).

2.3.4 Information systems planning in the healthcare environment

In the case of health IS, an IS planning process consists of three phases: the leadership, coordination and assessment phase, secondly the priority-setting and planning phase, and lastly the implementation phase (Health Metrics Network, 2009). Figure 2.6 provides a detailed representation of the subsequent processes.

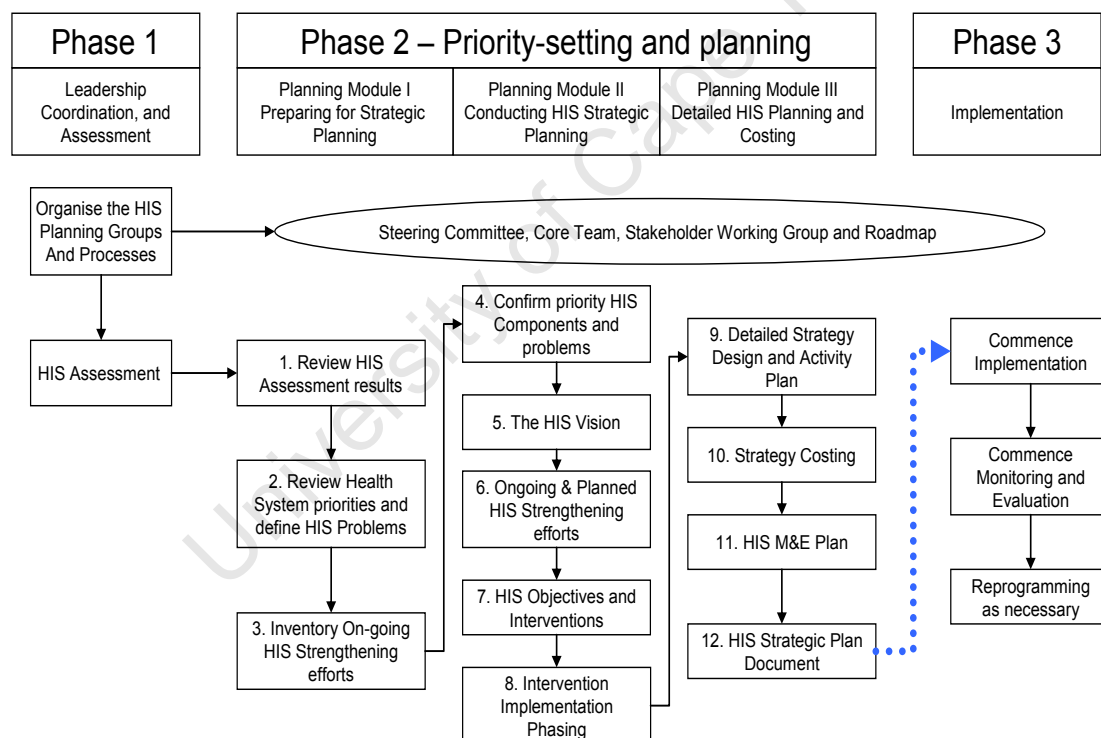


Figure 2.6: The health information systems design and implementation planning process (Health Metric Network, 2009)

The lack of literature on the implementation of IS strategy in the healthcare sector brings to the fore the necessity of conducting further research in this area.

2.4 ICT implementation and the healthcare sector

2.4.1 IS in the healthcare environment

Although ICTs have been widely implemented in various sectors, the healthcare sector is still lagging behind in the adoption and implementation of innovative ICTs (Wager, Lee, & Glaser., 2005). The characteristics of the healthcare sector differentiates it from other sectors (Avison & Young, 2007). Despite these differentiating characteristics healthcare IS have gradually evolved over the past five to six decades (Wager et al., 2005). Table 2.3 provides a summary of the evolution of health IS.

The increased ICT implementation trend in the healthcare sector is described in the 2011 editorial of the 50th edition of the *Method of Information in Medicine Journal* by Gelsbuhler (2011, p. 298) as follow: “after decades of relative stagnation, where most of the development and evaluations took place in few pioneering healthcare institutions, we are now witnessing an implementation spree fuelled by multiple ingredients: the political recognition of the failure of healthcare systems in terms of safety, quality, equitable access and sustainability, the expectation that the tools of the information society will bring benefits in health systems as they did in other domains, and, last but not least, significant public investments and related incentives notably in the US and other Western countries.”

The criticality of the healthcare sector and the relevance of IS for the improvement of service delivery is undeniable. Although innovative ICTs have been proposed as a healthcare service improvement enabler, there is still some scepticism around the benefits and impact of these solutions. Moreover implementation of IS in the healthcare sector is a very challenging task (Berg, 2001). Regarding the lack of evidence about the benefits and impact of eHealth, Black, Car, Pagliari, Anandan, & Cresswell (2011) for example reiterate the need for further research on eHealth and how its benefits can be reaped so as to develop an understanding of how and why IS interventions in the health sector do or do not work.

Table 2.3: Evolution of health information systems (adapted from Wager et al., 2005)

| Decades | State of information technology | Use of healthcare information systems |
|----------------|---|--|
| 1960s | Large mainframe computers Centralised processing Few vendor-developed products | Administrative or financial IS used primarily in large hospitals and academic centres Developed and maintained in-house Shared systems available for smaller hospitals Centralised data processing |
| 1970s | Main frame still in use Mini computers become available, smaller, more affordable | Turnkey systems available through vendor community Increased interest in clinical applications (for example laboratory, radiology, pharmacy) Shared systems still used |
| 1980s | Microcomputer or personal computer (PC) become available – fast, more powerful, affordable; brings computing powers to desktop; revolutionises how companies process data and to business Advent of local area network | Distributed data processing Expansion of clinical IS in hospitals Physician practices introduce billing systems Integrating financial and administrative information becomes important |
| 1990s | Unveiling of the internet and world wide web – revolutionizes how organisations communicate with each other, market services, conduct business | Growth of internet has profound effect on healthcare organisations Vendor community explodes Products more widely available and affordable Enterprise-wide systems Increased interest in clinical application Relative small percentage of healthcare organisations adopt CPR |
| 2000+ | Internet expansion continues Emerging technologies become more widespread Wireless technologies Voice recognition Bar coding PDAs | Focus on electronic health record HHS get involved – charges IOM and Health level Seven (HL7) with developing standards for HER Organisations struggle with implementing CPOE, medication administration, and other decision support systems designed to improve patient care |

2.4.2 Challenges to IS implementation in the healthcare sector

There are various challenges to the implementation of ICTs in the healthcare sector. Shortliffe (2005) identifies the following three sets of barriers to the use of IT in healthcare: cultural barriers, making the business case, and structural barriers. In the case of e-Health, Bartlett, Boehncke, Wallace, and Johnstone-Burt (2010) identify the following barriers: the reluctance of healthcare providers to adopt technology or change their clinical practices without what they consider to be a compelling medical reason, the absence of an agreed-upon set of performance targets that can be accomplished through the use of IT in healthcare, the perceived opportunity costs of IT investments in healthcare, the fragmented nature of the health systems in many countries and their lack of centralised management and leadership.

The nature and the complexity of the healthcare sector is another challenge to ICT implementation. The complexity of the healthcare sector in contrast to other sectors is highlighted by Avison and Young (2007). Implementers of ICT in the healthcare environment should therefore take into consideration the factors that are particular to the health environment. Gelsbuhler (2011, p. 298) cautions about the danger of rushed implementations: "It is now well understood that rushed implementations of clinical IS can be dangerous, and that human and organisational factors are key determinants, more so than technology itself for achieving positive outcomes". He emphasises the need "to understand, evaluate and improve these factors, in the real-world settings of our complex healthcare systems". In the case of hospital IS, Hanseth and Monterio (1998) report the negative impact of the institutionalised nature of work practices in hospitals on the introduction of electronic medical records (EMR).

Another challenge to the implementation of ICTs in the healthcare sector is the involvement of different stakeholders who have differing values, interests, and visions (Cain & Mittman, 2002). The healthcare sector of developing countries provides an exploratory ground for this challenge as these countries envisage using innovative ICTs to improve the quality of healthcare services. Hence, in this study we

focus on the public healthcare sector of developing countries, a sector that is still in its primary or earlier stage of implementing ICTs.

2.4.3 Hospital information systems classification

Hospital information systems (HIS) are a sub-category in the classification of Health IS. One general classification of health IS is a two groups' classification in which health IS are divided in administrative and clinical systems (Wager et al., 2005). A good illustration of HIS is provided by Yusof, Papazafeiropoulou, Paul, and Stergiouklas (2008) as illustrated in Appendix 1. They classify HIS IS in the following categories: patient centered IS, administrative IS, clinical IS, radiology IS, laboratory IS, pharmacy IS, telemedicine, clinical decision support systems and hospital IS. Generally, HIS can be grouped in the following five categories: patient management, hospital finance and administration, department, point of care and electronic medical records (Coiera, 2003).

The use of innovative IS and ICTs in hospitals is central to the emergence of the concept HIS (Lin, Lin, & Roan, 2011). Hence HIS can be defined as a sub-set of Health IS that primarily focus on the use of enabling ICT technologies to improve the quality of data and service provision at a hospital/clinic institution level (Degoulet & Fieschi, 1997). Typical examples of IS at a hospital level include: electronic medical records (EMR), computer-based physician order entry (CPOE), radiology information systems (RIS), Laboratory information systems (LIS), picture archiving and communication systems (PACS), and pharmacy information systems (PIS) (Ward, Jaana, Bahensky, Vartak, & Wakefield, 2006).

IS provide support at two main levels at the hospital level: primary work processes related to patient care, and secondary processes which are inclusive of all support processes and activities such as resources management, finance management, and more (Berg, 2001). Like health IS, HIS can be classified according to the IS pyramid in the following three groups as illustrated in Figure 2.7: operational information systems, tactical information systems and strategic information systems. It should

however be noted that the hospital environment is a very complex one and that there are often “heterogeneous systems” which sometime do not intercommunicate (Lu, Duan, Li, Zhao, & An, 2005).

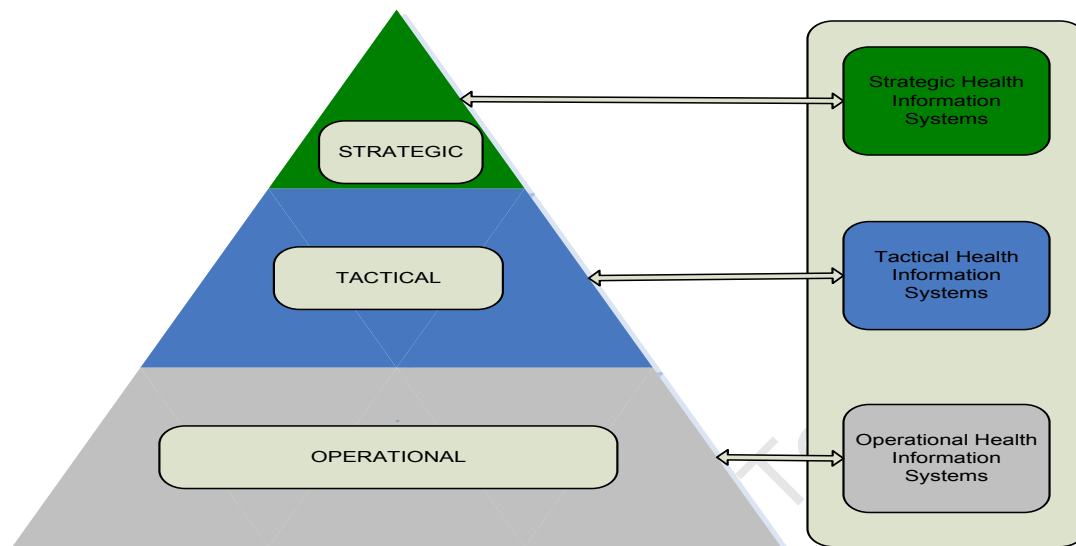


Figure 2.7: Information systems pyramid: classification of Health Information Systems

HIS are a subset of health IS at a lower level of the health IS pyramid and, it is argued that quality of data at the hospital level is important as it has ramifications to the entire healthcare system: data at the hospital level provides the elements of abstraction needed in decision making from the lowest level to the highest level in the health decision making process (Wyatt, 1995). Research into IS implementation at hospital level is therefore relevant not only to contribute to more successful IS implementations at the hospital level but also to contribute to the broader healthcare system level.

2.4.4 ICTs in the healthcare sector in developing countries

The healthcare sector in many developing countries is affected by challenges such as: shortage of resources, infrastructural deficit, skills shortages, inadequate technological support, and the burden of diseases and epidemics such as Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome (HIV/AIDS), malaria,

tuberculosis, etc. (Fraser et al., 2005). Some of these challenges can be addressed by the innovative use of ICTs. Innovative ICTs such as telemedicine (Wootton, 2008; Wootton, Patil, Scott, & Ho, 2009), electronic medical record systems (Fraser et al., 2005), mHealth (Vital Wave Consulting, 2009) are key examples in developing countries. It is argued that ICTs are an enabling tool for development (Hanna, 2004). Hence there has been great interest and investment in ICT-based projects for development in developing countries (Hosman & Fife, 2008) in areas such as health, education, etc. Although ICTs cannot provide an all-inclusive solution for the multitude of challenges that developing countries face (Fong, 2009), they present an opportunity for service improvement, and development (Hanna, 2004).

Although ICTs present a great opportunity to developing countries, channelling investments towards ICT for development initiatives is a great challenge on its own for governments in developing countries with limited resources and a multitude of difficulties such as literacy, infrastructure, and health which ought to be a priority (Hosman & Fife, 2008). The characteristics of implemented ICTs in the healthcare sector in developing countries reflect the limitations and weakness of existing health IS in these countries as emphasised by Kumalo (2006). She further argues that the different disease-focused programmes create silos of duplicate data systems that further impact ICTs in the developing countries' healthcare context.

Some of the obstacles that affect the implementation of ICTs in the health sector in developing countries include poor infrastructure, lack of resources, and insufficient political commitment and support (Bukachi & Pakenham-Whalsh, 2007). These challenges are summarised by Bukachi and Pakenham-Whalsh (2007) under a "four Cs" umbrella which comprises Connectivity, Cost, Capacity, and Culture. In the case of eGovernment which is inclusive of eHealth, Ndou (2004) notes that "the ability of developing countries to reap the full benefits of eGovernment is limited and is largely hampered by the existence of many political, social, and economic hindrances".

2.5 The South African public healthcare sector

2.5.1 The nine provinces of South Africa

As a country, South Africa has nine provinces namely: Eastern Cape, Free State, Gauteng, Kwazulu Natal, Limpopo, Mpumalanga, Northern Cape, Northwest, and Western Cape. Table 2.4 provides a short summary of these provinces, their respective capital cities, population, land areas and the predominant language. From Table 2.4 and Figure 2.8 it can be noted that the biggest province has the smallest population number and the smallest province has the highest population number. This contrast can partly be attributed to the geographic conditions and economic opportunities of each province.

Table 2.4: Summary of the nine provinces of South Africa (SouthAfrica.info, 2013)

| PROVINCE | CAPITAL/ MAJOR CITY | POPULATION | LAND AREA (KM ²) |
|---------------|-------------------------|------------|------------------------------|
| Eastern Cape | Bisho/Port Elizabeth | 6 562 053 | 168 966 |
| Free State | Bloemfontein | 2 745 590 | 129 825 |
| Gauteng | Johannesburg | 12 272 263 | 16 548 |
| Kwazulu Natal | Pietermaritzburg/Durban | 10 267 300 | 94 361 |
| Limpopo | Polokwane | 5 404 868 | 125 755 |
| Mpumalanga | Mbombela | 4 039 939 | 76 495 |
| Northern Cape | Kimberly | 1 145 861 | 372 889 |
| Northwest | Mahikeng | 3 509 953 | 106 512 |
| Western Cape. | Cape Town | 5 822 734 | 129 462 |



Figure 2.8: The nine provinces of South Africa (SouthAfrica.info, 2013)

2.5.2 The South African public sector and public hospitals

The South African public health sector is part of the broader South African Healthcare system which consists of the following four components: the public sector, the private sector, the African traditional medicine sector, and a “relatively small number of practitioners of complementary and alternative medicines such as ayurveda, traditional Chinese medicine, osteopathy, chiropractice, homeopathy, naturopathy, phytotherapy, aromatherapy, massage therapy and reflexology” (Harrison, Bahna, & Ntuli, 2007, p. vii). The public healthcare sector provides care to 80% of the population (DoH, 2010).

The South African department of health classifies public hospital in 5 groups (DoH, 2011): district hospitals, regional hospitals, tertiary hospitals, central hospitals, and

specialised hospitals. Appendix 2 provides a comparative summary of the characteristics of these 5 groups of public hospitals. There are currently 332 public hospitals in South Africa. Table 2.5 provides a summary of the number and types of public hospitals by province in South Africa. It should be noted that, with the planned NHI, the South African Health department is planning to upgrade the existing public hospitals and to build more public hospitals.

Table 2.5: South African public hospitals per region and type (Adapted from DoH, 2011)

| Province | Type of Hospital | | | | | Total |
|----------------|--------------------|--------------------|--------------------|-------------------|-----------------------|------------------|
| | District hospitals | Regional hospitals | Tertiary hospitals | Central Hospitals | Specialised hospitals | |
| Eastern Cape | 42 | 1 | 4 | 1 | 16 | 64 |
| Free State | 17 | 5 | 0 | 1 | 1 | 24 |
| Gauteng | 11 | 11 | 0 | 4 | 6 | 32 |
| Kwa Zulu Natal | 45 | 14 (15) | 2 | 2 | 19 | 72 (73) |
| Limpopo | 30 | 5 | 2 | 0 | 3 | 40 |
| Mpumalanga | 18 | 3 | 2 | 0 | 5 | 28 |
| Northwest | 12 | 3 | 2 | 0 | 2 | 19 |
| Northern Cape | 8 | 1 | 1 | 0 | 2 | 12 |
| Western Cape | 21 | 5 | 0 | 2 | 2 | 40 |
| Total | 204 | 48 (49) | 13 | 10 | 56 | 331 (332) |

2.5.3 Information systems in the South African public health sector

The public health sector in South Africa is dependent on various IS at different levels. Among these IS in the public health sector in South Africa are health IS and HIS. The South African National Health Information Systems structure provides a broader

perspective of the hierarchical flow of health related information from the facility level to the national level as represented in Figure 2.9.

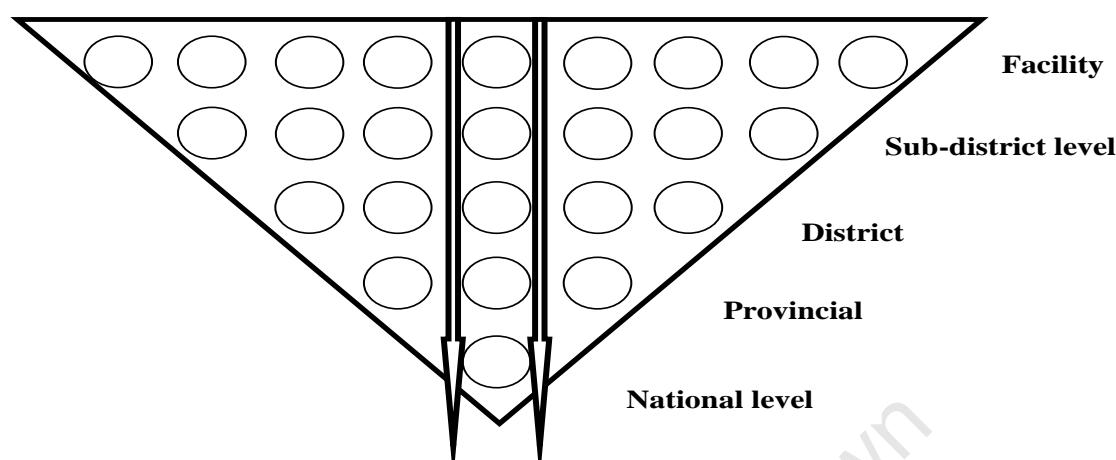


Figure 2.9: The South African Nation Health Management Information Systems (Adapted from Kumalo, 2006)

The South African public health sector has been going through major transformations since the year 1995 (Braa & Hedberg, 2002). Implementing a decentralised health IS through the Health Information Systems Program (HISP) has since been a major driving force for the provision of better healthcare to all. Despite this there are still major challenges that the South African public healthcare systems face on a daily basis. To address some of these challenges, innovative ICTs such as telemedicine (Gulube & Wynchank, 2001; Jithoo, Govender, & Nathoo, 2003) and mHealth (Curioso & Mechael, 2010) have been explored as potential solutions. There is a potential for IS in the South African Public healthcare sector (Banderker & Van Belle, 2006); a sector which faces various challenges (Ojo, 2006). Kachienga (2008) for example suggests that telemedicine offers great opportunities for healthcare service delivery in South African rural areas which face even greater challenges in providing healthcare services.

There are challenges and factors that affect the implementation of ICTs in the public health sector of South Africa. Kumalo (2006) identifies the following challenges to health management information systems (HMIS) implementation in South Africa:

inadequate investment in HMIS, inappropriate policies and regulations and shortage or resources; lack of an information culture in the public health sector, integration challenges, data quality and decision making issues, lack of integration of HIS, data accessibility; and poor communication across the different levels of the health system. In the case of a Health IS implementation in Limpopo/South Africa, Littlejohns et al. (2003) identified the following as reason for failure in the implementation process: failure to take account of the healthcare cultures, underestimating the complexity of healthcare processes, different expectations of commissioner, developer, and users, long implementation in context of fast managerial change, “My baby” syndrome, reluctance to stop putting good money after bad, and failure to learn from lessons from past projects experiences. Despite these challenges, Health IS can still be successfully implemented.

A good illustration of the IS use in the public healthcare sector is the case of the HISP and HIS that feed into the national health management system. The South African health management system include the following components (Kumalo, 2006): information on demography, information on socio-economic status, information on health status, information on health resources, information on healthcare provision, information on healthcare utilisation, information on health promotion, information on healthcare coverage, and IS on support services which include administration, financial management, human resources management, and laboratory services management. In 2004, it was estimated that 40% of public hospitals in South Africa had a “form of electronic patient information system” (Burn and Shongwe, 2004). Table 2.6 provides a list of IS in use in public hospitals in South Africa.

Presently, the South African government’s department of health is in the process of developing and implementing a National Health Insurance (NHI) scheme which aims at improving access, quality and affordability of healthcare services to all individuals living in South Africa (DoH, 2011).

Table 2.6: Information systems in use in public hospitals the provinces of South Africa (Adapted from DoH, 2011)

| Province | Number of Public hospitals | Information systems in use |
|---------------|----------------------------|--|
| Eastern Cape | 64 | Delta 9 |
| Free State | 25 | Meditech, PADS |
| Gauteng | 33 | Medicom, Soarian, Medsuite, PharmAssit, PAAB |
| Kwazulu Natal | 72 | Medicom, Meditech, PALS, Pro-Clin, ReMed |
| Limpopo | 40 | Medicom |
| Mpumalanga | 29 | PAAB |
| Northern Cape | 19 | PAAB |
| Northwest | 14 | Nootroclin |
| Western Cape. | 41 | Clinicom, Delta 9, PHCIS, JAC Pharmacy |

2.6 IS strategy in the context of public hospitals of South Africa

This study aimed at investigating how stakeholder relations influenced the implementation of IS strategy in public hospitals in South Africa. IS strategy can be differentiated as specified by in the following groups or categories. In the case of this study, it is imperative to contextualise IS strategy in the specific case of public hospitals in South Africa. In this section, we describe IS strategy in public hospitals in South Africa.

The lack of appropriate strategy is a major challenge in the implementation of adequate IS systems in the healthcare sector in general and in public hospitals in particular. This observation is highlighted in the problem statement of the South African e-Health policy referring to the Negotiated Service Delivery Agreement (NSDA) 2010-2014: "Although large sums of money have been used to procure health ICT and HIS in South Africa in the past, the ICT and HIS within the health system is not meeting the requirements to support the business processes of the

health system thus rendering the healthcare system incapable of adequately producing data and information for management and for monitoring and evaluating the performance of the nation health system. This results from the lack of technology regulations and a lack of policy frameworks for all aspects of infrastructure delivery”.

In the sub-output 4.4.4 on “improved health infrastructure availability” of section 4.4 on “strengthening health system effectiveness” of the NSDA the following is stated: “The public health sector has a reasonably large infrastructure backlog that needs to be addressed proactively to ensure equitable and sustained improvements in access to need health services in various regions of the country. The department of health will undertake organisational restructuring that is directed to better manage infrastructure maintenance and requirements including health technology and ICT functions. We will exercise our stewardship function more strongly to pay greater attention and support to the infrastructure service delivery through building capacity at the national and provincial health departments as well as their implementing agents. We will develop and implement a national strategy to harness the value of technology in support of healthcare service delivery and this strategy will be managed in manner that insure that we avoid the current costly and ineffective fragmentation”

The above statement highlights the relevance of IS strategy, the relevance of IS/ICT implementation for improved healthcare service delivery, the state of IS/ICT implementation and the implications of the lack of adequate IS strategic planning in the public sector of South Africa. Hence the South African health department has developed a national eHealth strategy that provide guidelines, priorities and direction regarding the use and implantation of ICT solutions for improved service delivery in various aspects of the provision of healthcare service in South Africa. This national eHealth strategy provides guidelines to all provinces. It consists of the following ten strategic priorities: strategy and leadership, stakeholder engagement, standards and interoperability, governance and regulation, investment, affordability and sustainability, benefits realisation, capacity and workforce, eHealth foundations,

Applications and tools to support healthcare delivery, and monitoring and evaluation of the eHealth strategy. The eHealth strategy highlights a framework that is assistive in attaining the department's priorities both in the short and medium term. This framework integrates the strategy's ten points and the NSDA's four outputs and identifies opportunities for eHealth to improve service delivery accordingly as illustrated in Table 2.7.

Table 2.7: Kwazulu Natal Health 2011/12 planned strategies and activities regarding ICT

| 4.5 Information, communication and technology and health information systems | | |
|---|--|--|
| <i>Provincial priority for 2011/12</i> | <i>Planned strategies and activities</i> | <i>Target 2011/12 – 2014/15</i> |
| Increase investment and revitalise information, communication and technology services | Implement the Master System Plan (MSP) | Implement MSP as per implementation plan |
| Improve health information systems and data management | Implement information management turn-around strategy including health information systems, data management, and monitoring and evaluation | Annual unqualified audit opinion for performance information |
| | | Results-based performance monitoring: Four quarterly reports (Treasury) Four progress reports on 10 Points plan targets Approved annual report tabled |
| | Establish provincial health information committee | Established by 2011/12 and quarterly meetings convened |

This strategy further specifies three objectives for the required eHealth interventions: objectives which involves building on what already exists, objectives which involve new or extended work requiring significant procurement and implementation, and objectives for which further planning is required. The eHealth strategy was approved in 2012 by the minister of health. It is the responsibility of each province to operationalise this strategy. For example in the Kwazulu Natal annual performance plan, the following provincial priorities for 2012/12, planned strategies and activities are specified regarding information and communication technology and health IS as illustrated in Table 2.7. The National Health Act

stipulates the following on co-ordination of national health information systems in section 74:

- (1) The national department must facilitate and co-ordinate the establishment, implementation and maintenance by provincial departments, district health councils, municipalities and the private sector of health information systems at national, provincial and local level in order to create a comprehensive national health information system.
- (2) The minister may, for the purpose of creating, maintaining or adapting databases within the national health information system contemplated in subsection (1), prescribe categories or kinds of data for submission and collection and the manner and format in which and by whom the data must be compiled or collated and must be submitted to the national department.

Section 75 stipulates the following:

The relevant member of the executive council must establish a committee for his or her province to establish, maintain, facilitate and implement the health information systems contemplated in section 74 at provincial and local level.

Section 76 stipulates that:

Every district health council and every health municipality which provides a health service must establish and maintain a health information system as part of the national health information system contemplated in section 74.

The IS strategy for public hospital can be understood to be developed at provincial level taking into consideration the national guidelines, the national eHealth, the province's own health strategic plan or operationalisation plan, and the specifics of the peculiarities of each public hospital. It should also be noted that, according to the approval time of the current eHealth strategy, the IS strategy for public hospitals can be classified into two major groups: the pre eHealth strategy era and the post eHealth strategy era.

There are different forms of strategy. This is emphasised by Ward and Peppard (2002, p. 188) as follow: "the business strategy may exist in a variety of forms: as

formally recorded corporate, business unit or functional area strategy documents or less formally in other documents and/or in the health of individuals. In the later stage it can be understood and confirmed through discussions with senior management". In the case of public hospitals in South Africa, it has been noted that the IS strategy has been existing in an informal form for the past ten to twenty five years. However this is changing as presently there are on-going activities and processes aiming at formulating, formalising and officialising IS strategy documents.

2.7 Stakeholders, stakeholder theory, and ICTs in the health sector

It emerges from the literature on ICTs implemented in the healthcare sector in general and in developing countries in particular that stakeholders are a key consideration in the implementation of ICTs in the healthcare sector. In the case of a HIS implementation in Limpopo/South Africa for example, Littlejohns et al. (2003) note that conflicting expectations among different stakeholders was one of the difficulties in the adoption and use of HIS. In the case of OpenMRS, Kanter et al. (2009) highlight the necessity for "obtaining buy-in from local and national decision makers." It is therefore necessary to understand how stakeholder relations influence the implementation of IS strategy in the healthcare sector in developing countries. A primary source of knowledge on stakeholder role and influence on ICTs implementation in developing countries such as South Africa is the exploration of stakeholder theory and its application to the healthcare sector in the developing countries' context. In the following section, we therefore explore the concepts of stakeholders and stakeholder theory and the application of these concepts in the study of ICTs in the healthcare sector.

2.7.1 Stakeholder theory overview

Stakeholder theory evolved since Freeman's (1984) exploration of strategic management from a "stakeholder's perspective based on the stakeholder concept (Friedman & Miles, 2002; Rowley, 1997). The theory has been used in different fields including IS. Stakeholder theory is associated with stakeholder analysis, a process through which stakeholders, their role and influence are explored (Brugha &

Varvasovky, 2000). According to Blair and Fotler (1990), stakeholder theory can be seen as a strategic analytical tool for stakeholder management that entails the following six stages or processes: Stakeholder identification, stakeholder assessment, stakeholder diagnosis and classification, stakeholder strategy formulation, strategy implementation and evaluation of stakeholder management effectiveness.

A stakeholder is “any group or individual who can affect or is affected by the achievement of the organisation’s objectives” (Freeman, 1984, p. 46). Stakeholders can be classified according to Mitchell, Agle, and Wood (1997) in seven typological groups as illustrated in Figure 2.10 based on their power, legitimacy and urgency attributes: definitive stakeholders, demanding stakeholders, dormant stakeholders, dependent stakeholders, dominant stakeholders, discretionary stakeholders, dangerous stakeholders, and non-stakeholders. Savage, Nix, Whitehead, and Blair (1991) provide a four group matrix classification of stakeholders based on stakeholder potential for cooperation and threat to an organization in an alternative classification. They further argue for an appropriate strategy for each type: supportive, marginal, non-supportive and mixed blessing. This classification is illustrated in Figure 2.11.

Associated with stakeholder theory are the concepts of stakeholder analysis and stakeholder relations (Brugha & Varvasovky, 2000). Stakeholder analysis is the process through which stakeholders are identified, differentiated and their relations investigated (Reeds et al., 2009). Stakeholder relations on the other hand are concerned with the interrelation amongst stakeholders. With this regard, Rowley (1997, p. 890) argue that “stakeholder relations do not occur in a vacuum of dyadic ties, but rather in a network of influences; a firm’s stakeholders are likely to have direct relationships with one another.” He reiterates the need for further research regarding organisational reactions towards stakeholder influences. Figure 2.12 provides an illustration of stakeholder analysis.

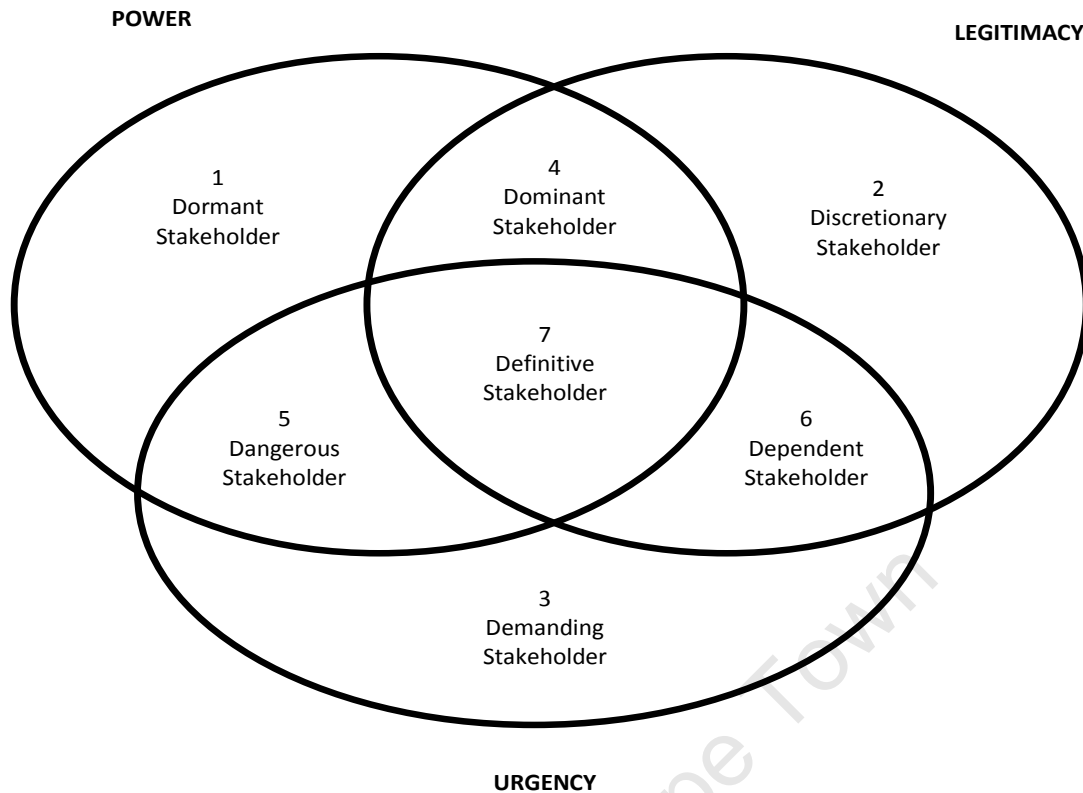


Figure 2.10: Stakeholder typology (Mitchell et al., 1997)

| | | | |
|---|------|---|---|
| | | Stakeholder's potential for threat to the organisation | |
| | | HIGH | LOW |
| Stakeholder's potential for cooperation with the organisation | HIGH | Stakeholder type 4: MIXED BLESSING Strategy: COLLABORATE | Stakeholder type 1: SUPPORTIVE Strategy: INVOLVE |
| | LOW | Stakeholder type 3: NONSUPPORTIVE Strategy: DEFEND | Stakeholder type 2: MARGINAL Strategy: MONITOR |

Figure 2.11: Stakeholder types and management strategies (Savage et al. 1991)

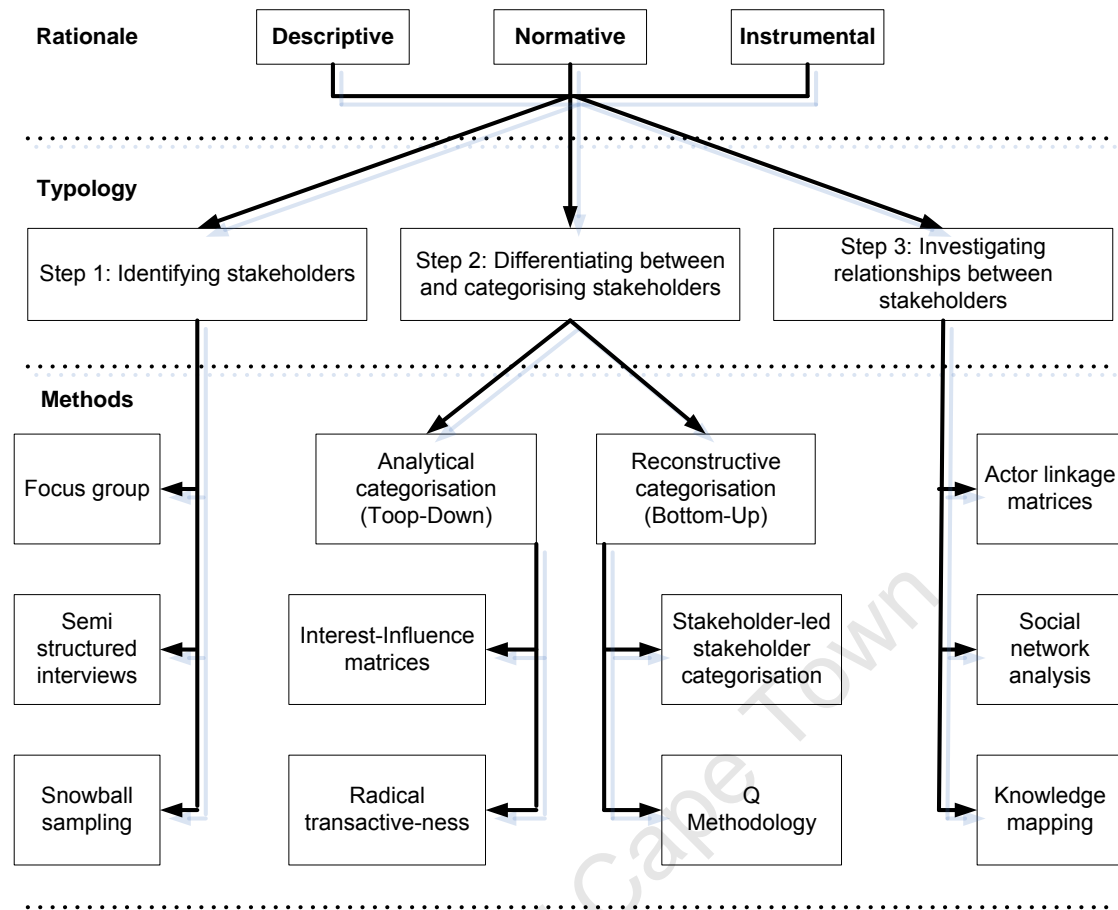


Figure 2.12: Stakeholder analysis: rational, typology and methods (Reed et al., 2009)

2.7.2 Types of stakeholder theories

Stakeholder theory has evolved over the last three decades (Laplume, Sonpar, & Litz, 2008). As stakeholder theory has been evolving, one major challenge has been encountered: “the confusion about its nature and purpose” (Donaldson & Preston, 1995). In its infancy, stakeholder theory focused on the simple identification of stakeholders. Stakeholder theory has been evolving and more complex issues have been taken into consideration. Waddock and Smith (2000) for example note that there has been a shift from the simple identification of stakeholders to the exploration of the interrelations among stakeholders and the consequential influences of these relationships. Stakeholder theory is divided into three different types: normative stakeholder theory, instrumental stakeholder theory, and descriptive or empirical stakeholder theory (Donaldson & Preston, 1995; Jones &

Wicks, 1999). Table 2.8 presents a summarised description of these three types of stakeholder theory.

Table 2.8: Types of stakeholder theories (Adapted from Jones and Wicks 1999)

| Stakeholder theory type | Explicit traits that were left implicit in early formulations | Research/ Scholarly group |
|------------------------------|---|-----------------------------|
| Descriptive/Empirical | Firms/managers actually behave in certain ways | Social Science-based theory |
| Instrumental | Certain outcomes are more likely if firms/managers behave in certain ways | Social Science-based theory |
| Normative | Firms/Managers should behave in certain ways | Ethic-based theory |

Donaldson and Preston (1995, pp. 71-73) describe these typologies as follow:

- ❖ “A descriptive aspect of stakeholder theory reflects and explains past, present, and future states of affairs of corporations and their stakeholders”.
- ❖ “Instrumental use of stakeholder theory makes a connection between stakeholder approaches and commonly desired objectives such as profitability. It falls short of exploring specific links between cause and effect in detail”.
- ❖ “A normative theory attempts to interpret the function of, and offer guidance about, the investor-owned corporation on the bases of some underlying moral or philosophical principles”.

Scholars such as Donaldson and Preston (1995) describe these three types of theories as being “the three aspects” of stakeholder theory. They argue that these aspects are complementary and interrelated despite their differentiating peculiarities. “Stakeholder theories are grouped in two broad categories: social science-based theory including instrumental and descriptive/empirical variants and ethics-based theory focusing on normative issues” (Jones & Wicks, 1999, p. 207). Despite the wide use of stakeholder theory and stakeholder concepts, Laplume et al. (2008, p. 1180) note that “several areas remain under investigated”. In this study the descriptive/empirical aspect of stakeholder theory will be followed in the

investigation of the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa.

2.7.3 Misunderstandings of stakeholder theory

There are some misunderstandings and misuses of stakeholder theory. Freeman et al. (2010) for example highlight the following: stakeholder theory being an excuse for managerial opportunism and its use limited to shareholder theory, the theory's inability to provide sufficiently specific objective function to the corporation, the perception that stakeholder theory requires changes to current laws, the perception that stakeholder theory is socialism and refers to the entire economy, the perception that stakeholder theory is a comprehensive moral doctrine, and the assumption that stakeholder theory applies only to corporations. These misunderstandings bring to fore the need for a deep exploration of stakeholder theory, its use and application in different context, and the adaptation and/or expansion of the theory. These misunderstandings and misrepresentations of the theory have been addressed by Freeman and other scholars in the refinement and defence of the theory (Laplume et al., 2008).

2.7.4 Stakeholder relations and IS implementation in the healthcare

There are various stakeholders involved in the implementation of ICTs in hospitals. Cain and Mittman (2002) identify the following stakeholders: the policy makers, the payer, the provider organisation, the patient, and the vendor. Taking note of the peculiarities of the healthcare sector and the factors that influence the use of innovative technologies in the healthcare sector, Atun and Sheridan (2007) emphasise the need to understand the influential role of the different stakeholders. In the design of health IS in developing countries, Byrne and Sahay (2003) advocate the relevance of involving all stakeholders in a participatory approach. Norris, Stockdale, and Sharma (2009) reiterate the need for multi-level interactions between these stakeholders. In a study of ICT implementations in the health sector, Juciute (2009) reiterates the importance of engagement with stakeholders, not only end users, at the earlier stages of, and throughout the implementation process. In

the context of the public sector and with regard to e-government implementation, Scott, Golden, and Hughes (2004) highlight the importance of understanding stakeholder relations in an environment where social, cultural and political issues are a key challenge.

The concept of stakeholder relations has received less attention in the implementation of ICTs in the healthcare in general (Freeman et al., 2010) and the implementation of ICT in the public healthcare sector in developing countries in particular (Murdock, 2004). Most of the studies do not explore this concept extensively when IS implementation is explored in the healthcare sector and in developing countries. Hosman and Fife (2008) observe that although the concept of stakeholder relations has received much attention in the business sector, the concept has received less attention IS in developing countries. In most cases, the stakeholder and stakeholder relations concepts are referred to as relevant or critical in the implementation of ICTs in developing countries. The existing studies provide no corroboration of the influence of stakeholders and stakeholder relations on the implementation of ICTs in the healthcare sector in developing countries. A broad approach to the implementation of ICTs in the complex context of the healthcare sector should therefore not only be limited to the technical and technological, but be inclusive of the interplay between the technology, the stakeholders, the clinical and managerial processes, as well as the organisational culture and politics (Atkinson et al., 2002).

2.8 Research gap

ICTs implementation remains a challenge in most industries and sectors. Despite the existence and use of ICTs for almost half a century, it is general knowledge that ICTs implementation in the healthcare sector remains a major challenge (Berg, 2001). Yet ICTs have been proposed as a service improvement enabling tool to address some of the challenges faced by the healthcare in general and the public healthcare sector in particular in developing countries (Lippeveld et al., 2000; Info Dev 2006; Wu et al., 2007).

The implementation of ICTs has different facets and influential factors that need to be understood. One such facet is IS strategy and IS strategy implementation. The strategic role of ICT is generally addressed through the alignment of an organisation's business strategy and IS strategy and the consequential strategic planning process (Bartenschlager & Goeken, 2009). This process consists of three major process groups: formulation, implementation, and monitoring (Cohen & Cyert, 1973). One of the outcome of the strategic planning process is the IS strategy. Although there has been extensive research on the strategic role of IS, it is reported that IS strategy implementation hasn't received as much research attention as IS strategy formulation (Bell et al., 2010).

In comparison with other organisations and/or sectors, public hospitals lag behind in the implementation of IS strategy and ICTs. Moreover healthcare service provision at public hospitals is characterised by the involvement of different stakeholders with different values, interests and cultures. It is argued that these stakeholders should be a key consideration in the implementation of IS strategy. Although this is a general observation, there are few studies that have explored the influence of stakeholder relations on the implementation of IS strategy in the public hospitals in developing countries such as South Africa.

In this study, we therefore investigated the interplay between stakeholder relations and the implementation of IS strategy in public hospitals in South Africa with the aim of developing a framework of how stakeholder relations influence the implementation of IS strategy in public hospitals in South Africa. The findings of this study contributes to the body of knowledge on IS strategy implementation in the context of public hospitals and to the IS strategy implementation practice.

2.9 Chapter summary and conclusion

In this chapter we presented a review of the literature on the concepts of stakeholder relations and the implementation of IS strategy in public hospitals in South Africa. We firstly presented an overview of IS implementation, secondly we explored IS implementation in the context of the healthcare environment, thirdly we explored ICTs in the context of the South African public health sector, fourthly we provided an overview of IS strategy implementation with a focus on SISP, fifthly we discussed the concept of IS strategy in the context of public hospitals in South Africa, sixthly we provided an overview of the notion of stakeholder in the context of ICT in the healthcare sector, in the end we described the research gap that constituted the aim of this study. In this regard we highlighted the need for research on the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa.

CHAPTER 3: THEORETICAL FRAMEWORK: ActAD FRAMEWORK

3.1 Introduction

This chapter describes the theoretical framework used in this study. Researchers in the IS field borrow from existing disciplines to explore IS phenomena. Walsham and Sahay (2006) emphasise the need to choose and use the appropriate theory for a study and to adapt or contextualise this theory to the nature of the study.

The exploration of stakeholder relations and the implementation of IS strategy in public hospitals in South Africa is a socio-technical research endeavour which necessitates the use of a socio-technical theoretical framework. For many years the interaction with ICTs and IS has revealed the socio-technical nature of different aspects of and issues associated with ICT and IS (Piotti & Macome, 2007). In the healthcare environment Talmon (2006) emphasises the socio-technical nature of the implementation of IS and the need to understand this socio-technical environment when IS implementation is envisaged. AT is one of the many socio-technical theories that allow the exploration of human activities within their contexts. AT is known to be a theory that “analyses human beings in their natural environment” (Nardi, 1996, p. 107). The ActAD framework, an enhancement of AT, is particularly relevant in the exploration of the multi-actor, multi-sub-activities nature of a joint activity (Korpela et al., 2000). Hence we selected AT as the explorative lenses for this study. In this study AT has been used at two levels: firstly, in the formulation of the interview questionnaire and secondly in the analysis of the collected data.

This chapter is structured as follow: we firstly present an overview of AT with an emphasis on its origins, principles, limitations and the ActAD framework, a variation of AT. We then discuss the use and relevance of AT in research in general and in IS research in particular. We lastly provide an elaboration of how the ActAD framework has been used in this study.

3.2 Activity theory overview

3.2.1 Activity theory origins

AT, also known as Cultural-historical activity theory (CHAT), has its origins in Psychology and Anthropology (Cole, 1985) but can have its roots traced back to the 19th century classical German philosophy (Kagawa & Moro, 2009). Engestrom (2001) describes how the theory emerged in the 1920s and 1930s and how the theory was primarily developed through the work of Russian psychologists Vygotsky (1978) and Leont'ev (1978). In a summary of the philosophy behind AT, Kaptelinin (1996, p. 53) describes AT's philosophy as "an attempt to integrate three perspectives: the objective, the ecological and the socio-cultural". Over the years, AT has evolved through three generations and based on the work of three scholars: Vygotsky, Leont'ev and Engestrom (Roth & Lee, 2007). Engestrom's work is rooted into Marxism and "mediated through the work of Vygotsky" (Avis, 2007, p. 162).

3.2.2 Structure of an activity

The first generation AT is based on Lev S. Vygotsky's work and the concept of mediated social process. Vygotsky's model is generally referred to as "the triad of subject, object, and mediating artefact" (Engestrom, 2001, p. 134). The second generation AT is based on the work of Aleksander Luria and Aleski N. Leont'ev (Engestrom et al., 1999). Aleksander Luria and Aleski N. Leont'ev are Vygotsky's students who further developed the concept of mediated social process (Roth & Lee, 2007). Leont'ev introduced the notions of actions, operations and activity and the corresponding concepts of motive, goal and condition (Kuuti, 1996). Leont'ev (1978) suggests that human activity can only exist in the form of action or a chain of actions. He emphasises that the differentiating factor between activity systems is the difference in activity objects: each activity has its specific object. The third generation is based on Engerstom's work. The third generation aimed at addressing some of the flaws of its predecessors and "to develop conceptual tools to understand dialogue, multiple perspectives, and network of interacting activity systems" (Engestrom, 2001, p. 135).

In his extended version of AT, Engestrom (1987) proposed a framework which is referred to as the third generation CHAT (Roth & Lee, 2007) and which is seen as “the best kept secret of academia” (Engestrom, 1993, p. 64). This framework is generally accepted as the current version of AT (Langemeyer & Roth, 2006). AT has become “international and multidisciplinary” (Engestrom et al., 1999, p. 20). Although Engestrom’s form of AT is sometimes referred to by certain scholars as the current form of AT, it should be noted that there have been different variations that have emerged from different scholarly elaborations of the preliminary forms of AT. Figures 3.1, 3.2 and 3.3 provide an illustration of the structures of an activity from Vygotsky, Leont’ev and Engestrom perspectives respectively.

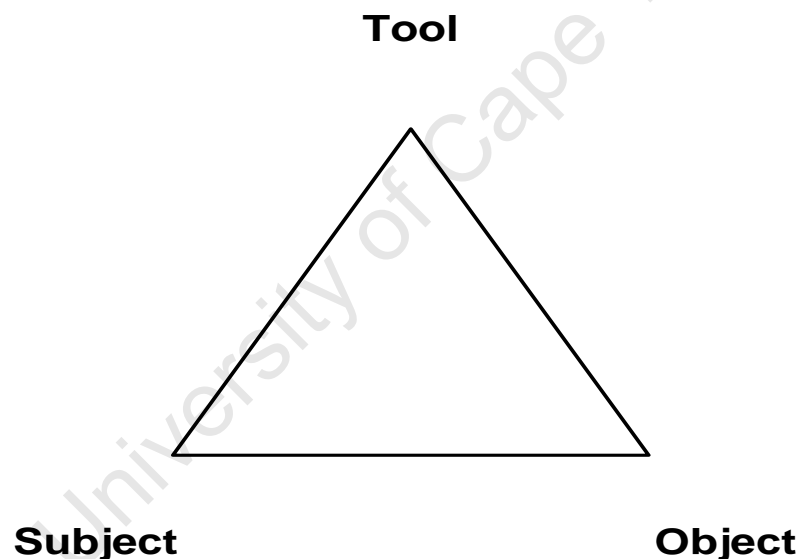


Figure 3.1: Vygotsky’s model of tool-mediated action

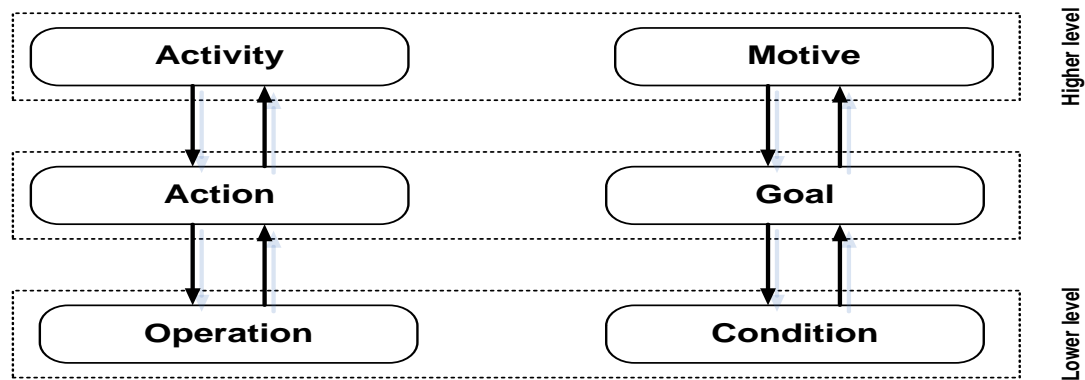


Figure 3.2: Leont'ev concepts of action, operations and activity

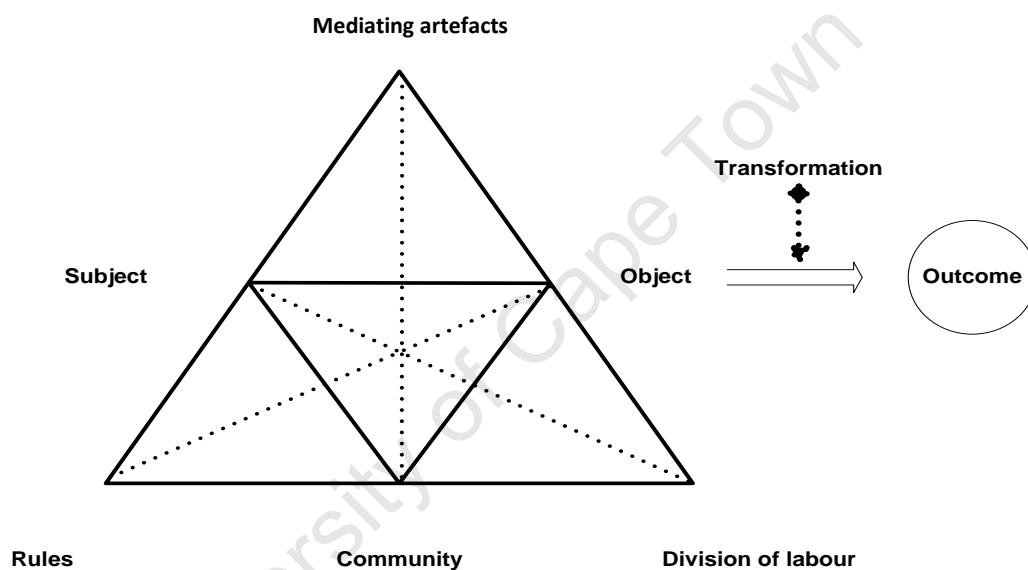


Figure 3.3: Engeström's extended activity framework

AT evolution has resulted in the move from Vygotsky's basic single triangle model of tool-mediated action to Engeström's detailed model of an activity system as illustrated in Figure 3.1. Vygotsky's model on the one hand consists of the following elements: subject, tools and object. Leont'ev (1978) on the other hand, suggested that an activity consisted of the following components: needs, motives, goals, actions and operation. Engeström's extended model, on the other hand, consists of elements of Vygotsky's model and the following additional elements: rules, community and the division of labour. All these elements "influence each other"

(Uden, 2007, p. 86). An activity aims at transforming an object and activities can be differentiated based on their respective objects (Kuuti, 1996).

The structure of an activity system is summarised by (Roth, 2009, p. 65) as follows:

“The subject, the conscious means of production, community, division of labor, rules, and object, exist as objectively experienced societal and material structures in the world that other actors can use as resources in their actions”.

Langemeyer and Roth (2006, p. 29) note that:

“An activity system is supposed to represent collective forms of practice and should allow not only grasping the entire structure of an activity, but also the history of practices, its changes and developments”.

The structure of an activity is summarised by Uden (2007) as composed of the following 3 elements:

- (1) The interrelation between the subject and the object is mediated by the tool (or mediating artefact),
- (2) The interrelation between the subject and the community is mediated by rules
- (3) The interrelation between the community and the object is mediated by the division of labour.

3.2.3 Principles of activity theory

AT principles are summarised by Engestrom (2009, p. 309) as follow: “AT is a theory of object-driven activity. Objects are concerns; they are generators and foci of attention, motivation, effort, and meaning. Through their activities, people constantly change and create new objects. The new objects are often not intentional products of a single activity but unintended consequences of multiple activities.”

There are generally five basic principles of AT: Hierarchical structure of activity, Object-orientedness, Internalization and externalization, Mediation, and Development (Kaptelinin, 1996; Nardi, 1996). However it should be noted that the basic principle of AT is unity of consciousness (human mind as a whole) and activity

(human interaction with objective reality): “the human mind emerges and exists as a special component of human interaction with the environment” (Nardi, 1996, p. 107). These principles should be considered as an integrated system (Kaptelinin, 1996). The concept of activity is the focal point of AT (Victor Kaptelinin & Nardi, 2006).

Engestrom (2001, pp. 136-137) proposes the following five key principles of AT:

- (1) A collective, artefact-mediated and object-orientated activity system, seen in its network relations to other activity systems, is taken as the unit of analysis.
- (2) The multi-voicedness of activity systems. An activity system is always a community of multiple points of views, traditions and interests.
- (3) Historicity: activities take shape and get transformed over length periods of time.
- (4) The central role of contradictions as sources of change and development.
- (5) The possibility of expansive transformation in activity systems: activity systems move through relatively long cycles of qualitative transformations; as the contradictions of an activity system are aggravated, some individual participants begin to question and deviate from its established norms”.

Although AT has been extensively used, it does not provide a ready-made technique and procedures for research (Engestrom, 1987). Hence researchers adapt AT concepts and principles to the context of their studies.

3.2.4 Limitations of activity theory

AT has had its share of challenges. Engestrom et al. (1999) for example identify eight preliminary challenges of activity. These are: (1) Understanding transformation, (2) Collective and individual activity, (3) Structure and component of activity, (4) Different kinds of activity (5) Understanding communication, (6) Connections to other theories, (7) The biological and the social, and (8) Organising interdisciplinarity. AT has certain limitations. A major limitation of AT is its abstractness and its lack of concrete guiding principles of applicability and use in a given research setting (Hedestig & Kaptelinin, 2002).

AT has in the past being criticised in Russia and in many instances for having been at the time “an expression of totalitarian ideology” as contended by Lektorsky (1999, p. 65). He notes that some of the remarks about the flaws of AT have been voiced by previous AT scholars. These scholars claimed that AT was limiting in the sense that the human creative character had been ignored at the expense of the rather biased executor-like characteristic of human being portrayed by former AT theorists. He however argues that the relevance of AT and the credibility of some of its claims and principles cannot be dismissed.

3.2.5 Enhancements and variations of activity theory

From the early work of AT’s founders in Russia, there has been related scholarly discourses and theoretical expansion both in Russia and internationally. These discourses and expansions have led to the development of hybrid forms, shapes and denominations of enhanced AT. Engestrom et al. (1999) for example note that eight to nine decades ago since its emergence from the work of cultural-historical school founders Vygotsky, Leont’ev and Lyra, AT has seen certain enhancements. The preliminary work on AT has therefore generated great interest worldwide and has resulted not only in its wide use in different research domains but also its enhancement.

In the exploration of these enhancements, Engestrom (2001) proposes different generations of AT. Van Oers, Wardekker, Elbers, and Weer (2008) and Sannino, Daniels, and Gutierrez (2009) on the other hand proposes different elaboration levels and forms of AT. Hence in the literature on AT it is not unusual to come across differing terminologies that refer to AT. This reflects not only the expansion of AT but also the breadth of the discourse and development around the concept of activity and AT. Scholars of the developmental work research (DWR) in Finland have particularly played a pivotal role in the expansion of AT in Eastern Europe. Engestrom, the founder of the Center for Activity Theory and Development Work Research in Helsinki in 1994, has particularly made great theoretical and methodological contributions to AT (Engestrom, 2005).

3.2.6 Role and relevance of activity theory in research

AT's global relevance and use has grown steadily (Hong, Yang, & Cheng, 2007). Its role and relevance expands beyond its field of origin. In this regard Engestrom et al. (1999, p. 8) contend that "AT should not be regarded as a narrow psychological theory but rather as a broad approach that takes new perspective on and develops novel conceptual tools for tackling many of the theoretical and methodological questions across the social sciences today". They argue that the breadth of AT's contribution extends to various domains. AT use has expanded to different research fields including science education (Plakitsi, 2013), HCI (Kaptelinin, 1996), IS and IS development (Mursu et al., 2007)

Perhaps one of the many points of relevance of AT is its use beyond its field of origin - psychology – and its adoption as a practical theoretical framework in different research fields and domains. In their evaluation of the contribution of AT in research in China, Hong et al. (2007) emphasise this. They identify the following four main contributions of AT: (1) the expansion and application of the principle of unifying activity with consciousness in AT, (2) the introduction of the historicity principle into psychology, (3) Activity / activity system as an object (and unit) of analysis, and (4) the shift of psychological study from the strictly controlled lab experiments to natural life situations.

AT spread and use at international level coincided with major political and economic systems transformations worldwide such as the liberation of Nelson Mandela from prison and the fall of the Berlin wall (Engestrom, 2005). As AT is continuously used as a theoretical framework by various scholars, two major tendencies have emerged in the literature: the individual (and not always clear) use of AT concepts, and the critical exploration of AT use (Engestrom, 2009).

3.3 Activity Analysis and Development (ActAD) framework: an enhanced form of AT

One of the many AT enhancements is the Activity Analysis and Development (ActAD) framework (Korpela et al., 2000). In this enhancement of AT the emphasis is on the importance of understanding how individual actions contribute to the attainment of a joint activity objective. As such and as highlighted by Korpela et al. (2000) individual actions are elements of a systemic entity where a system encompasses and is greater than all its constitutive elements taken individually. In their proposed framework, a framework developed with the aim of attaining a more practical AT-based framework, Korpela et al. (2000) emphasise the multi-actor nature of an activity system. In this systemic activity, a network of actors are involved in a network of sub-activities whose joint outcomes contribute to the attainment of the outcome of a joint activity as illustrated in Figures 3.4, 3.5 and 3.6 (Mursu et al., 2007).

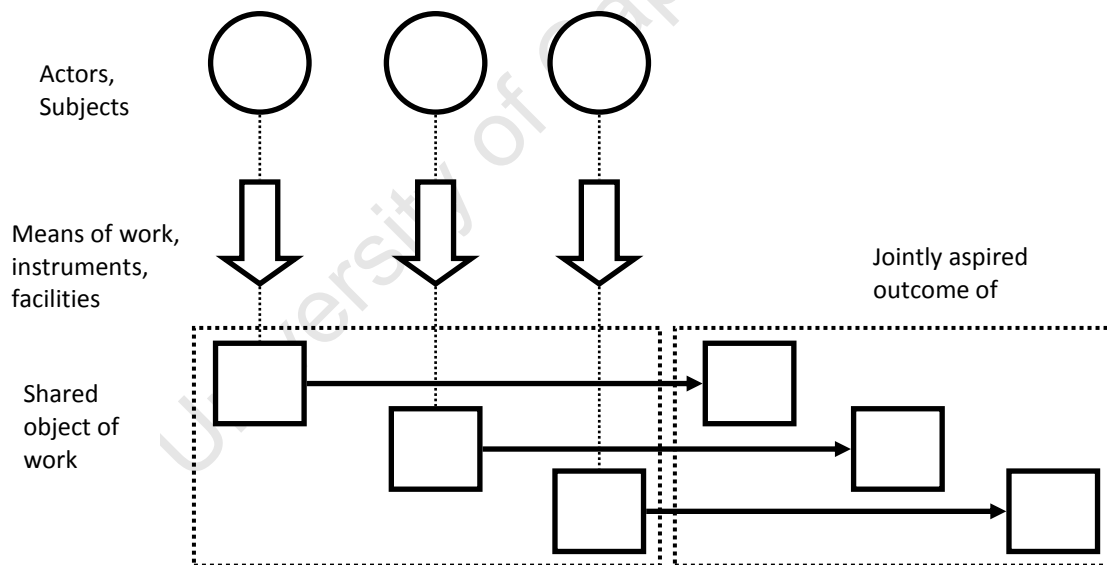


Figure 3.4: Individual actions merging into an activity (Korpela et al., 2000)

The ActAD framework consists of the following activity elements: (1) Collective Actors: groups, team, community of practice; (2) Means of coordination and communication: division of work, rules, etc; (3) Actors: Individuals or groups; (4) Tools/Mean of work: mental instruments, facilities; (5) Object; (6) Outcome; (7) Individual/group work process and action; (8) Mode of operation: historical phases;

(9) Relations with other activities and the network of activities; (10) Contradictions. A key element in the ActAD framework is the emphasis on individual and group actions as well as the capturing of historical phases, the relations with other activities and the contradictions relating to any activity system. In the proposed ActAD framework, Mursu et al. (2007) identify the following levels of analysis: societal, organisational, group/activity and individual levels. Figures 3.4, 3.5 and 3.6 provide an illustration of their proposed individual actions merging into an activity, the collective work activity as a systemic entity, and the ActAD framework: the structure and relations of a work activity as a systemic entity respectively.

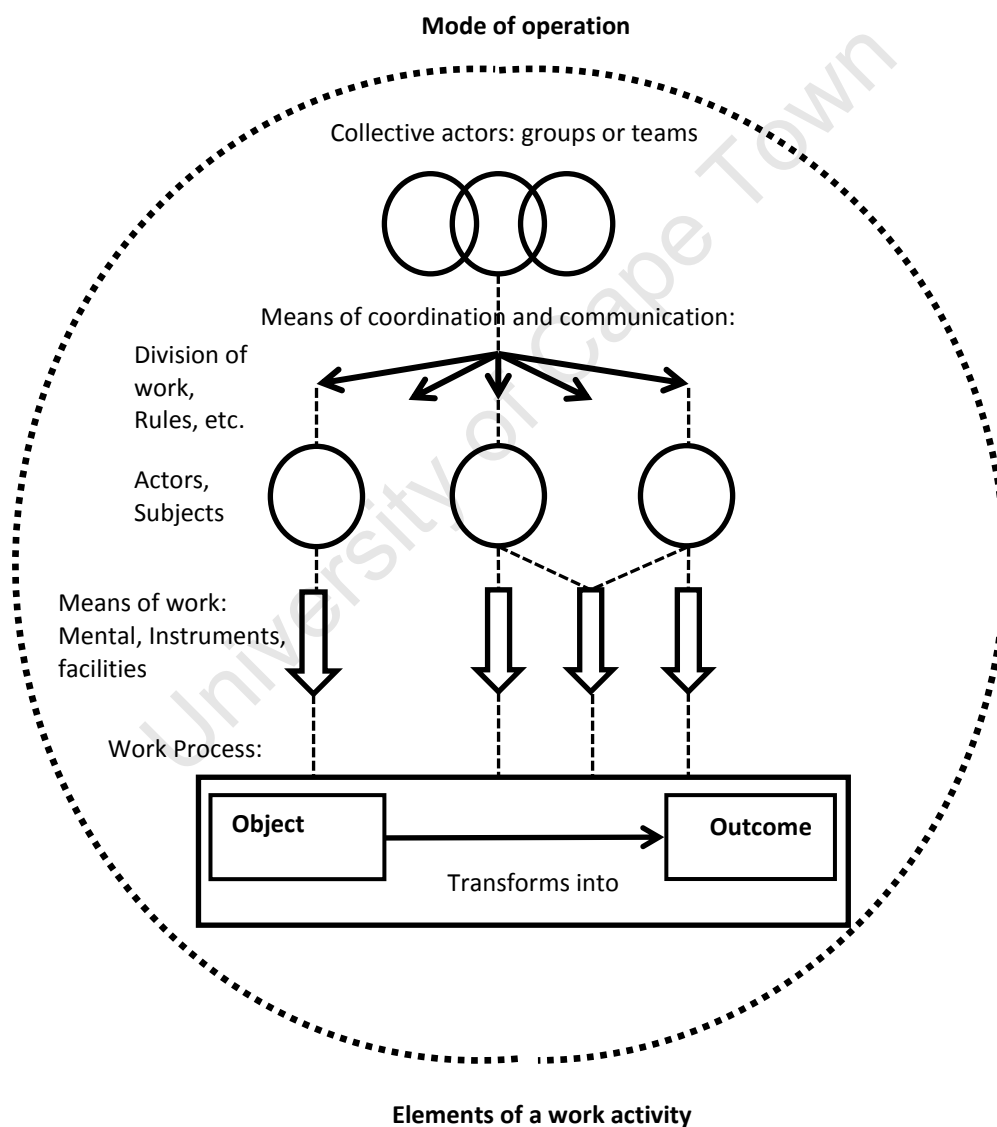


Figure 3.5: Collective work activity as a systemic entity (Korpela et al., 2000)

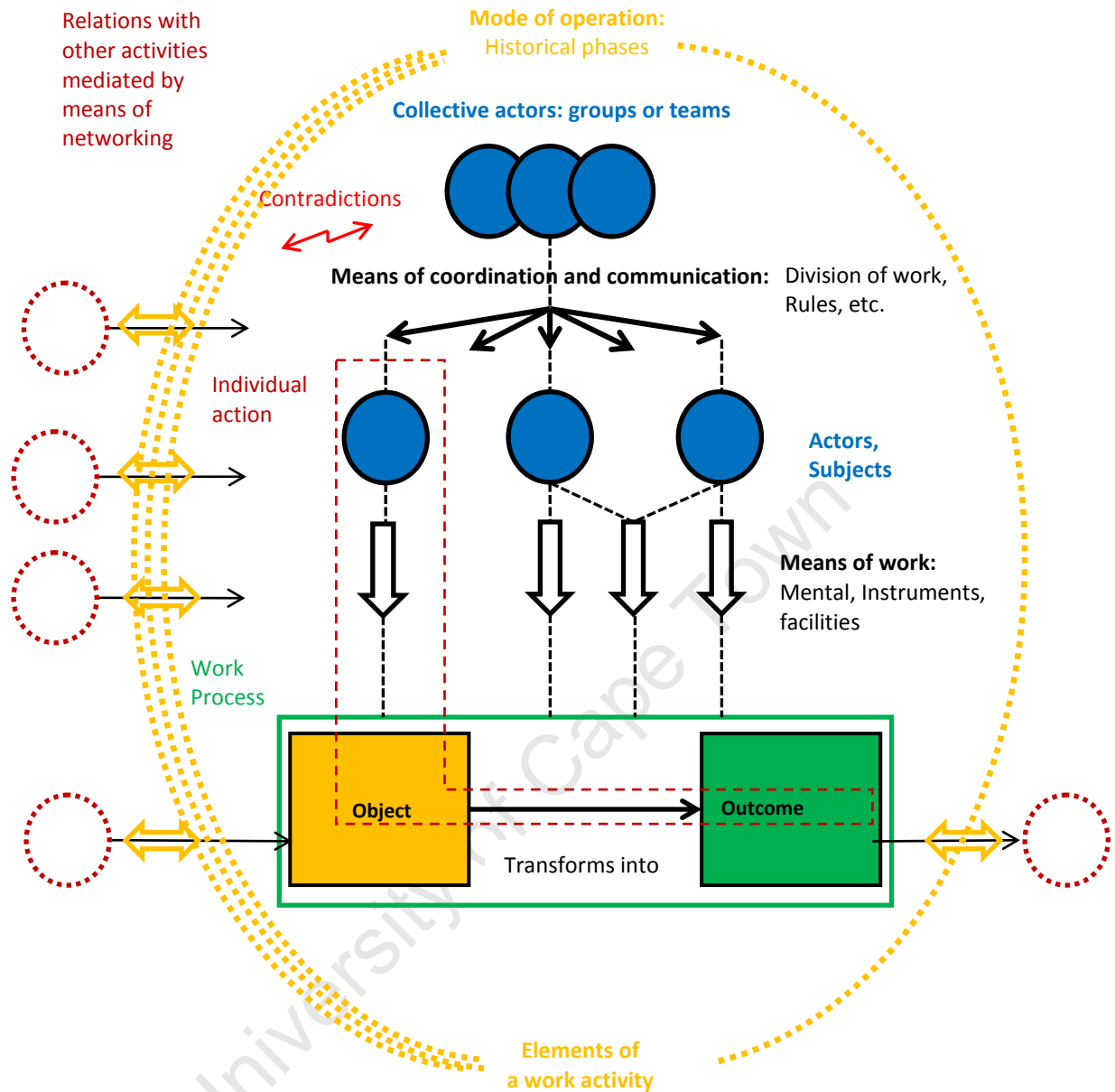


Figure 3.6: The ActAD framework: the structure and relations of a work activity as a systemic entity (Mursu et al., 2007)

3.4 Activity theory use in IS research

AT concepts are of a great relevance for IS research and IS researchers (Engestrom et al., 1999). Introduced for the first time as a research approach in IS in 1991 at the IFIP WG8.2 conference in Copenhagen, AT has since been applied for more than a decade by IS scholars (Mursu et al., 2007). AT has proven to be a relevant theoretical framework in IS research in general (Nardi, 1996) and it has earlier been considered

as an alternative framework in Human Computer Interaction (HCI) research (Kuuti, 1996). As early as 1991, Kuuti (1991) presented AT as an appropriate theory for IS research and development. Not only has AT been used in IS research; it has also been enhanced by IS scholars such as Korpela et al. (2000) in their proposed ActAD framework. Korpela et al. (2004) have used AT in general and ActAD in particular in IS research in the healthcare environment.

AT has been extensively used in the various studies in IS research. Uden, Valderas, and Pastor (2008) for example used AT to study web application requirements. They used AT as it gives room for the exploration of notion of understanding, history, mediation, motivation, culture and community. AT concepts provide exploratory lenses to various IS scholars. Hence its wide adoption as a theoretical framework in different IS research areas. AT has for example been used in the following IS research areas: the adoption of learning management systems (LMS) (Mlitwa & Van Belle, 2010), computer-supported cooperative work (CSCW), human computer interaction studies (HCI), Information systems development (ISD) (Korpela et al., 2000; Mursu et al., 2007).

AT use in IS research is expanding as it is a socio-technical theoretical framework. Moreover its concepts provide great exploratory capabilities for the IS research areas and the IS environment which is characterised by human activities mediated by IS and other tools, the interaction between human and technology and the consequential transformations such as organisational performance enhancement and service provision improvement.

3.5 Activity theory as a theoretical framework in this study

The implementation of or the execution of an IS strategy is a human activity and an activity system which is formally or informally undertaken to bring to life the content of an IS plan. Central to the implementation of IS strategy in general is the involvement of different stakeholders with differing attributes, views, and interests. In this activity system the interactions and relations among the different

stakeholders affects the objects of the constitutive activities and sub-activities. Hence our research phenomenon is seen as an activity system that can be seen in a systemic way as described by Mursu et al. (2007) and Korpela et al. (2000), an activity system where there exists a network of actors and a network of activities, an activity in which there is a need to understand the influence of the relations of the various stakeholders involved in the overall activity system.

From Engestrom's triangular representation of the research phenomenon, the IS strategy implementation activity system can be represented as illustrated in Figure 3.7. The following aspects can be derived from this representation:

- ❖ Who are the stakeholders who partake in the implementation of the IS strategy?
- ❖ What are the mediating factors in the IS strategy implementation activity system?
- ❖ What are the rules that guide the implementation of IS strategy?
- ❖ Who are the potential actors who are affected by/affect the implementation of IS strategy?
- ❖ What are the labour regulations that guide the designation of stakeholder groups involved in the IS strategy implementation
- ❖ What is the IS strategy?
- ❖ What IS strategy elements are implemented?

These aspects don't provide appropriate capabilities to capture and explore the influence of stakeholder relations which is represented by the cloud callout in Figure 3.7.

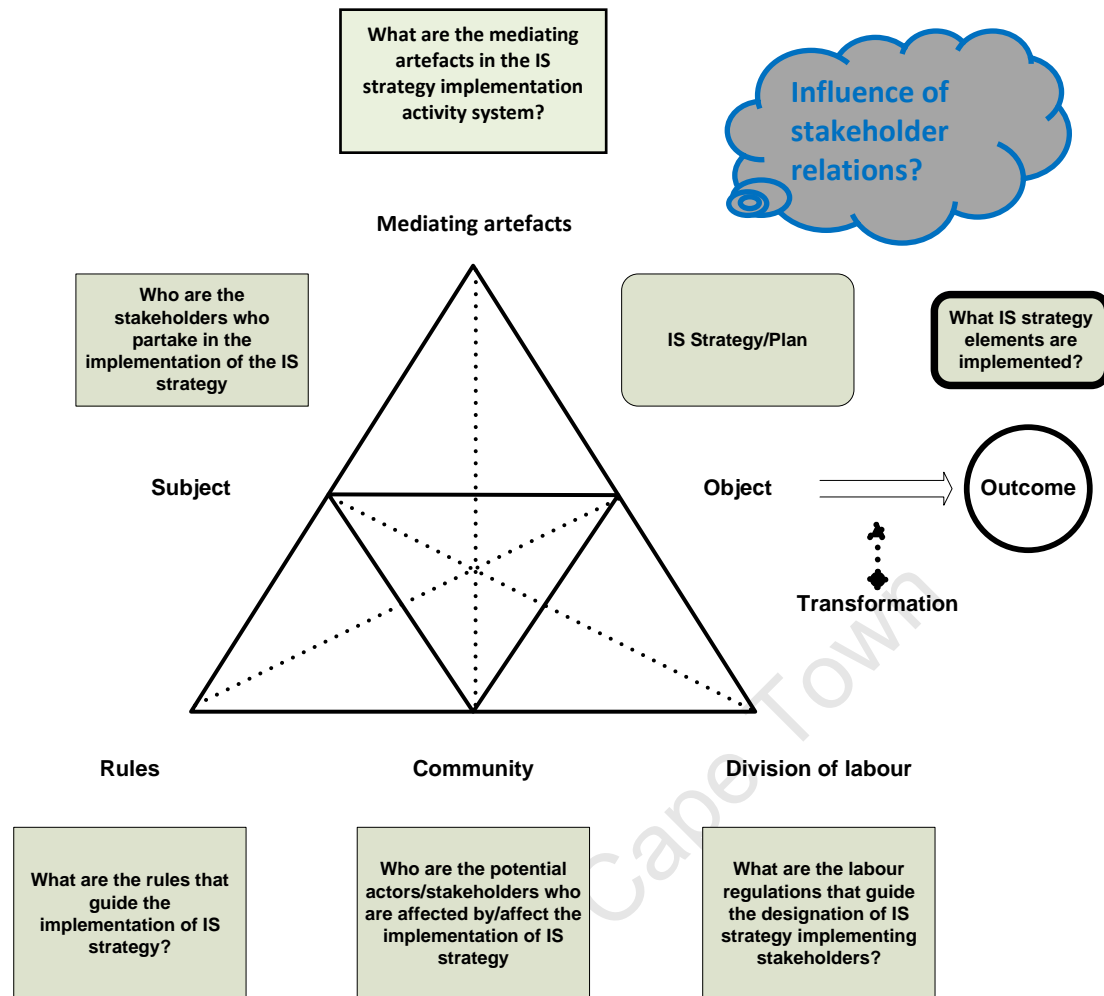


Figure 3.7: AT triangular representation of the research investigation

This AT triangular representation does not provide details about the individual actions of stakeholders/actors and the implications of their actions on the overall IS strategy implementation activity system. The ActAD framework, an enhanced version of AT, provides better exploratory capabilities of the research phenomenon. The ActAD framework highlights the multi actor nature of an activity system and the involvement of a network of actors in a network of sub-activities contributing to the attainment of the joint outcome of an activity system. The ActAD framework's concepts provide better exploratory capabilities of the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa. A detailed representation of the research phenomenon captured using ActAD is illustrated in Figure 3.8.

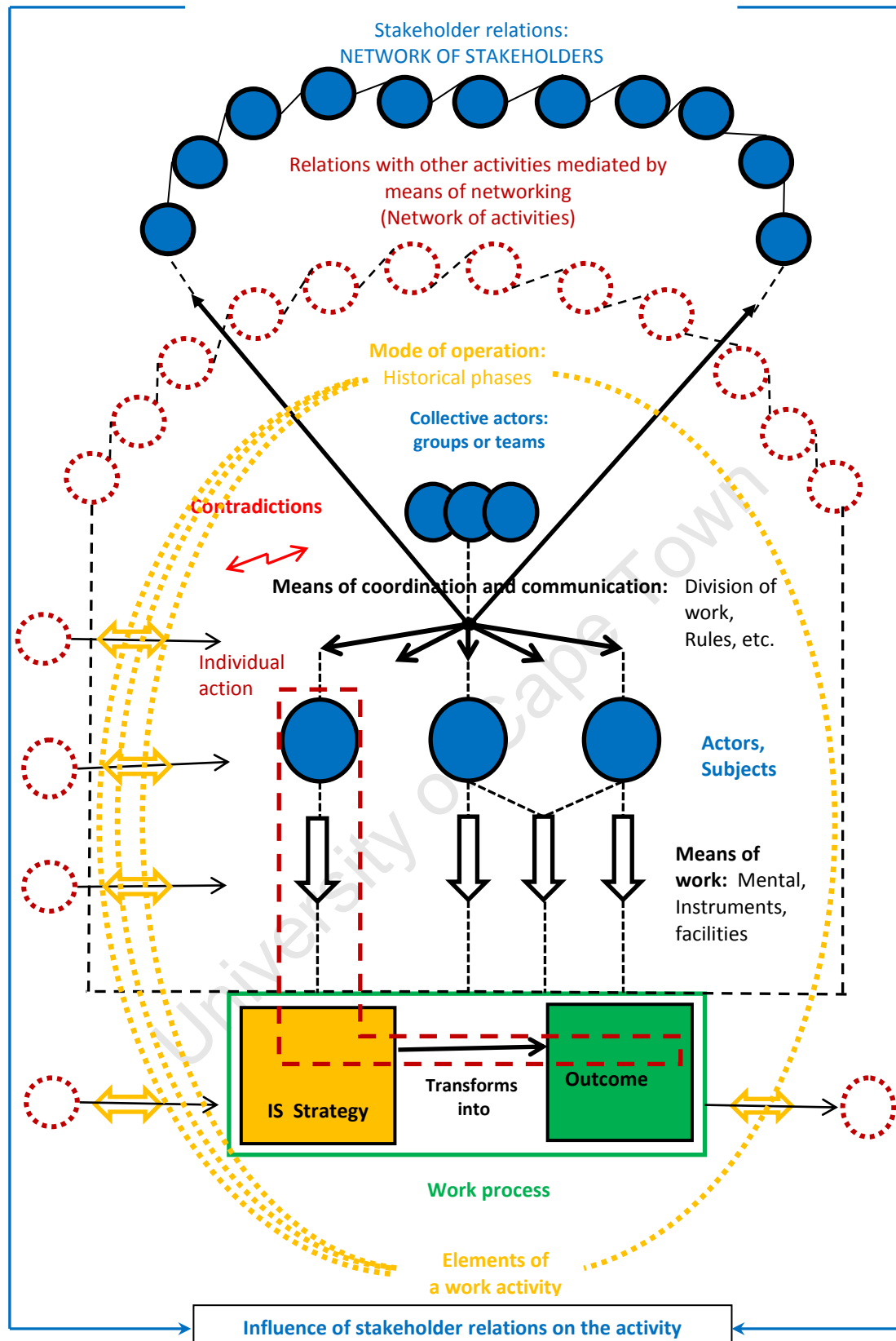


Figure 3.8: The research phenomenon from an ActAD framework perspective

In this study we have selected ActAD to guide our investigation of the influence of stakeholder relations on the implementation of IS strategy as it provides detailed exploratory capabilities of how stakeholder relations influence the implementation of IS strategy in public hospitals in South Africa in a historical manner. Figure 3.9 provides an illustration of how ActAD has been adapted for the purpose of this study. We preferred a slightly linear representation of ActAD so as to facilitate the capturing of the various stakeholder relations influential elements of the implementation of IS strategy.

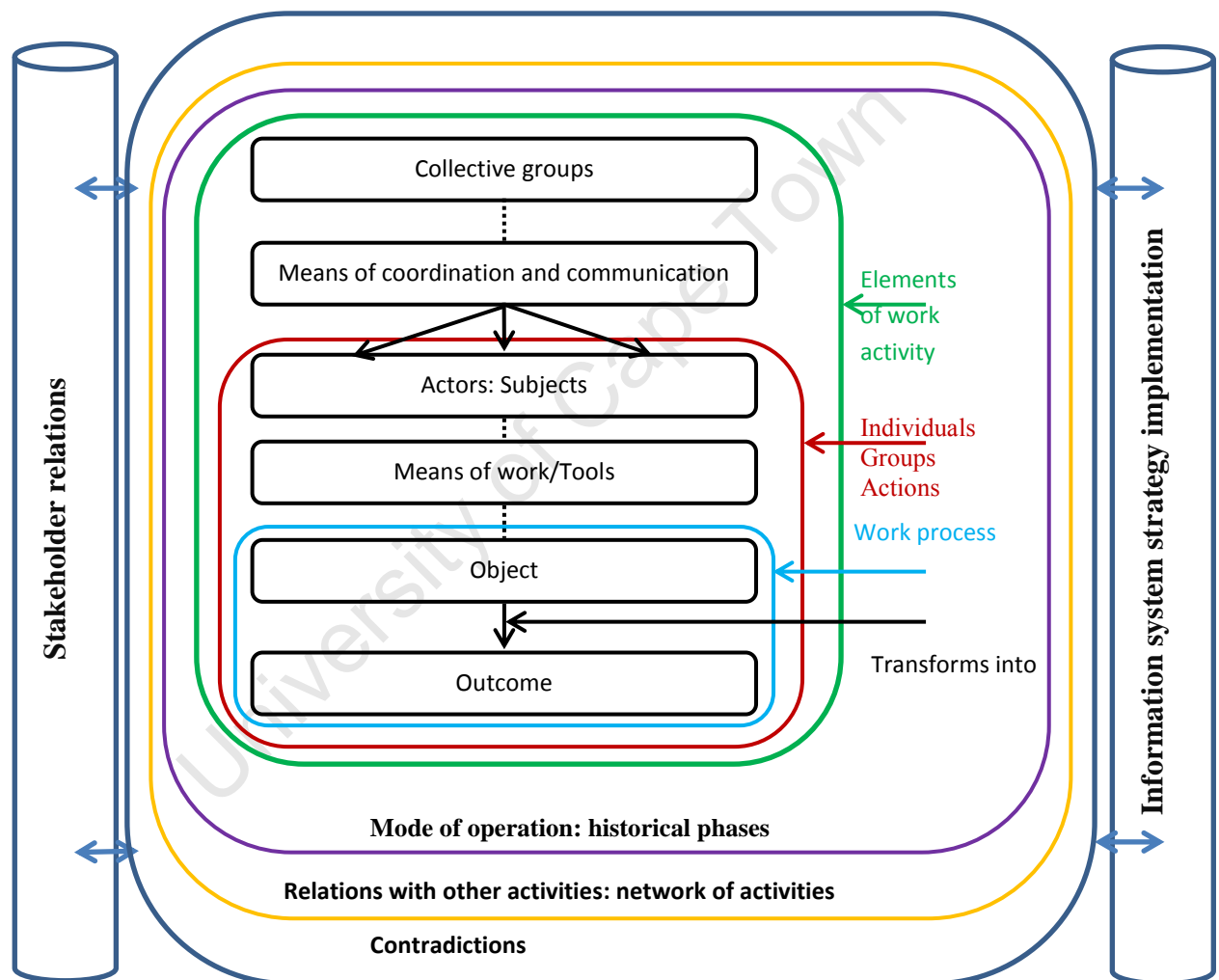


Figure 3.9: ActAD framework adaptation for the purpose of the study

As an activity system and from an ActAD perspective, the implementation of IS strategy is an activity whereby a strategy is “transformed” into implemented strategy elements and where historical events influence the implementation

process. This transformation is done in a systemic way by a network of selected stakeholder group who use various mediating artefacts in the individual and group processes. In this activity system there is a network of intertwined activities that complementarily contribute to the overall IS strategy implementation process and the attainment of the final objectives of the implementation of the IS strategy. Although there are means and modalities of coordination, communication and work, there always exist contradictions that are inevitable in an activity system and that contribute to the activity system.

We have therefore used the ActAD framework as the theoretical framework at two levels on this study: firstly in the formulations of the interviews questionnaire for the data collection and in the analysis of the collected data; secondly the ActAD framework concepts have allowed us to explore the complexity of stakeholder relations and their influence on the implementation of IS strategy in public hospitals in South Africa. Using the ActAD framework we have been able to get insight into the research phenomenon that could have otherwise been missed.

3.6 Chapter summary and conclusion

This chapter presented the theoretical framework that was used to guide the exploration of stakeholder relations influence on the implementation of IS strategy in public hospitals in South Africa. We firstly presented an overview of AT with an emphasis on its origins, principles, its limitations, and the ActAD framework as one of its many variations. We then discussed AT use and relevance in research in general and in IS research in particular. We lastly provided an elaboration of how the ActAD framework has been used in this study. In the next chapter we present the research methodology that was followed in this study.

CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 Introduction

This study investigated the following research question as highlighted in Section 1.4: *How do stakeholder relations influence the implementation of IS strategy in South Africa's public hospitals?* This chapter presents the research methodology followed in this study. There are no prescriptive guidelines as to what the best approach or strategy is in the research process (Denscombe, 2007). However scholars have to choose the most appropriate methodology for their research endeavour and throughout the consequential research process depending on their inclination for a preferred methodology and the type of the research they undertake to conduct (Saunders, Lewis, & Thornhill, 2009). It is therefore imperative that the research process and associated concepts be well understood.

This study has been an interpretive qualitative research following a case study approach where semi-structured interviews, meetings, document analysis and physical artefacts observation have been used to collect data. The rest of this chapter is structured as follow: section 4.2 provides some background of the research process; section 4.3 discusses the philosophical underpinning of the study; section 4.4 present the research question that we investigate in this study; section 4.5 describes the selection of the case studies; section 4.6 presents the research design of this study; section 4.7 describes the field work that was conducted; section 4.8 discusses the ethical implications of the study; and sections 4.9 describes the encountered challenges; and section 4.10 discuss the lessons learnt.

4.2 Background on qualitative research

4.2.1 The research process onion

The research process is complex and intricate. The notions of epistemology, theoretical perspective, methodology and methods are an illustration of this complexity (Crotty, 1998). The intricacies of the research process can be explored

through Saunders et al. (2009) “research process onion” as illustrated in Figure 4.1. From the outer layer to the inner layer of the research process onion’s the following groups of research process concepts are identified: philosophies, approaches, strategies, choices, time horizons, and techniques. The outer layer or philosophies’ layer represents the research philosophy. The research philosophy determine the researcher’s assumptions about the world, assumptions which in turn will guide the use or choice to follow a certain research strategy and the associated research methods (Saunders et al., 2009). Hence the different terminologies that are encountered can be mapped according to this research process onion. From the outer layer to the inner layer we distinguish the following groups of research process elements:

- ❖ Philosophies consisting of: positivism, realism, interpretivism and pragmatism
- ❖ Approaches consisting of: deductive and inductive approaches
- ❖ Strategies consisting of: experiment, survey, case study, action research, grounded theory, ethnography and archival research
- ❖ Choices consisting of: mono method, mixed methods and multi-method
- ❖ Time horizons consisting of: cross sectional and longitudinal research
- ❖ Techniques and procedures for data collection and analysis

It should however be emphasised that the research onion classification provides just an illustration of the intricacies of the research process. Scholars such as Saunders et al. (2009) for example provide a different illustration of the research process.

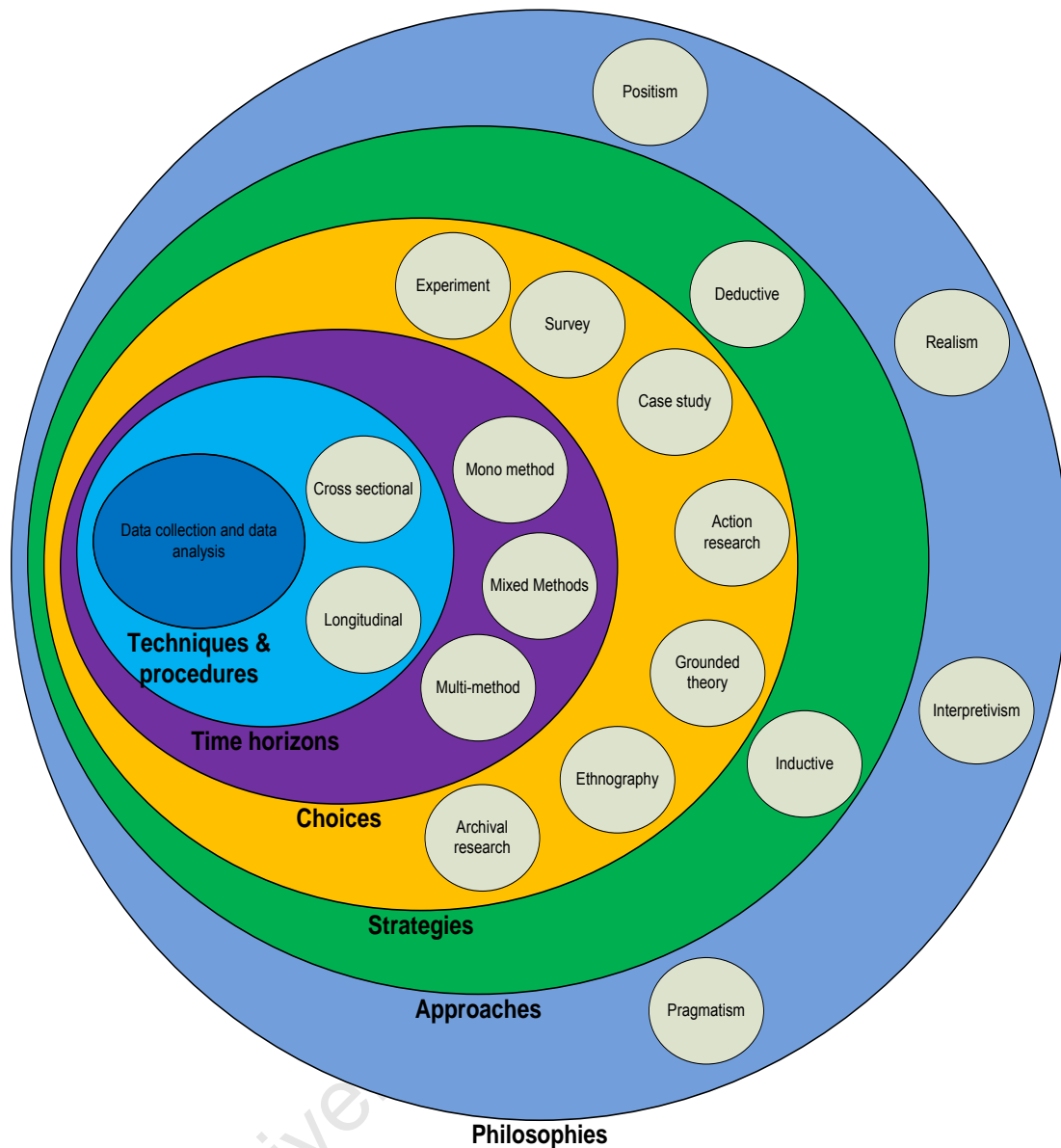


Figure 4.1: Research process onion (Adapted from Saunders et al 2003; 2006)

To contextualise research philosophies, Saunders et al. (2009) emphasise the association of research philosophies with the concept of research paradigm in social sciences. Table 4.1 provides a comparison of four paradigms in social science research based on each paradigm's ontology, epistemology, axiology and data collection techniques.

Table 4.1: Comparison of four research philosophies (Saunders et al., 2009, p. 119)

| | Positivism | Realism | Interpretivism | Pragmatism |
|--|---|---|---|---|
| Ontology Researcher's view of the nature of reality or being | External, objective and independent of social actors | Is objective. Exists independently of human thoughts and beliefs or knowledge of their existence (realist), but is interpreted through social conditioning (critical realist) | Socially constructed, subjective, may change, multiple | External, multiple, view chosen to best enable answering of research question |
| Epistemology Researcher's view regarding what constitutes acceptable knowledge | Only observable phenomena can provide credible data, facts. Focus on causality and law like generalisation, reducing phenomena to simplest elements | Observable phenomena provide credible data, facts. Insufficient data means inaccuracies in sensations (direct realist). Alternatively, phenomena create sensations which open to misinterpretation (critical realism). Focus on explaining with a context of contexts | Subjective meaning and social phenomena. Focus upon the details of situation, a reality behind these details, subjective meanings motivate actions. | Either or both observable phenomena and subjective meanings can provide acceptable knowledge dependent upon the research question. Focus on practical applied research, integrating different perspectives to help interpret the data |
| Axiology Researcher's view of the role of values in research | Research is undertaken in a value-free way, the researcher is independent of the data and maintains an objective stance | Research is value laden; the researcher is biased by the world views, cultural experiences and upbringing. These will impact on the research. | Research is value bound, the researcher is part of what is being researched, cannot be separated and so will be subjective | Values play a large role in interpreting results, the researcher adopting both objective and subjective points of view |
| Data collection techniques | Highly structured, large samples, measurement, quantitative, but can use qualitative | Methods chosen must fit the subject matter, quantitative or qualitative | Small samples, in-depth investigations, qualitative | Mixed or multiple method designs, quantitative and qualitative |

There are three generally used/accepted philosophical paradigms in qualitative research that are based on the underlying research epistemology: positivist, interpretive, and critical (Myers, 2009, p. 37). In addition to these three philosophical paradigms, there exists constructivism (Guba & Lincoln, 1994).

4.2.2 Qualitative research

Qualitative research is known to be driven by the need to investigate a research phenomenon in society within its context through direct interaction with the research subjects and the explorations of these subjects' (individuals or groups) perception of reality and creation of meanings in their contextual environment (Creswell, 2009; Sarantakos, 2005). Qualitative research's roots are engrained in three theoretical principles: relativism, constructionism, and interpretivism (Sarantakos, 2005). Qualitative research is known to be naturalistic, dynamic, subject-oriented, informative and detailed, normative, constructionist, context-sensitive, reflexive, open, flexible, empathetic, communicative, subjective, interpretivist, holistic, inductive and small-scale (Sarantakos, 2005). Figure 4.2 highlights the possibilities of qualitative research.

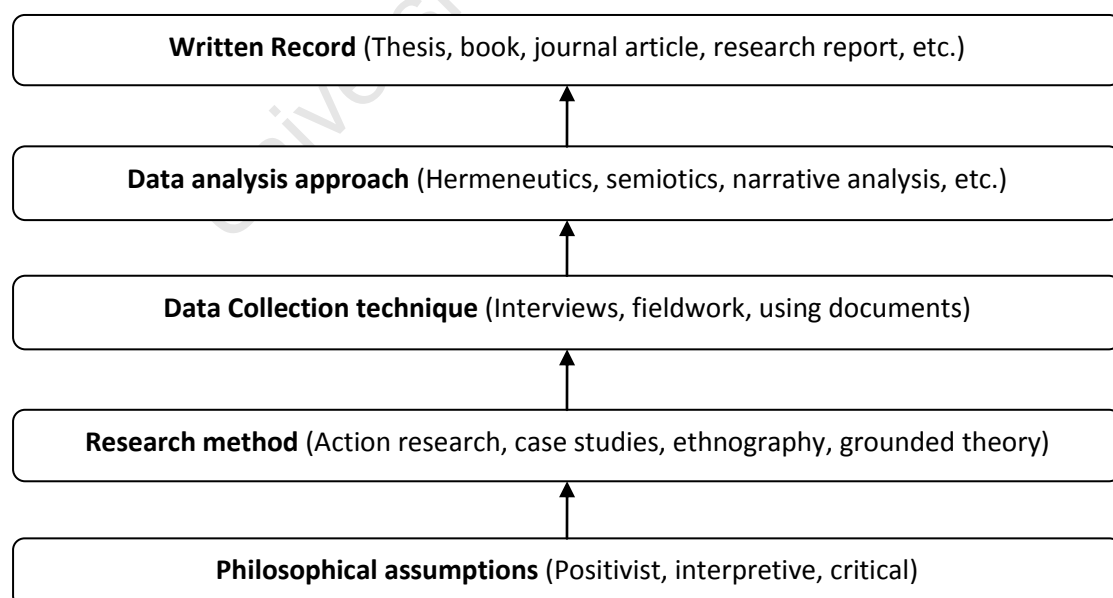


Figure 4.2: Possibilities of qualitative research (Myers 2009: 26)

There are different research methods that guide qualitative research/researcher. These include but are not limited to action research, case study research, ethnography, and grounded theory. Randolph (2008) and Creswell (2009) suggest that there are five major approaches to qualitative research, adding narrative research to the four approaches cited above. There are further qualitative inquiry strategies such as participatory action research, and discourse analysis as well. Table 4.2 provides a summary of some common strategies for data collection used in qualitative research.

Table 4.2: Common qualitative research strategies

| Strategy | Qualitative research strategy definition |
|----------------------------------|--|
| Action research: | “Action research aims to contribute to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework” (Rapoport, 1970, p. 499). |
| Case study research | “A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin, 2009, p. 18). |
| Ethnography | An in-depth research strategy in which the ethnographer (researcher) immerses herself/himself into the research phenomenon’s contextual and cultural environment over a prolonged period of time (Myers, 2009) |
| Grounded theory | Termed “the discovery of theory from data” by Glaser and Strauss (1967, p. 1), grounded theory is defined by Urquhart, Lehmann, and Myers (2010, p. 357) as a qualitative research method that seeks to develop theory that is grounded in data systematically gathered and analysed”. |
| Narrative research | “a strategy of inquiry in which the researcher studies the lives of individuals and asks one or more individuals to provide stories about their lives.”(Creswell, 2009, p. 13) |
| Phenomenological research | “a strategy of inquiry in which the researcher studies the lives of individuals and asks one or more individuals to provide stories about their lives.”(Creswell, 2009, p. 13) |

There exist different strategies/techniques for the collection of data that are used when following the above described approaches. In qualitative research, the sources of data are generally the following: These data collection strategies include the following: observation, interviews, and documents (Myers, 1997). Although there are various sources of data, a distinction exists between primary and secondary sources of data. Primary data sources refer to the unpublished data which is gathered by the researcher directly from the people of the organisation. Secondary

data sources refer to any material such as books and articles that have been previously published. Data analysis in qualitative inquiry follows the following steps in an interactive iterative fashion (Creswell, 2009).

The preliminary thing to do when analysing qualitative data is to organise and prepare the data. This is followed by the task of developing a general understanding of the information that was conveyed by the participants. Once this general understanding is developed, then the researcher start with the coding process: grouping of portions of text, ideas from the collected data. This is followed by the process of developing themes: these themes emerge from the coded data. The last steps involve the description and the interpretation of the developed themes. It should be noted that researchers now use software for qualitative data analysis when necessary. In this study, the collected data was analysed using thematic analysis (Oates, 2006; Ritchie & Lewis, 2003). We provide more details on thematic analysis and the software that are used for qualitative data analysis in the study design section.

Qualitative research can be assistive to researcher in developing a deep understanding of the social and cultural context within which research subjects are active (Myers, 2009; Myers & Newman, 2007). Hence in this study we chose to follow qualitative research principles as this would help us to investigate our research phenomenon in its context and to develop a deep understanding of how stakeholder relations influence the implementation of IS strategy in public hospitals in South Africa.

4.2.3 Interpretive research overview

Interpretive research is based on the assumption that access to reality (given or socially constructed) is only through social constructions such as language, consciousness and shared meanings. Interpretive research entails the generation of conclusion through the interpretation of societal realities in their context and the

assigned meanings (Klein & Myers, 1999). There are no predefined parameters (variables) in interpretive research.

In this study, we opted for an interpretive philosophy, followed a mono method – qualitative research- and used cases study as a strategy. The techniques that we used to collect data include interviews, document analysis, physical-artefacts observation and archival records. We provide more details of this in the research design section.

The interpretive approach has been widely used in the field of IS (Skok & Legge, 2002). It is for example noted by Walsham and Sahay (2006) that the use of interpretive research approach by IS scholars has increased since the 1990s (Walsham & Sahay, 2006). For the purpose of this study, this approach allowed us to deeply explore the complexity of IS strategy implementation in public hospitals in South Africa and how stakeholder relations influence the implementation of IS strategy in the context of the South African public hospitals.

4.2.4 Case study approach overview

The case study approach is among the many approaches used in social science research (Yin, 2009). This approach has gained wide recognition and is frequently used by scholars in IS (Benbasat, Goldstein, & Mead, 1987; Klein & Myers, 1999) as it allows the exploration of complex multi-variable phenomena in their contextual natural settings (Ferlie, Wood, & Fitzgerald, 1999; Fitzgerald, 1999; Yin, 2009). In information system, case study research is known to be the preferred method for most qualitative studies (Darke, Shanks, & Broadbent, 1998). Case studies are an important data collection technique in interpretive research. Unlike surveys which “measure of few aspects of a relatively large number of cases, a case study observes a large number of aspects of relatively few cases” (Olivier, 2009, p. 10). One of the advantages of case studies is the fact that they allow a deep and detailed exploration of specific cases (Olivier, 2009).

In designing a case study, Yin (2009) suggests the following four possibilities: single-case and holistic designs, single case and embedded designs, multiple-case and holistic designs and multiple-case and embedded designs depending on the singularity and the multiplicity of the unit of analysis. The appropriateness of each type of design is dependent of the research question and the nature of an investigation. In general, case studies can be grouped in 3 as suggested by Stake (2005): intrinsic case studies, instrumental case studies, and multiple of collective case studies. Generally case studies can be conducted in two ways: single case study and multiple case studies as suggested by Yin (2009). He further suggests that an important consideration of the case study approach is the selection of the case study, and he suggests the following “modest advice in selecting case study designs”: firstly, preferential consideration of multiple-case studies over single-case studies if possible; secondly, flexibility and openness in conducting a case study as new developments/ might occur during the course of the study; and thirdly, consideration to combine other methods to the case study approach when necessary. In a multiple case study it is possible to test the protocols in a pilot study before embarking on the bigger study (Olivier, 2009).

There are advantages and disadvantages in using a case study approach. One of the advantages of case studies is the fact that they allow a deep and detailed exploration of specific cases (Olivier, 2009). As a strategy to address the various challenges in conducting case study research, Darke et al. (1998, p. 279) suggest that the following five questions be thought of when undertaking a case study research:

- (1) What kinds of research can be addressed using case study research approach?
- (2) How can a case study research project be designed, shaped and scoped in order to adequately answer a research question?
- (3) How can the participation of organisation in case study research be obtained?
- (4) How can case study data be collected from case participants in efficient and effective ways?

- (5) How can rigour be established in writing up case study research so that it is publishable in academic journals?

Denscombe (2007, pp. 45-46) identifies the following advantages and disadvantages of a case study approach as illustrated in Table 4.3.

Table 4.3: Advantages and disadvantages of case study approach (adapted from Denscombe, 2007:45-46)

| Advantages | Disadvantages |
|---|---|
| <ul style="list-style-type: none"> ❖ Focus on one or few instances allows the researcher to deal with the subtleties and intricacies of complex social situations. ❖ Use of variety of research methods in order to capture the complex reality under scrutiny ❖ Use of multiple source of data which in turn facilitates validation of data through triangulation ❖ The researcher has little control over events, hence there is no pressure on the researcher to impose control or to change circumstances ❖ Concentrated effort on one research site or a few sites ❖ Can be used in theory-building as well as in theory-testing | <ul style="list-style-type: none"> ❖ Credibility of generalisations: the point at which the case study approach is most vulnerable to criticism is in relation to the credibility of generalisations ❖ Perceived as producing soft data: the approach is accused of lacking the degree of rigour expected of social science research ❖ Difficulty in defining the boundaries of a case and implications for decision on what sources of data to incorporate and not to incorporate ❖ Time waste and difficulties in access to case study setting: research can flounder if permission is withheld or withdrawn. In case studies, access to documents, people and settings can generate ethical problems in terms of things like confidentiality ❖ Risk of 'observer effect': Those researched might behave differently from normal owing to the knowledge that they are "under the microscope" and being observed in some way. |

When conducting a case study, the investigator can use the following six tools: documentation, archival records, interviews, direct observations, participant-observation, and physical artefacts (Yin, 2009). Among these six, interviews are known to be the most used data collection technique in qualitative studies (Myers & Newman, 2007), and in social sciences (Lewis-Beck, Bryman, & Liao, 2004). In this

study we followed the following steps in the data collection process as proposed by Sarantakos (2005): gaining access (getting the required permission to investigate the case), meeting the appropriate people and establishing contacts, data collection, recording of data, partial data analysis, disengagement (maintaining positive relationships with the respondents), announce the end of the study an express appreciation for having been allowed to conduct the study.

This study has followed a case study method, a common method used in interpretive research and in qualitative IS research (Walsham, 1995b). The case study method and the data collection strategies used in this study are further described in the research design section. We used a multiple collective case study approach using interviews and supplementary techniques such as document analysis, physical-artefacts observation, and archival records when necessary. A multiple case study approach entails a joint investigation of a certain number of cases with the aim of investigating a given phenomenon (Stake, 2005).

4.3 Philosophical underpinning: interpretivism

This study has been a qualitative interpretive research. The foundation of the interpretive approach is the assumption of no predefined variables, and the understanding of the research phenomenon in its context based on the people's interpretation of the phenomenon (Myers, 1997). Walsham and Sahay (2006, p. 19) note that this approach "specifically aims to access the interpretations of stakeholders and other research participants and to bring out the authors' own interpretations". This view is further advocated by various scholars in social research. Sarantakos (2005) for example emulates this principle in his explanation of how the concepts construction and reconstruction contribute to the generation of interpretive meanings associated with social life and social actions. Researchers must take note of the fact that qualitative research does not imply interpretive research as qualitative research can take any of the above mentioned forms (positivist, interpretive, or critical) based on the predisposition and choice of a researcher (Myers, 1997).

4.4 Research methodology and research design

We have mentioned earlier that this study was conducted following a case study approach. In this section we provide a detailed description of how the study was conducted. Figure 4.3 provides an illustration of this study's research design.

We initially started with investigating in the general literature for two main reasons: firstly to identify the work that has already been done with regards to stakeholder relations and the implementation of IS strategy and to identify the research gap that we wanted to address; Secondly, to identify which theoretical elements can be assistive in the development of an understanding of stakeholder relations and the implementation of IS strategy in public hospitals in South Africa. We then conducted a preliminary investigation of the current state of IS that have been implemented in public hospitals in South Africa.

The aim was: firstly to establish the nature of IS strategy and whether an IS strategy guided the implementation or not, and secondly, to determine the landscape of stakeholders who were implicitly and explicitly involved in the implementation of IS strategy in public hospitals in South Africa. The findings from this initial investigation contributed to the views of IS strategy, and the identification of the stakeholders who were involved in the implementation of IS strategy in public hospitals in South Africa and the extent to which IS strategy had been implemented in South African public hospitals.

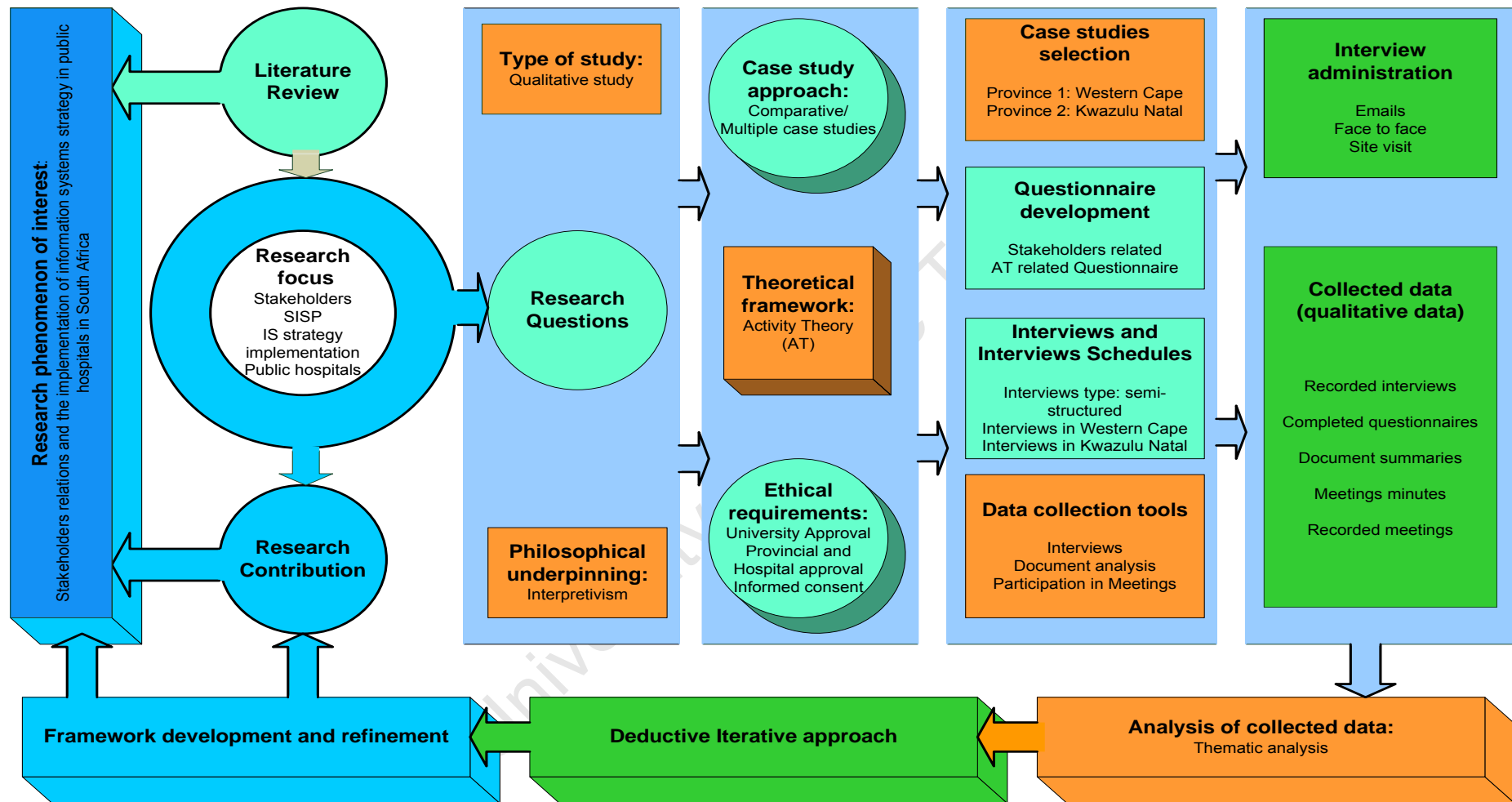


Figure 4.3: Research design

The preliminary investigation was followed by a stakeholder-targeted investigation which focused on the development of an understanding of how stakeholder relations were formed and how these relations influenced the implementation of IS strategy in public hospital in South Africa. This provided the foundation for identifying elements and concepts that later contributed to the development of a framework of the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa. The investigation was conducted using semi structured interviews. The collected data was analysed using thematic analysis. We used model building principles (Werthner, 1994) to develop the proposed framework.

4.4.1 Interviews as a data collection tool

Interviews – a key data collection tool in interpretive studies (Myers & Newman, 2007) – are planned to be conducted in the course of the study. Myers and Newman (2007) identify three types of interviews: structured interviews, unstructured interviews and group interviews. Interviews however have some limitations such as the following described by Myers and Newman (2007): artificiality of the interview, lack of trust, lack of time, level of entry, elite bias, Hawthorne effects, constructing knowledge, ambiguity of language, and the fact that interviews could go wrong.

There are different classifications of interview types. Sarantakos (2005) for example provides a broad typology of interviews which describes three major categories of interviews: the first category being that of structured and unstructured interviews, the second category is that of Delphi interviews and lastly, the category of other types of interviews which include analytic interviews, biographical interviews, convergent interviews, diagnostic interviews, dilemma interviews, elite interviews, ethnographic interviews, groups interviews, guided interviews, “hard” interviews, individual interviews, inquiring interviews, neutral interviews, open interviews, panel interviews, problem-centred interviews, receptive interviews, “soft” interviews, telephone interviews, and unique interviews.

Interviews can be administered in different ways. It should be noted that in the interview administration criteria, computerised interviews cannot be omitted in nowadays computerised era. In this regard, Sarantakos (2005) suggests the following examples of assistive computer packages for the conduct and administration of interviews: Computer-aided personal interview (CAPI), Computer-driven self-completion interview (CODSCI), Computer-aided telephonic interview (CATI), Computer-integrated survey research (CISUR), and “the data collector”.

There are advantages and disadvantages of using interviews as a tool to collect data. Some of these include the following as summarised in Table 4.4.

Table 4.4: Advantages and disadvantages of interviews (Adapted from Sarantakos 2005: 285-186)

| Advantages | Disadvantages |
|--|---|
| Flexibility, high response rate, easy administration, opportunity to observe non-verbal behaviour, less tedium, control over environment, capacity for correcting misunderstandings by respondents, control over the order of questions, opportunity to record spontaneous answers, control over the identity of the respondent, completeness, control over the time, data and place of the interview, ability to handle complexity, length. | Cost Bias Inconvenience Lack of anonymity Sensitivity |

In this study, data was primarily collected using interviews. The interviews were structured and semi-structured in nature and have been administered either directly or by email. Structured interviews were conducted based on a pre-compiled questionnaire. Semi-structured interviews were conducted in an informal fashion based on specific themes of the study. The preliminary interviews were conducted with the hospital personnel: manager, ICT manager, and any other staff members who were involved in the implementation of IS strategy. Additional interviews were conducted with other relevant individuals who had been identified from the preliminary interviews based on their involvement and role in the implementation

process. Additional data collection tools such as document analysis and physical-artefacts observation were used whenever necessary.

4.4.2 Case study data analysis: thematic analysis

It is argued by Yin (2009) that analysis of data collected using a case study approach is not an easy endeavour. He proposes the following four strategies to help researchers in the analysis of data collected using a case study approach: relying on theoretical propositions, developing a case description, using qualitative and quantitative data, and examining rival explanations. Apart from these strategies, he further suggests that scholar can use the following five analytical techniques which are also described by Sarantakos (2005): pattern matching, explanation building, time-series analysis, logic models, and cross-case synthesis. He also proposes the following four guidelines to ensure good case study analysis: attendance to all the evidence, addressing all major rival interpretations, addressing the most significant aspects of the case study, and the use of one's own prior, expert knowledge.

Thematic analysis is a data analysis technique that is used in a pattern of data development and recognition fashion (Fereday & Mui-Cochrane, 2006). It is defined by Braun and Clarke (2006, p. 6) as "a method for identifying, analysing, and reporting patterns within data". Through this process, themes emerge and are developed progressively as data is continuously sifted through and as patterns of data are identified. Ritchie and Lewis (2003) suggest the following guidelines for conducting a thematic analysis: identification of initial themes and concepts, constructing an index, coding the data, categorisation, and development of thematic chart, development of themes, and linking the developed themes to the aim of the study. These guidelines can be defined differently by different scholars but they describe the same thematic analysis procedural aspects. Fereday and Mui-Cochrane (2006) proposes a six stages process as illustrated in Figure 4.4 : developing the code manual, testing the reliability of codes, summarising data and identifying initial themes, applying template of codes and additional coding, connecting the codes and identifying themes, and corroborating and legitimating coded themes.

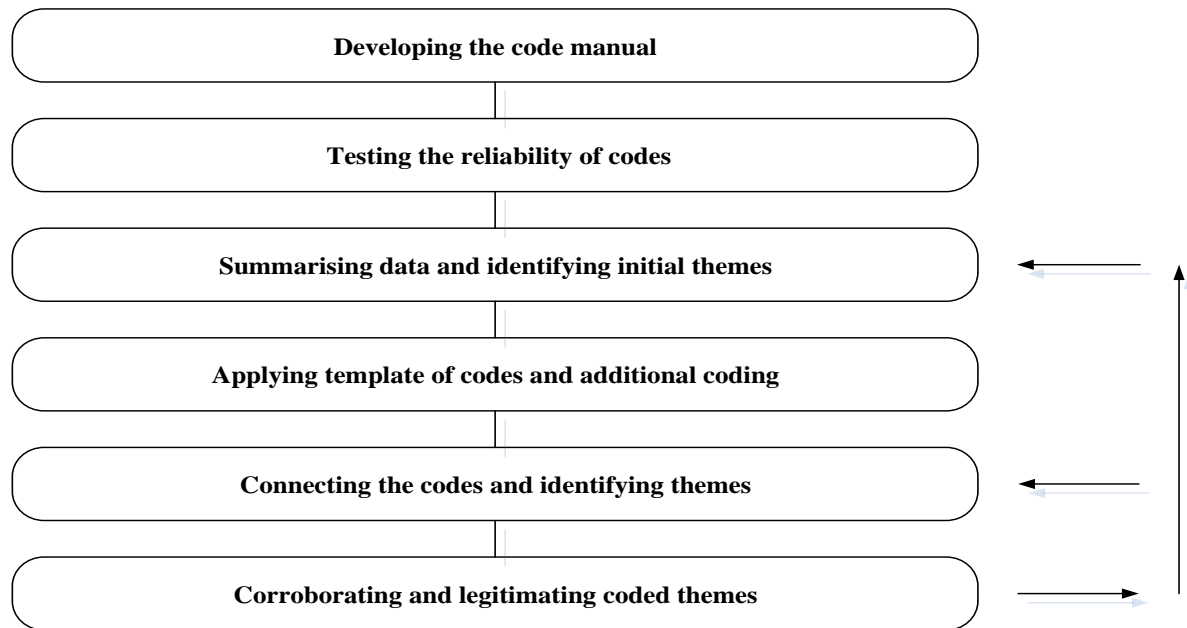


Figure 4.4: Thematic analysis process

Braun and Clarke (2006) note that thematic analysis is frequently used as a data analysis tool in qualitative research. They note that although there are various pattern identification methods such as interpretative phenomenological analysis (IPA) and grounded theory, thematic analysis distinguishes itself by not being “theoretically bounded”.

In this study, we followed these thematic analysis guidelines to analyse the collected data as illustrated in Figure 4.5. The analysis was conducted in a systematic manner consisting of identification of themes that emerged from interviews and the additional data sources. Hence we associated interview excerpt or citations from documents with the emerging themes. Later we grouped the themes into summarised themes in a tabular form. Appendices 14 and 15 provide a detailed account of the preliminary and secondary thematic analysis, coding and theme development levels of the five layered thematic analysis of the Western Cape Province case study data and the Kwazulu Natal case study data respectively. The process of thematic analysis was applied in a systematic iterative manner as illustrated in Figure 4.5.

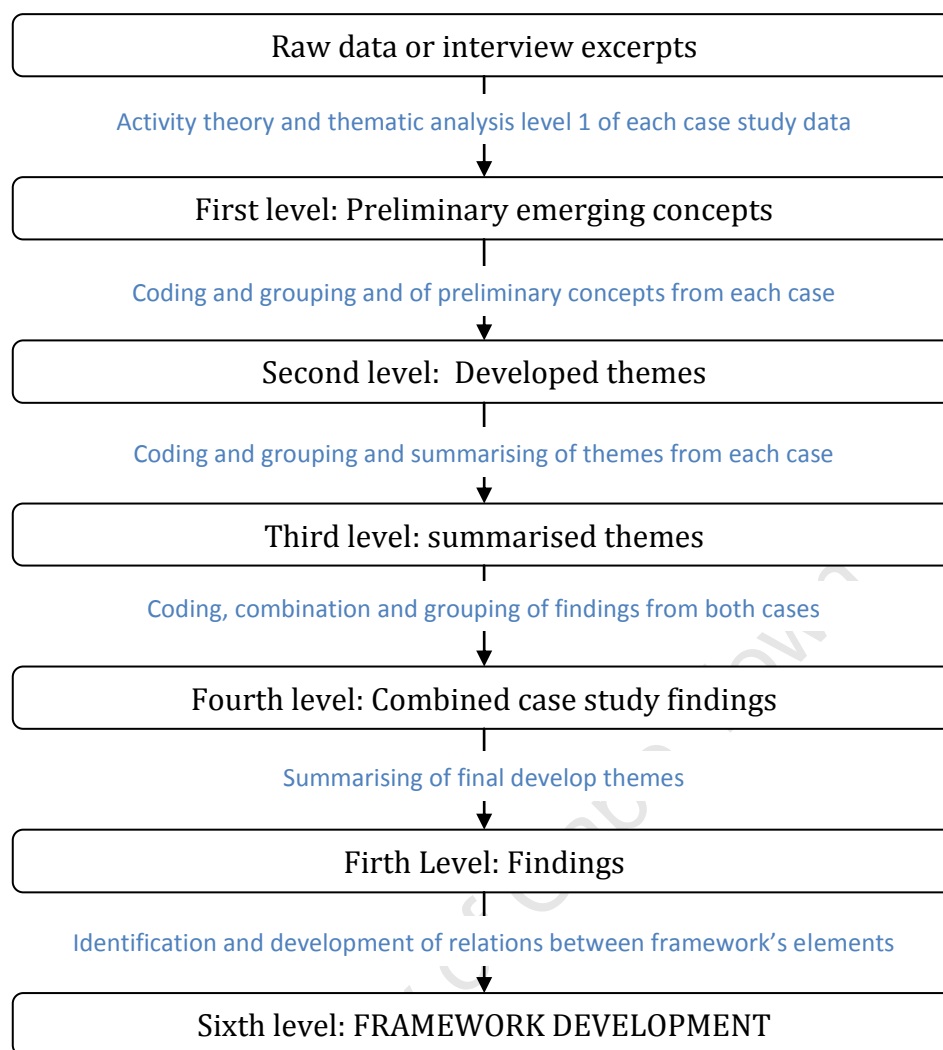


Figure 4.5: Data analysis: thematic analysis approach

4.4.3 Software for qualitative data analysis.

The case study approach generally produces a vast amount of data. To analyse vast amount of qualitative data, researchers can make use of qualitative data analysis software (QDAS). (Lewins & Silver, 2009) describe three types of QDAS: Code and Retrieve, Code-based theory building and Text retrievers/Text base managers. They suggest that the classification of QDAS is based on the ability of performing one or all of the following functions: content searching tools, linking tools, coding tools, query tools, writing and annotation tools, mapping or networking tools. They further note that the basic functionalities of a Computer-Assisted Qualitative Data Analysis Software (CAQDAS) are as follow: (1) planning and managing your project, (2) writing analytical memos, (3) reading, marking and commenting on data, (4) searching, (5)

developing coding schema, (6) coding, (7) Retrieval of coded segments, (8) recoding, (9) organisation of data, (10) hyperlinking, (11) searching the database and the coding schema, (12) mapping, and (12) generating output . Examples of QDAS include the following: Annotape, AnSWR AQUAD, Atlas/ti, CD EZ-Text, Code-A-Text and C-I-SAID, DeDoose, Diction, Ethno2, The Ethnograph (v 4.0), HyperResearch, INTEXT, Kwalitan, Leximancer, MacShapa, MAXQDA, Nvivo, PQMethod, QDA Miner, Qualrus, TAMS Analyser, Textalyser, TextAnalyst, TextQuest, The observer, Visual text, WEFT QDA, Wordstat, an more (CAQDAS). In this study we did not find it necessary to make use of any software.

4.4.4 Reliability and validity: triangulation and member checking

Case study research has been criticised regarding the credibility of the findings (Denscombe, 2007) . To minimise this, researchers are encouraged to make use of certain techniques and strategies to ensure reliability and validity as described by Yin (2009). He suggests the use of the following techniques: the use of multiple sources of evidence, the creation of case study database and maintaining a chain of evidence. Creswell (2009) on the other hand suggest the following techniques: triangulation, use of member checking, use of thick description to convey findings, clarification of the researcher's bias, presentation of negative or discrepant information, spending prolonged time in the field, use peer debriefing, use of an external auditor. In this study, we generally made use of triangulation and member checking. However throughout the study as we reported the findings, we indicated whenever we came across any contradictions or fabrications.

4.5 Description of field work

The field work involved conducting interviews with participants in their respective provinces and at their respective organisations and meetings with stakeholder groups. However in two cases participants were interviewed at selected coffee shops due to time constraint and for convenience purpose. In another case the interview meeting was conducted in Pretoria because of the IT supplier busy schedule and availability constraints. Table 4.5 provides a summary of the field work.

Table 4.5: Summary of the conducted fieldwork

| Field work date | Field work nature and Place |
|--------------------------------|--|
| 14 October - 27 October 2012 | Interviews in Western Cape |
| 03 December - 07 December 2012 | Meetings and interviews in Kwazulu Natal |
| 30 January - 09 February 2013 | Interviews in Western Cape |
| 04 March - 16 March 2013 | Interviews in Kwazulu Natal |
| 16 April 2013 | Interview in Pretoria |

4.5.1 Selection of the case studies

The selection of the case studies is a key consideration when conducting a case study research. The case studies have been selected based on the following three preliminary criteria: having public hospitals that have any computer-based IS in place and some form of IS strategy that guided the implementation of the IS. When these primary criteria are met, the following secondary criteria were applied: possibility of getting approval to conduct study in the province and selected public hospitals, accessibility to and availability of information and cost-effectiveness of conducting research in the province and the selected public hospitals.

Prior to the beginning of this study, we targeted all the nine provinces of South Africa and requested permission to conduct research to the relevant bodies and hierarchical structures. Only three of all the provinces gave a positive response among which the Western Cape province and the Kwazulu Natal province. Follow up with other provinces proved very difficult. This was partly due to the fact that some provinces were “under administration”¹ and hence there were no appropriate structures to deal with the approval process. Moreover the investigation of the IS in use public hospitals in all provinces proved that there were some provinces that had little IS in use. Hence we selected the Western Cape and the Kwazulu Natal provinces as our two case studies.

¹ A department can be under administration in the event that the government has established that the province hasn't been adequately managed. In this case the government decides to appoint a temporary management task team whose responsibility is to run the province until a new management team is established.

We therefore undertook to get approval at the provincial level, the district level and the hospital level before considering conducting the interviews. Once permission was granted at provincial level, voluntary participation was requested with the relevant participants. In an all-inclusive manner and based on approval given at provincial level (approval at provincial level, district level and hospital level), approval to conduct research was given for a total of 90 public hospitals. At the Hospital CEO level, permission and voluntary participation was requested to as many as 60 public hospitals. Out of these 60 hospitals only 13 accepted. In the end we were able to conduct interviews with 13 hospital CEOs. We describe the interviews further in section 4.7.

In some instances it was difficult to get permission and voluntary participation from the relevant participants despite numerous follow up attempts. The follow up was done by telephonic calls, emails and in few cases a direct visit at the hospital. In the follow up process, in some cases it was requested that the documents be faxed because the emails were not functional. In one of these cases, it was reported that the emails had been non-functional for a month. The feedback was in some instance very dissuasive of any further follow up as in the following email reply: *"Sorry not available, Thanks"*. At hospital level, an official refusal to conduct research was issued for nine hospitals. There were some challenges that were encountered in the selection of case studies. We discuss this in more details in the challenges section.

4.5.2 Interviews protocols

The interviews were conducted based on developed interviews protocol. The development of the interviews protocol was guided by the objective of the study, ActAD concepts, and the selected participants. The protocol contained information about the objective of the study, the logos of the research institutions where we are based, the modalities of participation in the study, and the interview questionnaire.

The interview questions were designed for three different participants groups. We describe this in details in the interview section. The interview questions were subdivided in five sections that addressed different purpose of the study:

- ❖ The first section intended to collect the general background information about participants, their education and understanding of IS strategy as well as the process of strategic information system planning.
- ❖ The second section intended to explore the implementation of IS strategy from an activity system/theory perspective.
- ❖ The third section aimed to explore the relations between the different stakeholders from an activity system/theory perspective.
- ❖ The fourth section aimed to capture the influence of stakeholder relations on the overall implementation of IS strategy process.
- ❖ The last section aimed to identify specific aspects of the implementation of IS strategy that are a direct consequence of stakeholder relations.

Appendices 2, 3 and 4 provide an illustration of the developed interview questionnaires.

4.5.3 Interviews

Prior to the description of the conducted interviews, it is necessary to note that before the interviews could be conducted, we had identified respondents and had made arrangements to meet with them. The arrangements included requesting their free participation and availability, setting up of interview date, and preparation of the logistic for the interviews. Strategically we made arrangements to conduct interviews in block per province so as to minimise the costs of travelling and to gather as much data as possible. Hence we conducted interviews in each province during a certain time period.

The interviews were generally administered using 3 different sets of interview questionnaires: hospital management, individuals in the IT department, and other relevant stakeholders. These sets of questionnaire addressed the same principal investigative issues but were slightly modified to be directed to the appropriate respondent group.

A total of 33 interviews were conducted as summarised in table 4.6. The interviews were conducted through four visits in the selected provinces and at one occasion in Pretoria as illustrated in Table 4.5. However it should be noted that two questionnaire were administered by email and the answers returned by mail and one answer had to be collected manually/physically. In the specific case where the questionnaire was collected manually/physically, a short face-to-face interview followed to clarify certain answers and questions.

Table 4.6: Summary of conducted interviews

| Respondent types | Code | Number |
|--|-----------------|-----------|
| Hospital CEO/CEO representatives | [Hosp. CEO] | 13 |
| IT Person (not necessarily IT Manager) at hospital | [Hosp. IT] | 5 |
| IT/Health Provincial Department | [Prov. DOH. IT] | 7 |
| IT suppliers (in-house and not in-house) | [Supp. IT] | 4 |
| IT user at hospital level (also called super user) | [User IT] | 4 |
| TOTAL | | 33 |

The interviews were conducted with the following respondent groups: (1) Hospital CEO/CEO representatives, (2) IT Person (not necessarily IT Manager) at hospital, (3) IT/Health Provincial Department, (4) IT suppliers (in-house and not in-house) and (5) IT user at hospital level (also called super user). We propose the following respective codes for each respondent type: (1) [Hosp. CEO], (2) [Hosp. IT], (3) [Prov. DOH. IT], (4) [Supp. IT] and (5) [User IT]. These codes are later used in chapter 5 in the presentation of the findings. In total 33 interviews were conducted in the two case studies. The interviews were conducted with different respondent groups and different level of the public healthcare system in South Africa for diversity purposes and for a broader view on how stakeholder relations influence the implementation of IS strategy in public hospitals in South Africa. In the Western Cape a total of 17 interviews were conducted as summarised in Table 4.7. In the Kwazulu Natal province a total of 16 Interviews were conducted as summarised in Table 4.8.

Table 4.7: Summary of interviews conducted in the Western Cape province

| Respondent types | Number |
|--|---------------|
| Hospital CEO/CEO representatives | 6 |
| IT Person (not necessarily IT Manager) at hospital | 3 |
| IT/Health Provincial Department | 4 |
| IT suppliers (in-house) | 1 |
| IT user at hospital level (also called super user) | 3 |
| TOTAL | 17 |

Table 4.8: Summary of interviews conducted in the Kwazulu Natal province

| Respondent types | Number |
|--|---------------|
| Hospital CEO/CEO representative | 7 |
| IT Person (not necessarily IT Manager) at hospital | 2 |
| IT/Health Provincial Department | 3 |
| IT suppliers (external) | 3 |
| IT user at hospital level (also called super user) | 1 |
| TOTAL | 16 |

Before the interviews were administered, we explained to the respondents the ethical aspects of the research, the procedural requirements that were followed (the university, the provincial, district and hospital levels) and the free and non-obligatory nature of their participation. Hence we provided all the participants with the informed consent form. Although in most case participants agreed to participate freely, some did not see the necessity to sign the informed consent. However few participants insisted on signing the informed consent form. It should also be noted that in some cases participants insisted on the provision of all the proof of adherence to the approval process to conduct research protocols at their respective institutions. During the course of this study, there were two cases where the interviews were cancelled because the to-be participants requested that a specific approval letter signed by a specific person within the institution be produced despite

the fact that all the necessary approvals had been granted all the relevant level of approval.

The interviews' durations varied depending on the individuals interviewed. Hence the respondents lasted between 25 minutes and 90 minutes. The shorter interviews were mostly with individuals who despite the willingness to participate, they did not either want to provide detailed information or they just did not know much about the strategy implementation or the stakeholders who would be involved in the implementation of the strategy. The longer interviews were with individuals who were very knowledgeable in terms of information system strategy or IT implementation at public hospitals, individuals who were prepared to go the extra mile to provide additional information. The interviews were generally conducted at the participants' work place. But in three cases, the interviews were conducted at the participants preferred location of choice. In these three cases the interviews were conducted at coffee shops in a relaxed manner. We observed that all the interviews conducted at coffee shops were much more informative. However, it should be noted that the location was not the key determinant. Rather it was the participants' trust, friendliness, professionalism and will to assist with research that determined the course of the interview.

4.5.4 Meetings

There were meetings that were conducted with stakeholder groups at the following levels: provincial stakeholders, district management level, hospitals and IT suppliers, and IS users. The attendants included nurses, IT managers, IT super users, IT suppliers, managers and researchers. Table 4.9 provides a summary of the meetings that we participated in. The purpose of the meetings was to assess the use of IS in the public hospitals and to understand how IS were deployed. Hence in these meetings issues relating to stakeholder relations and the implementation of IS strategy were also addressed.

Table 4.9: Summary of meetings conducted with stakeholder groups

| Meeting Date | Place | Group | Attendants |
|------------------|---------------|-----------------------|------------|
| 04 December 2012 | Kwazulu Natal | Provincial Department | 6 |
| 05 December 2012 | Kwazulu Natal | Hospital IT suppliers | 3 |
| 05 December 2012 | Kwazulu Natal | Hospital IT suppliers | 7 |
| 06 December 2012 | Kwazulu Natal | District | 8 |
| 07 December 2012 | Kwazulu Natal | Hospital IT suppliers | 5 |

4.5.5 Additional data collection techniques

In addition to the interviews and meetings that were conducted to collect data, we also analysed some documents and were given a tour of the IS in use at selected public hospitals. The tour of the IS in use is what we have earlier described as physical artefact observation

The following documents were used: District Health Information Systems (DHIS) project, IS strategy, provincial visions, health act, and publications on DHIS. Some of these documents were accessible on the provincial health department website. Some of the documents were accessed under strict confidentiality and for research purpose only. We analysed these documents to gather additional data. The data that was gathered from these documents provided an insight that could not otherwise have been picked. The provincial strategy and vision documents were particularly key in understanding the scope of IS strategy for public hospitals as well as the key milestones, planned IS strategy implementation activities and deliverables.

The tour of the system in use at selected public hospitals occurred at five occasions and it was done without our request. The respondents requested us to have a look at how the system works. This was particularly requested of us as a proof of how the IS strategy has been implemented and how service levels have been improved as a result of the IS strategy and IS implementations. During these tours we got more insight on the implications of stakeholder relations as the respondent provided

details of historical events that characterised the implementation of the IS strategy and the IS at selected facilities.

4.6 Ethical considerations

As scholars engage or plan to engage into research endeavours, they have the obligation to address ethical requirements pertaining to their respective research inquiries and the research environments within which the research inquiries are to be conducted (Creswell, 2009; Mirvis & Seashore, 1979; Myers & Newman, 2007; Piper & Simons, 2011). These ethical requirements are set of rules and laws that guide the conduct of research in social environments (Sarantakos, 2005). Throughout this study, we ensured strict adherence to ethical requirements and obligations pertaining to the nature and context of this study. Before this study could commence, approval was requested to the following bodies and/or structures: UCT ethics in research committee, the Western Cape ethics committee, the Kwazulu Natal province ethics committee, public hospitals management and individual informed consent.

4.6.1 Ethics approval at the University of Cape Town level

“Gatekeepers” and “sponsors” are inevitable in the quest for permission and access to the relevant research case and participants (Terre-Blanche & Durrheim, 1999, p. 136). International, national, as well as academic institutions have developed, approved and implemented acceptable code of conducts, managed and or governed by established bodies or committees (such as the ethic committees or review boards), that their members must adhere to (Sarantakos, 2005).

One of the requirements prior to the commencement of data collection at the University of Cape Town is getting approval by the UCT ethics committee in research. This preliminary and mandatory requirement implies that the PhD student has successfully presented his/her proposal and that his research proposal has been accepted at the faculty/department level. Only then and prior to embarking on the

data collection journey, can the researcher request approval from the UCT ethics committee in research.

The procedure to get approval from the UCT ethics committee in research is a four phase's process that takes between two and three months in normal cases: submission of the necessary documentation, review of documentation by the ethic committee, addressing amendments and changes requested by the ethic committee, granting of approval. We submitted all the necessary documents on the 10th March 2012 and we were granted approval from the UCT ethics committee in research on the 15th May 2012. Once approval was granted did we only begin with the ethical and procedural requirements for conducting research at the various public hospitals. The UCT ethics committee in research approval was a key requirement for getting approval at institutions (hospital and provincial level).

4.6.2 Ethics approval at hospital and provincial department of health level

In order to conduct research at any public hospital in South Africa, need is to get approval to do so from the necessary bodies. The provincial department of health is directly responsible for the granting of permission to conduct research at any respective public hospitals. Permission was requested from the relevant bodies within each province before we could commence with the data collection process.

In the Western Cape, permission was requested from the Western Cape Ethics committee. We submitted the required documents to the ethics committee. In the specific case of the Western Cape we were requested to specify which hospitals we wished to go to and the committee would then contact the hospitals and request their permission. For some other hospitals we were requested to directly request permission from the hospitals. Once the hospitals granted or denied permission to conduct research at their premises, then the provincial committee would contact us to inform us on whether permission has been granted or not at the selected hospitals. Then they would issue the approval letter with the list of hospitals that

granted permission. In some cases and for some hospitals, we were advised to request permission directly from these hospitals and not the ethic committee.

In Kwazulu Natal, permission was requested from the Kwazulu Natal provincial ethics committee. We submitted the necessary documents to the provincial ethic committee. We were later advised to also request permission from the hospitals or district manager and then send these approval letters to the provincial ethics committee. Once permission was granted from the hospitals and the districts, we then sent the approval letters to the ethic committee. It was only after submitting the approval letters from the hospitals and/or the district levels that the approval letter at provincial level would be issued. The approval letter granted permission to conduct research in the specified districts and hospitals that had given permission. In some instances it was difficult getting permission at district level. In these instances, we informed the provincial committee of the difficulty of getting feedback from the district and or hospital and a key contact at provincial level ensured that our requests were given attention urgently.

In both cases, it was required of us to submit a report of the research findings to the respective provinces at the end of the study and within a six months' time frame after the commencement of data collection. We have submitted these reports as soon as we completed data analysis.

4.6.3 Permission at other levels and informed consent

Getting ethical approval from the UCT ethics committee and the respective provincial ethics committees was a prerogative for getting permission to conduct interviews with all the participants. Participants' participation was requested individually. When requesting participants' free will participation in the study we submitted the ethic approval letters (UCT ethics committee and the provincial ethic committee), the informed consent, the abstract of the study and the interviews protocols. Before any interviews would commence, we explained to the participants the requirements and implications of their free and willing participation. In most

cases, participants signed the informed consent form. In other cases, participants said they understood and they did not find it necessary to sign the informed consent form.

4.7 Methodological challenges

Challenges are inevitable in the conduct of research. These challenges can be associated with different factors. In this study, there were various challenges that were encountered. Some of these challenges were anticipated and others were not anticipated. Some of these challenges can be associated with the nature of the study and the context within which the research was conducted. We classify the challenges that we encountered in four different categories: case study selection challenges, approval granting challenges, interview scheduling challenges and participants' inability to provide answers. The major challenges were in the case study selection process and getting approval to conduct the study at the selected facilities within the selected provinces.

4.7.1 Case study selection challenges

The first challenges that we encountered in the conduct of this study were in the selection of the case study. The conduct of interviews in a public hospital environment is guided by various requirements. Despite sending the request for permission to the relevant structures and following the guidelines, timely or favourable response was not guaranteed. The process of getting permission at provincial level proved to be difficult and resource consuming. In some cases, it was difficult to get hold of the relevant contact at provincial level due to requirements that were dissuasive. At some stages, attempts to get approval from some provinces proved to be a useless effort as, it was later revealed that there was no established management team. We learnt that some of the provinces were under an interim management or under administration.

4.7.2 Approval granting challenges

We also experienced difficulties in having permission at some facilities despite the fact that the province has given approval. In these cases, communications with the hospital management were difficult due to the fact that it was difficult to interact directly with the CEO as CEOs would be most of the time busy or in some meetings and also due to the fact that we did not get any responses to all the communications or follow up effort. In some cases we had to request the facilitation of an individual at provincial level to get feedback at hospital level. At some facilities, approval could not be granted due to the fact that the study was judged irrelevant. In one specific case permission could not be granted because the study was estimated irrelevant to the staff as highlighted in the following exert.

“We have reviewed this and do not think it has enough relevance for our staff. It is not aligned to any of the other processes presently happening. Thus for the district hospitals (i.e. all the facilities), we decline to have the research done.”

4.7.3 Interviews’ scheduling challenges

Scheduling of interviews was a key step in the process of conducting this study. This step followed the approval and request for free participation procedure. The scheduling of interviews aimed at getting the appropriate time slot and place to conduct the interviews with the participants. In this process there were instances where interview appointments had to be rescheduled. This was partly due to the fact that many respondents had various responsibilities and were in some cases required to attend urgent meetings without any notice. In other instances interviews were rescheduled more than once with the same respondent and in some cases the interviews were cancelled.

4.7.4 Participants’ inability to provide answers

This was sometimes due to that fact that some Respondents delegated other members without notifying them of the objective of the interviews. This was also

due to the fact that some respondents had little or no knowledge of the process and extent of strategy implementation in their hospital.

4.8 Lessons learnt

There are different lessons that can be learnt from the process of collecting data in a public hospital environment in general and in the context of IS strategy implementation in public hospitals in South Africa in particular. In this study we have learnt different lessons. We classify these lessons in three categories as described:

4.8.1 Protocols and approvals

There are protocols that need to be followed prior to conducting research. These protocols are critical in different research environments particularly in the public hospitals environment. We noted that the process of getting the necessary approvals can be lengthy and frustrating for the researcher. However it is the responsibility of the researcher to make sure that the necessary approvals are obtained from the relevant bodies, institutions and individuals.

We noted for example that in this process the communication channels have to be appropriate and that one has to be persistent to secure an appointment. In this regard we noted that emails are not very effective as many officials such as the CEOs, directors, or IT managers get many emails and they do not always get to attend to all of them. We also noted that telephonic appointment can be deceiving as the message is not always relayed to the right person. We realised that persistence and on site appointments can bring more positive results even though this option is quite expensive as the researcher must be present. This approach is also risky as in some cases the CEOs are out of office or are in some meetings. For example for two hospitals where approval had to be directly requested (and where all the documentation had been sent two months in advance but where no permission has not been given), a direct interaction led to an appointment being set and the interview being conducted a day later in one case and a week later in the other case. It is therefore necessary not only to plan and send the necessary

documentation beforehand but also to make use of various means of communication. In this regard we suggest a combination of emails, telephonic calls and onsite visit if possible to get things done.

Delayed approval process can partly be linked to the nature of the environment within which the research had to be conducted, the existence or no existence of an appropriated research approval body and guidelines at provincial level, and the procedural requirements for getting approval. Researchers should therefore be aware of the fact that the process of getting approval can be time and resource consuming and that it is imperative to make numerous follow up efforts to get the final approval. The approval procedure is not standard across all provinces.

4.8.2 Participant relations

In this study we realised that it was important to establish a friendly, relaxed yet professional relationship with the participants in order to break any communication barriers and to gather detailed information.

In addition to this we noted that it was important to interview various individuals at different levels as different participants have different levels of understanding of the intricacies of processes within their organisations and as different participants have differing knowledge on the plans, actions, milestones or achievements particularly with regard to the implementation of IS strategy in a public hospital environment. It was for example noted that within departments, different individuals had different views or opinion on the existence of an IS strategy and of actions related to its implementation.

Moreover we realised that some participants were very relevant as they had more knowledge of the IS strategy for public hospitals in their respective hospitals. In this case we noted that the number of years for which a CEO or an IT manager has been employed in the same position at the same hospital affected his/her awareness of the past, present and future activities related to the implementation of the IS

strategy at a selected public hospital. It was for example observed that for at one hospital where the CEO has been working for 5 years but the other has been working for the same hospital in the same position for 15 years: the one with less years did not know much about the history of IS that have been in use at the hospital except for the most recently implemented. The manager with more years working at the same hospital knew about the various systems that have been in use at the clinic and how the new system and strategy has been implemented. This proved to be also applicable to the case of IT managers.

4.8.3 Data collection strategy and requirements

Different data collection strategies are appropriate for different research endeavours. In this study we realised that semi structured interviews were relevant for the context of this study and that in the end we needed more time to analyse the massive and informative data that we collected. As a data collection strategy, semi-structured interview can be critical in getting detailed information from participants as it allows them to go into details about the research phenomenon in their own words and with their own contextual understanding of the phenomenon being investigated. For example we noted that participants were much at ease when they were given a chance to express their feelings and provide detailed accounts of historical events that characterised the relations between stakeholders and the implication of these relations on the implementation of IS strategy. The interviews could sometime be as long as 45 minutes or 1 hour and this necessitated a great amount of time for the analysis of the collected data. Hence with semi-structured interview it is necessary that the researcher spares enough time to go through the collected data so as to derive the relevant information. This information can be easily missed if the researcher does not analyse the data carefully.

There are always different lessons that can be learnt from the conduct of case study research in different context. We would encourage researchers to share their experiences so that the lessons learnt from different case studies can help scholars in their future endeavours in similar research environments.

4.9 Chapter summary and conclusion

This chapter described the study's research methodology. We described how this study has been an interpretive qualitative research following a case study approach. We also described the related field work. We provided a general background on the qualitative research process, illustrated the interconnections between the research process' concepts through the research process onion, and discussed the philosophical underpinning of the study. We presented the research question that we investigated in this study as well as the research methodology and research design that we followed. In the research design section we highlighted the use the case study approach, the interviews, the additional data collection techniques and the data analysis techniques. We later addressed some ethical considerations in regard with this study particularly the issues of approvals and informed consent. Lastly we discussed the challenges that we encountered and the lessons learnt from the conduct of this study.

CHAPTER FIVE: CASE STUDIES AND RESULTS

5.1 Introduction

This chapter describes the case studies and presents the results of the analysis of the data from the two cases that we selected: the Western Cape province and the Kwazulu Natal province. Both cases provided exploratory capabilities for the investigation of stakeholder relations and the influence of these relations on the implementation of IS strategy in public hospitals in South Africa.

We present the results of the ActAD framework-based analysis of the case studies.

The following ActAD framework elements are explored for each case study:

1. Collective Actors: groups, team, community of practice
2. Means of coordination and communication: division of work, rules, etc
3. Actors: Individuals or groups
4. Tools/means of work: mental instruments, facilities
5. Object
6. Outcome
7. Individual/group work process and action
8. Mode of operation: historical phases
9. Relations with other activities and the network of activities
10. Contradiction

The rest of this chapter is structured as follows: We firstly describe the two case studies. We then present the results of the Western Cape province case study. We lastly present the results of the Kwazulu Natal province case study.

5.2 Description of the two case studies

5.2.1 Case study 1: The Western Cape Province

The Western Cape is South Africa's fourth largest province in land size and the fourth most populated province in South Africa (SouthAfrica.Info, 2013). The Western Cape

comprises 6 municipalities or districts as illustrated in Figure 5.1: Cape Town, Cape Winelands, Central Karoo, Eden, Overberg and West Coast. The Western Cape Province has 41 public hospitals across its 6 municipal districts (DoH, 2011).



Figure 5.1: Districts of the Western Cape (South Africa.info, 2013)

With Cape Town as its capita city, the Western Cape province is known to be a major tourist attraction in South Africa. Some of the Western Cape province's major attractions include but are not limited to: its many mountains particularly table mountain, its famous and historical Robben Island former prison, its natural floral peculiarities, its agricultural and farming specificities, its lovely long beaches and its famous Cape Point which not only represent the Southernmost point of the world but also hosts the junction of the Atlantic and Indian oceans (SouthAfrica.Info, 2013). With an estimated population of 5 822 734 (Statistics South Africa, 2012), the Western Cape province has a total of 41 public hospitals across its 6 districts (DoH, 2011). Table 5.1 provides a summarised list of public hospitals of the Western Cape province.

Table 5.1: List of public hospitals per district in the Western Cape province (Adapted from DoH, 2011)

| Districts | Public Hospitals |
|----------------|--|
| Cape Town | 20 hospitals: Eerste River hospital, Helderberg hospital, Khayelitsha hospital, G F Jooste hospital, Mitchells Plain hospital, Lentegeur hospital, Western Cape rehabilitation centre, False Bay hospital, Victoria hospital, Mowbray maternity hospital, Red Cross War Memorial children hospital, DP Marais TB hospital, , Karl Bremer hospital, Tygerberg hospital, Stikland hospital, Groote Schuur hospital, Brooklyn chest hospital, somerset hospital, Alexandra hospital, Valkenberg hospital |
| Cape Winelands | 7 hospitals: Robertson hospital, Worcester hospital, Brewelskloof TB hospital, Paarl hospital, Sonstraal hospital, Stellenbosch hospital, Ceres hospital |
| Central Karoo | 2 hospitals: Beaufort West hospital, Nelspoort hospital |
| Eden | 6 hospitals: George hospital, Harry Comay TB hospital, Riverdale hospital, Knysna hospital, Mossel Bay hospital, Oudtshoorn hospital |
| Overberg | 2 hospitals: Swellendam hospital, Caledon hospital |
| West Coast | 4 hospitals: Vredendal hospital, Vredenburg hospital, Swartland hospital, Malmesbury infectious disease hospital |
| TOTAL | 41 |

In the Western Cape province the data was collected through interviews and analysis of documents, and visit of certain public hospitals. The interviews were conducted at selected public hospitals with CEOs, hospital IT managers and IT users, at provincial level with certain IT/health department individuals, and with other identified relevant stakeholders such as IT suppliers. The data that was analysed in the Western Cape province case study consisted of interview transcripts, and the following documents: The Health Act, National eHealth Strategy, the Western Cape Annual Performance Plan: 2012-2013, the 2020 Future of Healthcare in the Western Cape, strategic document. Table 5.2 provides a summary of these documents.

Table 5.2: List of analysed documents for the Western Cape province case

| Documents | Description |
|---|--|
| The Health Act | The national Act regulating the health sector and the provision of healthcare services in South Africa |
| National eHealth Strategy | A strategic document that is a road map of the national vision and plan regarding the role and use of targeted ICT for the improved healthcare service delivery nationally |
| The Western Cape Annual Performance Plan: 2012-2013 | An annual plan depicting the Western Cape province targeted achievements during the financial year 2012-2013 |
| The 2020 Future of Healthcare in the Western Cape | Strategic document depicting the vision of the Western Cape in terms of future innovations and service provision targets to be achieved by 2020 |

5.2.2 Case study 2: The Kwazulu Natal province

The Kwazulu Natal province is South Africa's seventh largest province in land size and the second most populated province in South Africa (SouthAfrica.Info, 2013). The province comprises 11 municipalities or districts as illustrated in Figure 5.2: Amajuba, eThekweni, iLembe, Sisonke, Ugu, uMgungundlovu, Umkhanyakude, Umzinyathi, Uthukela, Uthungulu and Zululand.



Figure 5.2: Districts of the Kwazulu Natal province (SouthAfrica.info, 2013)

With Pietermaritzburg as its capital city and Durban as a major town, the Kwazulu Natal province is known to be not only a popular tourist attraction in South Africa but also as the kingdom of the Zulus (SouthAfrica.info, 2013). Some of the major attractions of the Kwazulu Natal province include but are not limited to: its Drakenberg Mountain, its beaches stretching along the warm Indian ocean, its large harbour, its agricultural specificities and its historical heritage (SouthAfrica.info, 2013). With an estimated population of 10 267 300 (Statistics South Africa, 2012), Kwazulu Natal province has a total of 72 public hospitals across its 11 districts (DoH, 2011). Table 5.3 provides a summarised list of public hospitals of the Kwazulu Natal province.

Table 5.3: List of public hospitals per district in the Kwazulu Natal province (Adapted from DoH, 2011)

| Districts | Public Hospitals |
|----------------------|---|
| Amajuba | 3 hospitals: Niemeyer Memorial hospital, Madadeni hospital, Newcastle hospital |
| eThekweni | 18 hospitals: Osindisweni hospital, St Mary' hospital (Mariannhill), Wentworth hospital, King Edward VIII hospital, Dr Pixley ka Seme Hospital, Addington hospital, mahatma Gandhi hospital, Prince Mshiyeni hospital, RK Khan hospital, St Aidans hospital, Clairwood hospital, Hillcrest hospital, Ekuhlengeni hospital, Charles James TB hospital, Don Mckenzie hospital, FOSA TB hospital, King George V hospital, inkosi Albert Luthuli hospital, |
| iLembe | 4 hospitals: Stranger hospital, Umphumulo hospital, Untunjambili hospital, Mantebello hospital |
| Sisonke | 6 hospitals: East Griqualand and Usher memorial hospital, St Apollinaris hospital, Christ the King hospital, Rietvlei hospital, Umzimkhulu hospital, St Margaret's TB hospital |
| Ugu | 5 hospitals: Murchison hospital, Port Shepstone hospital, Dunstan Farewell TB hospital, GJ Crookes hospital, St Andrew's hospital |
| uMgungundlovu | 9 hospitals: Richmond chest hospital, Northdale hospital, Grey's hospital, Edendale hospital, Fort Napier hospital, Townhill hospital, Doris Goodwin TB hospital, Umgeni Waterfall institute hospital, Appelsbosch hospital, |
| Umkhanyakude | 5 hospitals: Hlabisa hospital, Bethesda hospital, Mosvold hospital, Manguzi hospital, Mseleni hospital |
| Umzinyathi | 4 hospitals: Dundee hospital, Church of Scotland hospital, Charles Johnson memorial hospital, Greytown hospital |
| Uthukela | 3 hospitals: Ladysmith hospital, Emmaus hospital, Estcourt hospital |
| Uthungulu | 8 Hospitals: St Marys kwaMagwaza hospital, Ekhombe hospital, Nkandla hospital, Lower Umfolozi war memorial hospital, Ngwelezana hospital, Catherine Booth hospital, Eshowe hospital, Mbongolwane hospital |
| Zululand | 7 Hospitals: Vryheid hospital, Benedictine hospital, Ceza Hospital, Nkonjeni hospital, St Francis hospital, Thulasizwe hospital, Itshelejuba hospital |
| TOTAL | 72 |

In Kwazulu Natal the data was collected through interviews, participation in different meetings with stakeholder groups and the analysis of documents. In addition, we also visited certain facilities. The interviews were conducted at selected public hospitals with CEOs, hospital IT managers and IT users; at provincial level with certain IT/health department individuals, and with other identified relevant

stakeholders such as IT suppliers. The meetings were also conducted with IT suppliers, the management of a district, and individual within the IT/health provincial department.

The data that was analysed in the Kwazulu Natal province case study consists of interview transcripts, meeting proceedings and the following documents: the Health Act, Kwazulu Natal health act, SITA act, National eHealth strategy, Kwazulu Natal health strategic plan, Provincial service transformation plan: 2010-2020, Provincial operational plan, Provincial annual performance plan: 2011/12 – 2014/15, and the District Health Management Information Systems Policy. Some of these documents are accessible on freely of the department (provincial web site while others are strictly confidential and were only accessed for the sole purpose of this study. These documents stipulate some of the duties and responsibilities of stakeholder groups regarding the implementation of IT/IS and, by implication, the implementation of the IS strategy.

Table 5.4: List of analysed documents for the Kwazulu Natal province case

| Document | Description |
|--|---|
| The Health Act | The national Act regulating the health sector and the provision of healthcare services in South Africa |
| Kwazulu Natal health act | The Kwazulu Natal provincial Act regulating the health sector and the provision of healthcare services in Kwazulu Natal |
| SITA act | The act regulating the functioning and the State Information Technology Agency (SITA) |
| National eHealth strategy | A strategic document that is a road map of the national vision and plan regarding the role and use of targeted ICT for the improved healthcare service delivery nationally |
| Kwazulu Natal health strategic plan | Strategic document depicting the Kwazulu Natal province department of health overall healthcare service provision vision and targets |
| Provincial service transformation plan: 2010-2020 | Strategic document depicting the vision of the Kwazulu Natal province in terms of future innovations and service provision targets to be achieved between the year 2010 and the year 2020 |
| Provincial operational plan | The Kwazulu Natal province plan governing the daily functioning of the different provincial departments |
| Provincial annual performance plan: 2011/12 – 2014/15 | An annual plan depicting the Kwazulu Natal province targeted achievements during the financial year 2011/12 - 2014-2015 |
| District health management information system policy | The policy depicting and governing the functioning of the District Health Management Information Systems |

5.3 Case study 1 results

This section presents the results of the ActAD framework-based analysis of the Western Cape province case study. For each ActAD framework element we provide a description of the result that emerged and, where applicable, a short interview excerpt for illustration purpose. Every excerpt is accompanied by a code associated with the specific respondent type or source of information (as illustrated in Table 4.6) where applicable: (1) [Hosp. CEO], (2) [Hosp. IT], (3) [Prov. DOH. IT], (4) [Supp. IT] and (5) [User IT].

5.3.1 Collective actors: groups, team, community of practice

Various stakeholder groups are directly or indirectly involved in the implementation of the IS strategy in public hospitals in the Western Cape. These stakeholders belong to different stakeholder groups and are involved at different levels hierarchically as well as regarding the various activities around the implementation of the IS strategy in public hospitals in the Western Cape province. The landscape of the stakeholders involved in the implementation of the IS strategy is broad and include stakeholders at the following levels: government level, provincial level, the department of health level, third party organisations level, and the hospitals and patients level. The landscape of the stakeholders can become broad when a detailed definition of the concept is applied. The notion of stakeholders was in some cases expanded to the different structures of the public hospitals to include the cleaners and the security personnel. This expansion of the stakeholder landscape brings to fore the necessity of managing the complexity of stakeholders and scoping stakeholder groups according to their relevance to the process of IS strategy implementation and their potential level of contributions in IS strategy implementation activities/processes in public hospitals in South Africa.

5.3.2 Means of coordination and communication: division of work and rules

The means of interaction and communication between these actors include the following methodologies: meetings, emails, telephone, and established forums.

However the commonly used mode of coordination and communication is meetings through the different established structures and committees such as the Departmental IT Committee (DITCOM), steering committees and forums. In addition to the established bodies, the means of engagement are broad to include not only the normal office setting tools but also established project management governance structure. The different means of coordination and communication are applicable to different types of engagements, different activity levels and different activity purposes.

“We have monthly meetings. Our communication to the rest of the department is through the DITCOM (Departmental IT committee) this DITCOM only meets every second month of the year and reports of systems, the functionalities, the progress of the roll out and is being presented at DITCOM committee. The DITCOM also proposes the ICT strategy to the head of department... The engagement with some stakeholders is through meetings and forums. With other stakeholders like the academia, we also invite them to our forums. Other means of communication are obviously by emails, telephones...” [Prov. DOH. IT]

There are defined rules and/or predefined agreements that govern the interaction between certain stakeholder groups and particularly their respective responsibilities towards the attainment of the IS implementation strategy objectives. The definition and revision of the rules is critical to the management of the stakeholder groups/actors responsibilities and contractual obligations towards the implementation of the IS strategy. A key aspect is to have appropriate adherence mechanism that stipulates punitive measures in case of non-adherence. The defined rules are mostly in the form of service level agreements (SLA) between the different stakeholder groups/actors.

“In terms of the engagement with CEI we have an SLA in place which is very descriptive in terms of how we would like to be serviced by them particularly from a user perspective...: that is already in place. One other stakeholder that

I forgot to mention is service providers, we engage with service providers to provide expertise in different areas... These will be external vendors and we will obviously have SLA that governs the interaction between ourselves and them: that's pretty standard with any relationship". [Prov. DOH. IT]

Although there may exist certain rules and modalities that are predefined for the interaction between stakeholder groups and for the definition of the roles and responsibilities of each stakeholder groups, there is always a need to have measures of enforcing adherence to the predefined rules and modalities in place. This is critical for the management of SLA and the attainment of the IS strategy implementation objectives. It is often necessary to have imbedded rules in the SLA to ensure adherence to the defined and agreed upon service delivery levels.

"All the responsibilities are clearly defined. We write SLA to avoid issues. If there are issues that arise you have a mechanism from which you can penalise or ensure certain things get delivered on... If you don't stick to that we start enforcing penalties, then it's a clear cut". [Prov. DOH. IT]

Although there are some existing explicit rules, there are often contextual realities that differently dictate the turn of events due to the complexity of the healthcare service and the implications of these contextual factors. The complexity of the IS strategy, the management of IS strategic issues and strategic, the needs for specific IS at certain public hospital with specialised IS requirements, and the maturity of the public hospitals are a key challenge in the prioritisation of IS strategic initiatives in the Western Cape Province. In such instances undefined rules are implicitly applied to achieve IS strategy implementation objectives. This is often the case in the funding of IS strategic initiatives and the initiation of new strategic initiatives such the NHI system. In these instances, funds availability at the facility level and the priorities/goals set at national level can become the deciding factors.

"When it comes to the implementation of IS strategy based deducted projects/initiatives, the section that has more money for it will get whatever

they want: that's the reality of the current situation. We have got a very complex department. We also need to take into consideration the NHI (national health insurance) that is being implemented by the national department. In the national department they have decided to include X hospital as a pilot site in Y district: which means that in our strategy we must focus on X hospital for NHI which might not have our priority last year because Y district wasn't a focal area... It changes things". [Prov. DOH. IT]

Regarding the implementation of the IS strategy in public hospitals in the Western Cape, there are various strategic documents that provide guidance and rules regarding not only the action of the different actors but also the interaction between the different actors. These documents define not only the province vision but also the division of roles and responsibilities. The Western Cape's 2020 the Future of Healthcare Vision, for example, stipulates that:

"The provincial approach to health service development is directed by the principles, values and vision for 2020 outlined. This involves a values-driven approach focusing on building the commitment of our staff to being client-centred, improving the patient experience of the service, and continuously improving quality of care." [Prov. DOH. IT]

5.3.3 Actors: individuals or groups

There are different actors who are essential in the implementation of IS strategy in the Western Cape Province. These actors play different roles at IS strategic level or in IS strategy operationalization processes. They can be grouped according their respective stakeholder groups hierarchical level and the associated activity levels: government level, provincial level, the department of health level, third party organisations level, and the hospitals and patients level. Within their respective stakeholder groups, these actors (individual or groups) have their internal hierarchical structure that defines the reporting structure but also the roles and

responsibilities. There are also internal group guides and principles that guide the actions of the different actors (individuals or groups).

Some of these actors accomplish certain activities in groups. Some of these actors have responsibilities for certain activities as individuals. The individual actors who have the responsibilities at higher hierarchical levels are critical in the decision-making process and the flow of the subsequent activities. The individual actor responsible for the approval of strategic initiatives can for example be a source of disturbance in the flow of activity if/when, for various reasons, he/she does not approve IS strategic initiatives on time. One of the many identified stakeholder groups is the IT implementation team. This stakeholder group is critical in operationalizing the IT strategy.

“Our implementation team is mainly the health department and our IT guys. We have a separate IT department in the Western Cape it is called the CEI (centre for e innovation): they do all the IT related things on our project from health side, business process reengineering, change management, training on the system, to the implementation, etc”. [Prov. DOH. IT]

Other stakeholder groups include providers of different services in support of the operationalization of the IS strategy. The service supplier stakeholder group include stakeholders such as the suppliers of IT technology, stakeholders maintaining IT infrastructure, and stakeholders providing related expert services.

5.3.4 Tools/means of work: mental instruments, facilities

The various actors use different tools to accomplish their respective tasks. These tools can be technological, technical or competence based. The expertise and competence of each stakeholder group/actor is one of generic reflection of the stakeholder group/actors individualistic tools. Stakeholder groups/actors use their knowledge and expertise in different domains to execute their tasks. The expertise and knowledge entails ability in aspects such as project management tools, software

development framework, and the body of knowledge in different disciplines. Technological tools include the various technologies that are available for the different stakeholder groups/actors in the execution of their tasks. These include but are not limited to innovative ICT used in the stakeholder groups/actors respective fields of expertise. The technical tools include the various other tools (non-competence related and non-technology related) such as the offices, meetings and meetings facilities, office tools and machine equipment.

5.3.5 Object

The main object is the province wide IS strategy for public hospitals in the Western Cape Province. The IS strategy is complex not only in its form, nature and scope but also in its decomposition in executable activities, tasks and projects. Some of the key objects in the process of the implementation of the IS strategy in the Western Cape province are the national, provincial and the department of health strategic documents. These documents are used to derive the IS strategy and strategic initiatives for public hospitals in the Western Cape province. Table 5.5 provides an illustration of the documents that are constitutive of the deduced IS strategy for public hospitals in the Western Cape province. The complexity of the IS strategy for public hospitals in the Western Cape province is further affected by prioritisation challenges. These challenges are partly related to the IS requirements of certain specialised public hospitals, the type of services provided at the hospitals and the maturity levels of the public hospitals.

“There are several documents which constitute our IS strategy. There is a government strategy for the Western Cape. We then have our own strategy for the department of health. Our strategy runs from 2010 -2014. What the strategy does it finds linkages in the government strategy, together with linkages in the ehealth strategy for the national department of health as well as the 2010-2020 health strategy... We from an IT perspective we will look at each of these strategies, not strategies as such but components and see how IT can enable that”. [Prov. DOH. IT]

Table 5.5: Strategic documents for IS strategy in the Western Cape province

| STRATEGIC DOCUMENTS FOR IS STRATEGY IN THE WESTERN CAPE PROVINCE |
|--|
| 1. The government strategy for the Western Cape |
| 2. The Western Cape department of health strategy |
| 3. The ehealth strategy for the national department of health |
| 4. The Western Cape 2010-2020 health strategy |

Just as with any IS strategy need is to review the strategy to ensure that the strategy does not become obsolete and so that the IS strategy continue to support the organisation' goal of better healthcare service delivery. The IS strategy for public hospitals in the Western Cape province has gone through a couple changes to ensure that the strategic objectives are maintained in an environment where technological changes and healthcare service delivery challenges are constant.

“Our ICT strategy for health systems has gone through a couple of change in the past 10 years. We are looking at different solutions. Our ICT strategy is being revised as we speak to fit in the 2020 objectives. Our ICT must support the work that is being done in healthcare: the service that is being rendered, not the other way around. The driver for us is the health service that must be rendered”. [Prov. DOH. IT]

The complexity of the healthcare systems in South Africa and the implications of the large number of stakeholder groups who paly different roles at different levels of the IS strategy implementation process have implications not only on the scoping of the IS strategy but also on its execution. The lack of appropriate structural guidance and support is a major challenge. Alternative measures necessary in achieving healthcare service delivery improvement through ICT become a form of IS strategy.

“The challenge is tow fold: We have to support the strategy from a provincial perspective, we also need to address the needs of health from and IT perspective because they want to have processes, business processes, certain drivers, we must be able to accommodate all that through the use of

technology; meanwhile in support of the provincial strategy... so that's the kind of challenge that we are having..." [Prov. DOH. IT]

"Because we don't have a vision: what we have is an expanded vision statement. What we have asked is what does this document means to the staff, the community, to department, our stakeholders and strategic partners and what does it mean to the provincial government... We see at how we can enable that vision through the use of ICT". [Prov. DOH. IT]

5.3.6 Outcome

The main outcome of the implementation of the IS strategy in public hospital in the Western Cape is the attainment of different IS strategic goals and related deliverables leading to steps towards the implementation of relevant IS for improved healthcare service delivery in public hospitals of South Africa. Associated with this are three aspects: firstly the implemented IS at public hospital level, secondly, the provision of better healthcare service at the public hospitals and, thirdly and implicitly the satisfaction of the different stakeholder groups particularly stakeholder groups/actors at the hospital level (patients, care givers and public hospital management).

"At our hospitals, the system was implemented for the first time in 2001 even though there are different versions of it. Ten years later, we are still rolling the system out: at the time being, we have covered 80% of the population but not 80% of the sites". [Supp. IT]

Another key outcome of the process is the linkage between the different strategic documents requirements and the translation of these documents into a provincial IS strategy for public hospitals document. Associated with this is the organisation of workshops which are a platform for not only deriving and documenting strategic initiatives but also to identify potential future IS strategic initiatives. One other

outcome is the technical and technological requirements for the deployment of the necessary systems in public hospitals.

There deliverables of the network of IS strategy implementation sub-activities contribute to the overall final outcome of the IS strategy implementation process. These sub-activities are the responsibility of different stakeholder groups' actors. A given stakeholder group's lack of performance might affect the entire IS strategy process and impact negatively on the attainment of the systemic outcome of the IS strategy implementation objectives.

5.3.7 Individual/group work process and action

There are different individual/group processes and actions that lead to the implementation of the IS strategy in public hospitals in the Western Cape province. The related deliverables are key to the consequential implementation of relevant IS for improved healthcare service delivery in public hospitals in the Western Cape Province. Various stakeholder groups/actors play different roles at different levels of the IS strategy implementation process in public hospitals in the Western Cape province.

A key function is the deriving of the IS strategy and/or IS strategic initiatives for public hospitals in the Western Cape province and the prescribing technological requirements for certain aspects of the IS strategy. This function is the responsibility of provincial stakeholder group/actors. Another key function is the implementation and/or deployment (and related aspects such as development) of ICT at public hospitals level. This function is the responsibility of the directorate of CEI.

“Our implementation team is mainly the health department and our IT guys. We have a separate IT department in the Western Cape it is called the CEI (centre for e innovation): they do all the IT related things on our project from health side, business process reengineering, change management, training on the system, etc”. [Supp. IT]

In parallel with the implementation of IS at public hospitals in the western cape province are IS implementation protocols which include the decision making procedures, the approval procedure, the procurement mechanism as well as the IS roll out mechanism at the public hospital level. An understanding of these function is provided by the province's approach to the implementation of the IS strategy. A provincial approach determine internal structures and modalities regarding the implementation of the IS strategy in the public hospitals. The role of top management in this regards has implications in the decision making and the approval of proposed IS strategic initiatives. Top management in particular is responsible for the approval of the different IS strategic initiatives. The role of top management is critical. Top management role is not limited to providing support or being involved in the processes. Top management's approval role illustrates the level of dependency in the hierarchical structures and the decision making process.

"How we are supporting is that from a technology perspective, we are able to advise what system to use in relation with their requirements. We are also being supported by CEI. We from an IT perspective, we will look at the different components and see how IT can enable that...

But top management will take decision of the IT strategy that DITCOM proposed. And it is quite an important function as we cannot move forward unless that happens...Basically before any system can be implemented it has to go to the directorate of CEI because it is there where they make decisions on what system needs to be implemented. They make all decisions on systems that need to be implemented. They will draw all the protocols with providers and make decisions. Only when those decisions have been made then the institutions get involved in training of various systems and the implementation and also how to do the support of the system". [Prov. DOH. IT]

Another key function is the identification of gaps in the existing IS strategy and the exploration of future of the ICT in public hospitals. This is generally with a twofold

aim: firstly, deriving new strategic initiatives based on the current strategic goals and the current technological trends in the health environment; and secondly, ensuring that the strategy allows for progressive measures in the future investment in IS and IS implementation at public hospitals, the attainment of futuristic healthcare services improvement and the return on investment of ICT initiatives. This is the responsibility of provincial stakeholder groups/actors.

“From time to time, as part of our strategy we look at - at the moment we have to look at IT architecture – future technological trends just to make sure that we are safe and that we can move forward. The reason for this is to be able to plan where we must go in the next 10 year with our IT architecture and how do we align all our systems/solution so that we reach there. ICT is very costly therefore you can’t, if you put in few millions Rands you must assure that you get your ROI: you cannot just chuck it away because you don’t like it. You must make sure the next thing I am going to implement is better”.

[Prov. DOH. IT]

5.3.8 Mode of operation: historical phases

The implementation of IS strategy in public hospitals in the Western Cape Province is characterised by a certain mode of operation or historical phases. The management of public hospitals does not have a say in terms of the IS strategy and its implementation. Furthermore it is the national, provincial who provide the guidelines in terms of strategic actions and projects that need to be undertaken at public hospitals. It is also the responsibility and has always been the responsibility of treasury to champion the implementation of financial modules in public hospitals.

“We determine where we want to go and where we implement. Hospitals don’t have a say; they have a say in effect because what we’ll do is that before actually rolling out we do a site assessment, we engage with hospital management, we tell them how we are going to roll out, what we are going to do, we also determine what are an infrastructural requirement, we also do

the staff assessment... we do that in a constant engagement with the hospital... For the finance systems and modules, all these systems we are prescribed by the national treasury: national treasury decides what needs to be rolled out or implemented and they are responsible for the implementation of these". [Prov. DOH. IT]

This is partly associated with the provincial approach to the implementation of the IS strategy, the model of implementation of IS strategic initiatives and the mobilisation of resources for the implementation of the IS strategy. In the Western Cape province the implementation of the IS strategy is and has been the responsibility of established bodies, one of which is the CEI which oversees all the IT related duties within all the departments. This structure is in-house.

"If our strategy identifies a critical area like medical record, improving waiting time, could be used and to make recommendations. On our structure that we have in this province, we have got for our IT a Central Information Technology committee (CITCOM (central IT committee) which is for the entire province. Representatives of each of the departments of the Western Cape province seat on the CITCOM and the CWEI take all the responsibility for the way forward. They are responsible for infrastructure, LAN and WAN, compliance to standards, security, implementation, desktops, and roll out of systems, all of that CEI does it for us as a group. At the CITCOM, the committee decides on the way forward for the province, which systems/solutions are going to be our main function". [Supp. IT]

The implementation of IS strategy and consequential IS in public hospitals in the Western Cape is a long term initiative. Changes are inevitable during the course of the IS strategy implementation process. There are often delays in integrating critical changes throughout the IS strategy implementation process. However the strategy can be revised and every time the focus is on IT supporting healthcare services.

“Our ICT strategy for health systems has gone through a couple of change in the past 10 years. We are working toward a single patient identifier... We are also looking at medical records. I think that our two main objectives, the third one is integration. We are looking at different solutions. Our ICT strategy is being revised as we speak to fit in the 2020 objectives. Our ICT must support the work that is being done in healthcare: the service that is being rendered, not the other way around. The driver for us is the health service that must be rendered”. [Prov. DOH. IT]

The complexity of the public healthcare environment partly justifies the mode of operation and the historical phases. The IS strategy implementation and the IS implementation in public hospitals in the Western Cape province is characterised by a scattered-coverage trend. Despite the early initiation of IS strategic initiative roll out at public hospitals, only few public hospitals have IS fully implemented and in use. Associated with this is the delayed adoption of international standards and guidelines for health IS and HIS.

“At our hospitals, the system was implemented for the first time in 2001 even though there are different versions of it. Ten years later, we are still rolling the system out: at the time being, we have covered 80% of the population but not 80% of the sites. At this stage we are doing ICD 9C in procedure coding. The reason is this is that national hasn't decided on any other coding as standard. So we don't want to change things now and then in a year or two have to change again. ICD 9c is not adequate but that what we have... The government structure is different from the private sector: it is very complex”. [Supp. IT]

The historical phases and mode of operation brings to fore the concept of time factor and its implications on the flow of the IS strategy implementation activities and processes, IS strategic and IS strategy operationalization decisions and IS implementation in public hospitals in the Western Cape province over the years. This can be explored within a given time frame limits.

5.3.9 Relations with other activities

The implementation of the IS strategy in the Western Cape Province is not an isolated independent activity system: there are various other activities that are directly or indirectly linked to the implementation of the IS strategy. Some of these activities are historical, others are hierarchical, others are procedural and others are process-related. The outcome of these activities and the timeliness of their respective outcomes affect the smoothness of the IS strategy implementation process. Of interest is the engagement between the different stakeholder groups and the frequency of the engagement between stakeholder groups. The relevance of frequent engagement is highlighted as critical to the efficiency of interactions between the different stakeholders and the consequential attainability of the organisation goal particularly the IS strategy implementation goals.

“From what I have seen, in terms of the different forums that have been taking place I think they are very helpful, more helpful than anything else because that where communication happens, that where sharing of knowledge happens, that where the crossing of minds happens in terms of ideas, etc...The view I have is that the more we have interactions, the more there are forums that open that line of communication, the better we are and the more efficient we will become in terms of attaining whatever goal we set to achieve. But if we minimise the communication, that becomes an impediment”. [Hosp.CEO]

There many other activities that are related to the implementation of IS strategy in public hospital in the Western Cape province. These activities occur at different hierarchical levels and within different stakeholder groups. Some of these activities occurs at different times of the IS strategy implementation cycle in public hospitals in the Western Cape province. The commonality of these activities lies in the fact that they can be classified in two groups: IS strategic activities or IS strategy operationalization processes. IS strategic activities consist of the following groups of activities:

- ❖ Provision of strategic leadership at national level
- ❖ Provision of strategic leadership at provincial level
- ❖ Provision of relevant expert guidance and advice
- ❖ Provision of strategic leadership at provincial health department level
- ❖ Provision of support for IS strategy operationalization
- ❖ Operationalization of the IS strategy for public hospitals

IS strategy operationalization processes consist of the following groups of activities:

- ❖ Integration of national and provincial IS for health goals and initiatives
- ❖ Liaison with different stakeholder groups regarding their role and responsibilities
- ❖ Development of IS strategy implementation model
- ❖ Extraction and scoping of IS strategic initiatives
- ❖ Implementation and management of IS strategic initiatives implementation
- ❖ Revision of IS strategy, strategic goals and initiatives

5.3.10 Contradictions

The implementation of the IS strategy in public hospital of the Western Cape is characterised by some contradictions at different level of the activity system and with different implications regarding the implementation of the IS strategy.

The emergence of new initiatives and directives is sometime observed in contradiction with the scope and implementation progress of an existing strategy. Generally these new initiatives have to be integrated into the existing IS strategy and/or the consequential requirement accommodated. This has been the case for the NHI project particularly. This puts pressure on the IS strategy implementation process but can have great benefits for the public hospitals especially when the selected public hospitals didn't have the minimum IS implementation requirements for the NHI system.

“We also need to take into consideration the NHI (national health insurance) that is being implemented by the national department. In the national

department they have decided to include X hospital as a pilot site in Y district: which means that in our strategy we must focus on X hospital for NHI which might not have been our priority last year because Y district wasn't a focal area... It changes things". [Supp. IT]

The flow of directive regarding the use of innovative IS solutions can sometime be in contradiction at a hierarchical level but not in the common IS-based healthcare service improvement goals. This is the case when, contrary to the established rules that national dictates what needs to be done – the provincial department undertakes to implement an innovative IS solution such as the ECM at a selected public hospital. In this case, a successful experience at the provincial level can lead to a national decision to replicate the implementation nationally. Hence the notion of shared responsibility and level of involvement in strategic initiative can be developed.

"National came to us to look at what we have been doing regarding ECM particularly and now national is prepared to fund it and to roll it out nationally. As much as national has a strategy, there are certain innovations that national is also looking into what provincial is doing but certainly we are still keeping in line with the strategy; we have to keep in line with the strategy, the vision is ton and we cannot deviate from it. But it is to say how do we support it and how do we think out of the box. Sometime we have to think out of the box". [Hosp. CEO]

Although there are recommendations that are given to certain stakeholder groups, these recommendations are not always taken into consideration. This leads to corrective measures and new learning particularly at project level.

"What we tend to do is that we say beforehand what the risks are: we will tell the people that this is the amount of people you need; they won't go out and get the staff, no, they will first implement the system and then when the system is not working, they blame it on the system. Then we tell them they

need more staff, they go get the staff here and there then it is straining people whereas if they had done it from the onset when we have requested from them, the implementation could have gone smoother. But it like you must first feel before you learn". [Supp. IT]

The requirements for more human resources for the successful implementation of IS strategy in public hospitals is sometimes in contradiction with the actual skills and capacity levels regarding the implemented IS at public hospitals in the Western Cape province. Great emphasis is put on the technological aspects and less on the people aspects. The direct consequences of this are difficulties in the use of the IS at the public hospitals. This has implications on the management of the IS strategy implementation process regarding the necessity of more human resource capacity, the mobilisation of resources, the success level of the implementation, the challenges in the use of the system at the public hospitals and the perception of failed IS implementation in public hospitals in the Western Cape province.

"The impact of a lot of these things is the need for more staff and the sad reality about our IT, IT in itself seems as though it seems to be the answer to everything; it is the answer to everything but it is costly and impact on HR capacity and needs. And it's what people don't realise, it is not just the need to only roll out the system, it is the need for people being actually there..."
[Supp. IT]

The delayed approval or non-approval of IS strategic documents is sometimes in contradiction with the normal flow of structural responsibilities and procedures. This has implications on the progress in the IS strategy implementation process as it results in delays in the implementation of the IS strategy. Frequent delays can result in frustrations within certain stakeholder groups and a misconception about the characteristic of IS strategy implementation in the public hospital context. Generally these delays can result in the perception that the implementation of IS strategy for public hospitals is always lengthy and difficult to manage. This brings to fore the notion of the timeliness of the deliverables from stakeholder group/actors.

“We are in the process of putting this (Outcome of workshop) in paper because the sad reality is that it is not documented in any way and it is not endorsed; endorsed in minutes but not in a process”. [Prov. DOH. IT]

Most of these contradictions feed into the overall IS strategy implementation activity system as they result into the development of alternative processes, implicit modalities and the continuity of the IS strategy implementation in public hospitals in the Western Cape province.

5.4 Case study 2 results

This section presents the results of the ActAD framework-based analysis of the Kwazulu Natal province case study. For each ActAD framework element we provide a description of the results that emerged from the data and, where applicable, a short interview excerpt for illustration purpose. Every excerpt is accompanied by a code associated with the specific respondent type (as illustrated in Table 4.6) where applicable: (1) [Hosp. CEO], (2) [Hosp. IT], (3) [Prov. DOH. IT], (4) [Supp. IT] and (5) [User IT].

5.4.1 Collective actors: groups, team, community of practice

There are different actors that are collectively involved in the implementation of the IS strategy in public hospitals of the Kwazulu Natal province. These stakeholder groups are from different expertise areas and play different roles at different levels in the hierarchy of activities related to the implementation of the IS strategy in public hospitals of the Kwazulu Natal province. The stakeholder groups/actors can be grouped into the following stakeholder groups and corresponding activity levels: national, provincial, intermediate, provincial department, service providers and facility or hospital level. At the different levels there are is a hierarchical reporting structure that characterise the relations between the stakeholder groups. The following stakeholder groups/actors can be identified at provincial level: Head of Department (HoD), head of clusters, the CIO, the CFO, the DDGs. The following

stakeholder groups are the facility or hospital level: the hospital CEO, the hospital management team, the care givers, the clinical and non-clinical staff and the patients. The hierarchical reporting structure guides the flow of IS strategy implementation procedural requirements at the provincial level.

5.4.2 Means of coordination and communication: division of work, rules

The means of interaction and communication and coordination include the following methodologies: meetings, telephone calls, emails and presentation. Among these methodologies of communication and coordination, meetings are the frequently used for the interaction between the different stakeholder groups/actors. The frequency and the urgency of the meetings depend on the necessity of the interaction between stakeholder groups/actors. Sometimes the meetings can be cancelled due to change in programmes. Although the cancellation of meetings does not occur frequently, there exists a pattern of meeting cancellation.

“Communication is through meetings and presentations. Once a month there is this meeting and if there is any specific issue that they want us to address they call for a meeting. When you work for government cancellation of meetings is evident: these things do happen but not frequently”. [Prov. DOH. IT]

The means of communication and coordination are generally pre-determined and defined in various policies or acts and contractual documents. There are instances where these defined obligations are not adhered to. Associated to these contracts are sets of enforcing measures/mechanism to ensure the different stakeholder groups' performance is up to the required standards. Challenges exist in the management of these contracts due to the constant changes that characterise the public healthcare sector. The changes are generally political or managerial leading to changes in stakeholder groups/actors dynamics.

“That what keeps the service providers sharp to what they are doing and that’s what keeps the service providers impression back on the hospitals to do what they have to do, and that where the balance comes out. It is not an easy contract to manage. These types of contracts are not easy to manage because you struggle with the public sector, they keep changing the management”. [Hosp. IT]

The change in the stakeholder groups/actors dynamic becomes a challenge in ensuring continuity of IS strategic initiatives. The contracts and contractual agreements between the different stakeholder groups are generally managed through established structures. However these structures are not always effective. This points up the issue of the appropriateness of the model of management of contract and the approach to the continuity of IS strategic initiatives in the event of structural and stakeholder groups/actors dynamic changes.

5.4.3 Actors: individuals or groups

There are different actors (individuals or groups) who participate in the implementation of IS strategy in public hospitals in the Kwazulu Natal province. It was noted that while some of these actors accomplish certain activities in groups, some of these actors have responsibilities for certain activities as individuals. There are different actors or individuals at different levels and within different stakeholder groups that ought to be involved in different activities and who are critical in the implementation of the IS strategy especially if these stakeholder groups are identified in the strategy.

“Now if your strategy identifies HIV as an important thing that means then the directorate that support HIV must be involved will need to involve someone from, if your strategy identifies epidemiology that means epidemiology at provincial level must be involved”. [Supp. IT]

Although there are various individual stakeholders or stakeholder groups that play different roles at different levels, there are implications regarding the breadth of the stakeholder groups and the eventuality of challenges emerging in the IS strategy implementation activities.

“With systems that involve different stakeholders there are major problems such as with the NHLS but with Clinicom we did not experience major issues except the normal resistance changes”. [Hosp. IT]

Associated with this is the notion of the relevance and level of involvement of stakeholder groups/actors in the different IS strategy implementation sub-activities and the influence of the dynamics of the stakeholder groups/actors on the implementation of the IS strategy in the Kwazulu Natal province. In general the IS strategy has implications on the determination of the people who should be involved as well as their role and responsibilities. But there is also a need for a particular strategy to assist in the identification of stakeholders to be involved and to determine the breadth of the stakeholder groups/actors to be involved. This highlights the criticality of having different strategies regarding different aspects of the implementation of the IS strategy and the necessity of planning in the IS strategy implementation process and the SISP practice at public hospital levels in the Kwazulu Natal province.

“So you start with your strategy, always have a strategy. If you don’t have a strategy you will involve far too many or fewer people. You will be including traditional healer where they are of no relevance. In the absence of a strategy, the next person that you will look at is at the project level, and it is the very low level”. [Supp. IT]

The stakeholders/stakeholder groups that are selected are not the only relevant stakeholders. There are different relevant stakeholders that should be involved but that are not involved for reasons that could not particularly be identified. One challenging questions that was brought up was the issue of determining and deciding

which stakeholder groups to involve, at which level and which time in the implementation process. It was suggested that for the involvement of the different stakeholder groups it would be ideal to establish rules that determine which stakeholders ought to be involved when, where and for what purpose.

5.4.4 Tools/means of work: mental instruments, facilities

The various actors use different tools to accomplish their respective tasks. These include but are not limited to the office settings and the IS supporting technologies that the different stakeholder groups use. Some of the major tools include government documents and guidelines such as the e-Health strategy, the National Health Act. These documents provide frames of reference guiding the actions of certain stakeholder groups/ actors particularly in provincial and government department of health hierarchical structures.

“The eHealth strategy for the public health sector provides the roadmap for achieving a well-functioning national health information system with the patient located at the centre”

The different stakeholder groups/actors have different skills and expertise. In the execution of their respective task stakeholder groups use their expertise, competences and skills. The requirements for specialised skills and the availability of these skills can sometime be a challenge. This is the case in post IS strategy implementation in certain public hospitals where IS have been deployed. Associated with this are: the shortage of staff and the inappropriateness of the supporting technological infrastructure at public hospitals in Kwazulu Natal. This is generally the case with the standard model of implementation of IS strategic initiatives in public hospitals in the Kwazulu Natal province. However with the case of the Public Private Partnership (PPP) at one selected public hospital, the skills and technological resources requirements are addressed adequately. Hence the approach to IS implementation can sometimes impact on the availability of the required resources and skills.

5.4.5 Object

The principal object is the IS strategy for public hospitals in the Kwazulu Natal Province. The IS strategy for public hospitals in the Kwazulu Natal province is complex not only in its nature and scope but also in its decomposition in executable activities, tasks and projects. There are three main strategic documents that are used in the development of the IS strategy for public hospitals in the Kwazulu Natal province as illustrated in Table 5.6.

Table 5.6: Strategic documents for IS strategy in the Kwazulu Natal province

| STRATEGIC DOCUMENTS FOR IS STRATEGY IN THE KWAZULU NATAL PROVINCE |
|---|
| 1. National eHealth strategy |
| 2. Kwazulu Natal health strategic plan |
| 3. Provincial service transformation plan: 2010-2020 |

The process of extracting IS strategic projects can be delayed due to delays in the delivery of strategic documents from certain stakeholder groups. There was a five year delay in having one strategic document ready. This impacted negatively the process of IS strategy decomposition and IS strategic initiatives extraction.

There is a mixed understanding about the scope and form of the strategy in the Kwazulu Natal province. Certain stakeholder groups/actors pointed out that there is no IS strategy. For these stakeholder groups/actors they said that the lack of the IS strategy was a result of lack of guidance from national level and the delayed availability of guiding strategic documents from stakeholder groups/actors responsible for the drafting of these documents and/or delayed approval of guiding strategic documents.

“The problem is lack of guidance from national. Now that the e-health strategy has been approved so there will some guidelines but there is no policy on how this will be done. There is a strategy that has been signed. The only thing that is missing is having the policy/procedures on how things will

be drilled down. We don't have any direction because we do not have any direction from national". [Prov. DOH. IT]

The lack of guidance and delayed availability of guiding strategic document has implications on the approach to IS implementation in public hospitals. This leads to lack of direction in IS implementation in public hospitals, difficulties in IS implementation in public hospitals, poor IS implementation in public hospitals in the Kwazulu Natal province, and difficulties in attaining strategic goals.

"The thing is when you do not have policies or guidelines, this is what happens: you run around like a headless chicken. If you have guidelines you know exactly which direction you are taking. Otherwise you are going on that road, this road, that road, this road, not attaining what you are trying to achieve". [Prov. DOH. IT]

Despite the challenges of having a standard IS strategy for public hospitals in the Kwazulu Natal province, there are alternative approaches to the deployment of ICTs in public hospitals in the province. One such approach is the case of the revitalisation project which has led to IS implementation in public hospitals in the province. The revitalisation project has led to major ICT infrastructural development in public hospitals in the Kwazulu Natal province and the implementation of IS such as Meditech in public hospitals in the Kwazulu Natal province. In addition to this there are selected public hospital where the IS strategy implementation has been piloted. These selected public hospitals are examples of the practice of SISP in the Kwazulu Natal province. These examples highlight not only the challenges and the success factors in the IS strategy implementation process in the Kwazulu Natal province but also the complexity around the state and form of the IS strategy in the province.

5.4.6 Outcome

The state and form of the IS strategy in the Kwazulu Natal province dictates the outcome of its implementation. The main outcome of the implementation of the IS

strategy in certain public hospitals in the Kwazulu Natal province. At some of these public hospitals there are fully implemented HIS. At some of these public hospitals there are scattered and domain specific IS. The steps towards the implementation of relevant IS for improved healthcare service delivery in public hospitals in the Kwazulu Natal province are not advanced. This is a direct consequence of the approach to the implementation and the state of the IS strategy.

A major consideration in the assessment of the outcome of the IS strategy implementation activity system in the Kwazulu Natal province is the impact of the revitalisation project. However the revitalisation project has been in support of a strategy that was developed years ago. Associated with this are the notion of IS strategy revision and the consequence of obsolete IS strategy.

“Now what happen is that they are implementing “revitalisation” with a strategy that was developed 20 years earlier and the strategy now and the choice of modules did not take into account the stakeholders. The clinical stakeholders have been very disturbed. The people who are running HIV/AIDS were not involved, epidemiology was not involved, reporting to DHIS was not a consideration”. [Supp. IT]

This brings to fore the notion of SISP practice in the province over the years, its long term and short term implications, stakeholder groups/actor level of involvement and the consequences of the level of involvement in SISP processes in the province.

5.4.7 Individual/group work process and action

A key process at provincial level is extracting strategic IS projects from the various strategic documents (national and provincial) and making recommendations regarding the IS to be implemented at public hospitals in the Kwazulu Natal province. Different individual/groups are responsible for different individual/group processes and actions. These processes contribute to the implementation of the IS strategy for

public hospital and the consequential IS for improved healthcare service delivery in public hospitals.

“What we do is to extract projects from these documents. For this financial year we are looking at IT infrastructure. Next year we will be now looking at information systems. We only make recommendation and approval is done at a higher level...” [Prov. DOH. IT]

The deployment of IS at different hospitals is another key process regarding the implementation of the IS strategy in public hospitals in the Kwazulu Natal province. Although there are IS that are being deployed as part of the IS strategy, sometimes there is no strategy that guided the deployment of the systems but just a plan to implement the systems. The model of deployment and the management of the roll out become key aspects in this regard. The question of the form of the IS strategy in this case is critical in this case.

“We are deploying systems at some hospitals as part of the revitalisation project. There was not a strategy really that guided the implementation of the system. There was just a plan to implement the system... What has happened is that we are rolling out or implementing the meditech system which is one of the hospital revitalisation project which fall under the IT infrastructure: the question would be that how can you roll out or implement this Meditech without any implementation plan”. [Prov. DOH. IT]

Despite the fact that there is no specific formal, written IS strategy that is followed, there is an implicit strategic goal that needs to be attained through the implementation of appropriate IS at public hospitals in the Kwazulu Natal province. In other words the decisions to implement IS in public hospitals implementation of IS in public hospitals in public hospitals in the Kwazulu Natal province are all in support of and the attainment of IS strategic goals whether in writing or not.

5.4.8 Mode of operation: historical phases

The healthcare environment has always been a different and complex environment where IS implementation is a major challenge. In comparison to other industries, the healthcare sector in general and the public healthcare sector approaches investments in IS differently. The South African healthcare environment in general and the public hospitals environment in Kwazulu Natal in particular are affected by this reality.

“Health cannot afford the IT of the populous world. You can’t have 1400 desktops. 1,400 desktops may cost you Rands 10,000 per desktop because you got to buy quality, (because you can’t buy the cheap ones as they do on the city contracts... That’s not the cost that kills you. The cost that kills you is keeping them running. And the support for it and the skills you got to have. We don’t have those skills in South Africa. You might have pocket of them. Remember health covers the entire country”. [Hosp IT]

The contextual realities of the healthcare environment, the eventual technological changes as well as the structural change in the management of public hospitals necessitated constant review and renewal of the IS strategy. This would ensure that the IS strategy is appropriate. The review and renewal of the IS strategy is not always done timeously due to stakeholder relations related factors. It was noted that there has been a strategy that was developed earlier and, following this, there were some changes due to new vision and availability of funds.

“Again there the assumption was made and the decision was made by a project manager (not a clinical) and he made an assumption and again this has to do with the leadership in 2008. He made the assumption that the strategic imperatives of 23 years ago were still relevant today (20 years later). And, yes and no, Health has changed. Now there is HIV, there is a whole load of things. In other words, disease management that was not 20 years earlier

is now a thing to do. And whereas 20 year earlier prescribing a system wouldn't have been an issue is issue now". [Supp. IT]

The contextual realities of the public sector and the management of contracts is another key historical aspect. The public sector environment is characterised by constant changes in areas such as leadership and directions. This is a major challenge particularly when dealing with the implications of this constant change. These changes affect the implementation of IS strategy and related activities in different ways. One challenge associated with this constant change is the issues of continuity of IS strategic initiatives in the event of change of leadership or change in stakeholder groups/actors dynamics. To address this challenge, an appropriate model of management of continuity of IS strategic initiatives is necessary.

"You struggle with the public sector, they keep changing the management. They change the government, they change the MEC, they change the head of department, they change the financial manager... So you enter into these long terms contracts and you are constantly dealing with people who don't know what the hell you are talking about because of memory loss. It is their turn of memory loss. So the contract manager, we need substantial people who will be there regardless of the political front. You have political change 4-5 years; you can't have in these projects that level of change". [Supp. IT]

5.4.9 Relations with other activities

The implementation of the IS strategy in the Kwazulu Natal Province is not an isolated independent activity system: there are various other activities that are directly or indirectly linked to the implementation of the IS strategy. Some of these activities are historical, others are hierarchical, others are procedural and others are process-related. The evaluation of public hospitals in the absence of the sought strategic objectives and with the IS strategy piloted implementation.

“They had a work study for the implementation. The work study evaluated all of the processes that were there and how they were done. A year later after the implementation the work study went back they went back and did the same thing. And they found the hospital was running much more efficiently, with a 20 % reduction in nurses, they were 20% more efficient than they were before the implementation. So if you look at it 23 years ago, KZN had a spot on: the implementation was that it was first going to happen at hospital X then to assess how well it went and on the basis of that decide on how they were going to roll out. So, that strategy was particularly good”. [Supp. IT]

The identification of a specific procurement model is one activity that has been identified as key in the implementation of IS strategy in public hospitals in South Africa. This activity entails investigating what IS are relevant for public hospitals, what funding mechanisms to follow and the implications of the choice of a given procurement model on the overall IS strategy implementation in public hospitals.

“They knew that if they commissioned it through the traditional way, it will fall into disrepair as with the other hospitals. So at that time they embarked on going through and they went through the UK and looked at the PFI project in the UK, they then went to Europe and looked at the PFI in Europe, and from there they selected the procurement model...And then what they did, they embarked on looking at various hospitals that were paper less paper meaning the medical record... They looked at some hospitals here, they looked at other reference hospitals in UK, in Europe, and out of that they came to formulate in their mind what they wanted for the Hospital. And they then said they wanted a paperless medical record...That what led them to the strategy where they said we want a paperless, we want electronic medical records”.

[Hosp. IT]

The management of contracts is another key activity related to the implementation of IS strategy in public hospitals in Kwazulu Natal. As mentioned earlier there are different stakeholder groups that play different role in the implementation of the IS

strategy in public hospitals in Kwazulu Natal. And there are contractual agreements that exist and that define not only the roles and responsibilities but also the rules and means of interactions. These contract need to be managed and it can sometimes be a big challenge.

“The bigger challenge is that of the contract management with the department, Because you have no consistency in the department, you always go back to square one, you always have to repeat yourself, you always to explain the contract to them because they don’t understand the contract at all, they don’t take the time to understand it because they don’t have the skills to understand it. And they don’t have the interest, to be honest. That is one of our key challenge that we have”. [Supp. IT]

The management of contract can be a big challenge due to the stakeholder groups’ dynamics where particularly one stakeholder group plays a double role: being a partner, the assessor and the client. Hence it was suggested that there should be an independent neutral actor who can carry the task of managing contracts.

“The ideal contractual structure for me is that you have an independent contract manager who does not work for the government and who does not work for the private partner, completely independent, to be appointed and it would be their responsibility to manage the contract from start to completion. The government and the private partner are then put under equal foot in that contract...So you need an independent contract manager who will monitor the contract”. [Supp. IT]

There are various activities that are linked to the implementation of the IS strategy in the Kwazulu Natal province. These activities and processes are either part of the IS strategic activities or the IS strategy operationalization processes.

5.4.10 Contradictions

The implementation of the IS strategy in public hospital in the Kwazulu Natal province is characterised by some contradictions at different level of the activity system and with different implications regarding the implementation of the IS strategy. For example although there exist a defined mechanism of procurement of prescribed IS for public hospitals, it is not always the case with all the hospitals. In some hospitals there is a different approach that is followed. Moreover there are contradictions in the roll out based on the availability of funds.

The lack of common understanding of what the strategy is and or the scope of the strategy is a contradiction in comparison to the strategic activities that have been taking place and the IS strategic decisions that have been taken in support of service delivery at public hospitals in the Kwazulu Natal province.

“We are deploying systems at some hospitals as part of the revitalisation project. There was not a strategy really that guided the implementation of the system. There was just a plan to implement the system”. [Prov. DOH. IT]

There is also a contradiction between the standard model of deployment and funding of IS strategic initiatives in the Kwazulu Natal province. This has been the case when the province was exploring potential other IS deployment models particularly the PPP model.

“IT systems are deployed differently here: in the case of hospital A it was a public-private partnership: they didn't follow the provincial Supply Chain Management (SCM) procurement process. In other hospitals there is funding coming from national and then the procurement is done through the provincial supply chain management”. [Hosp. IT]

Although there is an assumed hierarchical flow of responsibilities on certain aspects of the implementation of the strategy, there are still difficulties when certain actors

do not meet their hierarchical obligations. This has major implications of the rest of the activities within the hierarchical structures and penalises the normal course of related IS strategy implementation processes.

“We don’t have any direction because we do not have any direction from national. The thing is when you do not have policies or guidelines, this is what happens: you run around like a headless chicken. If you have guidelines you know exactly which direction you are taking. Otherwise you are going on that road, this road, that road, this road, not attaining what you are trying to achieve”. [Prov. DOH. IT]

Despite the existence of the IS strategy, it is possible that the initial strategy and objectives related to the strategy won’t be followed in practice. This leads not only to disruptions in the entire IS strategy implementation process but also inconsistency in the IS systems that are deployed at public hospitals. Associated with this are the decisions that are taken during the course of the execution of the IS strategy. These decisions are not always based on the advice from the service providers. Not following requirements or advice from certain actors can lead to difficulties at national, provincial, provincial department of health level, or facility level. These decisions are sometimes based on the success of a pilot implementation. The implications of this are a disruption in the flow of activities as initially planned or set in the initial IS strategic goals. This can result in challenges of scaling up the IS implementation of other public hospitals and maintaining the success at the pilot sites.

“However what happened is that soon after hospital A went live, they made other big decision that today will be difficult to believe...We want our ten facilities to improve their billing. Can you give us a billing module? So for the 10 selected hospitals they requested a billing module only, just the billing module. Not the other modules. The improvement in efficiencies at hospital A was due to the implementation of a set of modules, and here they are looking at one module... So beyond A hospital they lost it”. [Supp. IT]

Another contradiction is the implementation of IS strategic initiatives based on obsolete IS strategy. Associated with this are the issues of inadequate IS implementation in public hospitals and the incompatibilities between technological requirements and infrastructural capabilities, the technology in use and the technological support from service providers. Hence it is relevant to review the IS strategy in time to avoid the consequences of making decisions that are based on an obsolete IS strategy.

“23 years ago the strategy was relevant at the hospital but today it is completely different. Now what happen is that they are implementing “revitalisation” with a strategy that was developed 20 years earlier and the strategy now and the choice of modules did not take into account the stakeholders”. [Supp. IT]

The findings imply that the decision making that is based on an obsolete IS strategy can be the root cause of various IS strategy implementation challenges. The criticality of the associated challenges can be higher particularly when the different stakeholder groups/actors haven't been involved or consulted. It is therefore imperative not only to review the strategy timeously but also to involve and consult the relevant stakeholder groups in the practice of SISP in general and the implementation of IS strategy in public hospitals in the Kwazulu Natal province.

5.5 Chapter summary and conclusion

In this chapter we described the two case studies that were selected for the investigation of the influence of stakeholder relations in public hospitals in South Africa and presented the results of the ActAD framework-based analysis of the two case studies.

We firstly provided a description of each case study with a focus on the generalities of the province, the public hospitals and the source of data. We then presented the results of the ActAD framework-based analysis of each case study. The emphasis was

on the following ten aspects: (1) Collective Actors: groups, team, community of practice; (2) means of coordination and communication: division of work, rules, etc; (3) actors: Individuals or groups; (4) tools/means of work: mental instruments, facilities; (5) object; (6) outcome; (7) individual/group work process and action; (8) mode of operation: historical phases; (9) relations with other activities and the network of activities; (10) contradictions

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CHAPTER SIX: CASE STUDY FINDINGS

6.1 Introduction

In this chapter we present the findings of the thematic analysis of the case studies. Using thematic analysis, we identified concepts and themes that emerged from the results of the two case studies. The findings presented here are solely derived from the thematic analysis of the results of the case studies presented earlier in Chapter 5. For each case study we grouped, summarised and coded the emerging concepts. We then integrated the findings from the two case studies. In the end the integrated findings were summarised and mapped into the theoretical SRI framework for IS strategy implementation in public hospitals in South Africa. The detailed version of the SRI framework for IS strategy implementation in public hospitals in South Africa is described in Chapter 7.

The rest of this chapter is structured in five sections. Section 6.2 describes the thematic analysis procedure followed. Section 6.3 presents the thematic analysis findings of the Western Cape province case study. Section 6.4 presents the thematic analysis findings of the Kwazulu Natal province case study. Section 6.5 describes the integrated findings of the two case studies. Section 6.6 presents the developed theoretical SRI framework for IS strategy implementation in public hospitals in South Africa.

6.2 Thematic analysis and coding procedure

We analysed the findings of the ActAD-based analysis of the two case studies following a thematic analysis and coding process that entailed moving from the results of ActAD-based analysis to the identification of the initial themes, the final concepts and the theoretical SRI framework in an iterative manner as illustrated in Figure 6.1 below.

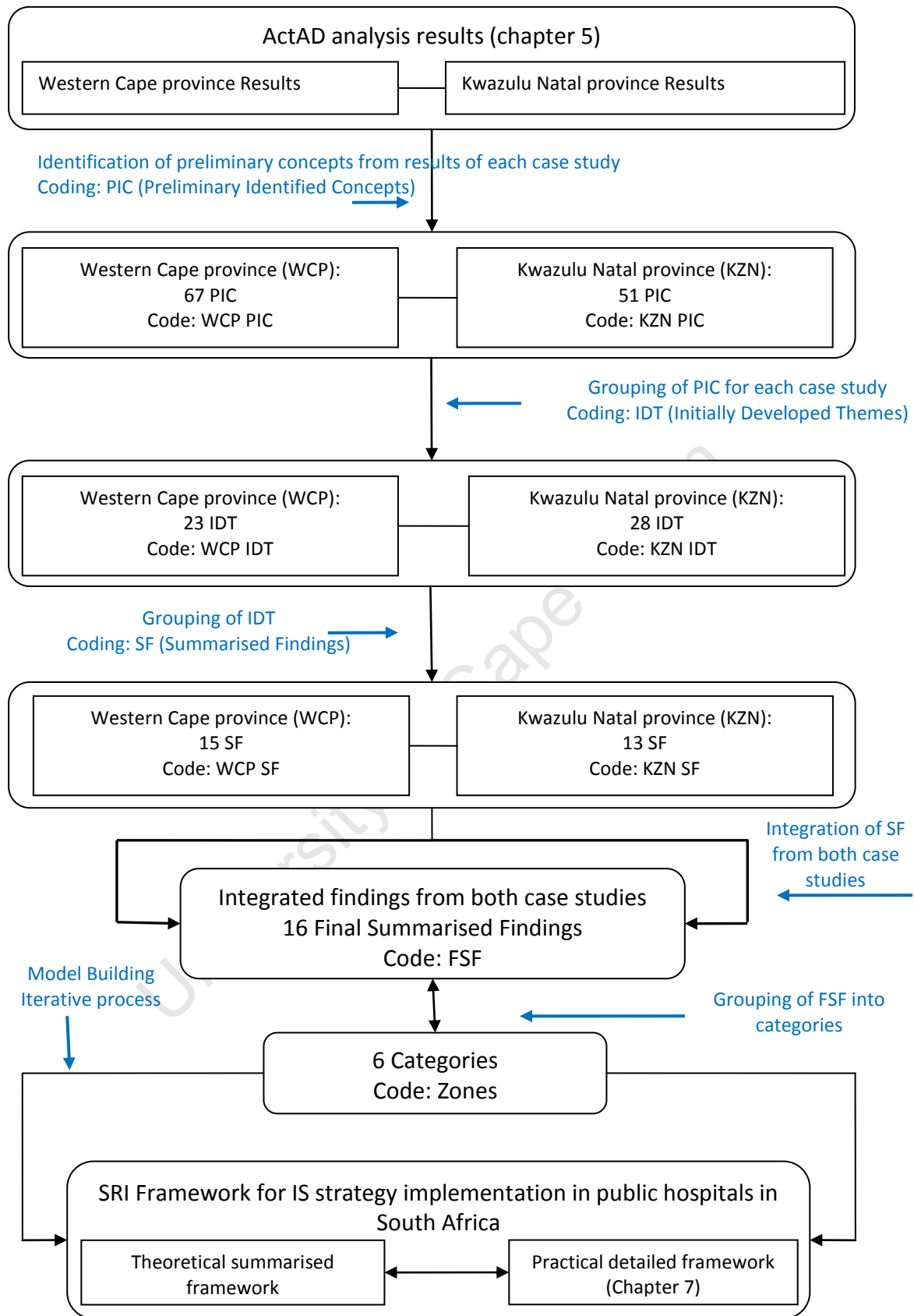


Figure 6.1: Thematic analysis and coding procedure

The thematic analysis process started with the identification of preliminary concepts from the results of the ActAD-based analysis of the two case studies as well as interview excerpts or citations from documents. At the end of this first level analysis we identified 67 themes from the Western Cape province case study and 51 themes from the Kwazulu Natal province case study. Each preliminary code was identified by reading through transcripts and assigned the code PIC (preliminary identified concepts). Hence we used the codes WCP PIC for the Western Cape province case and KZN PIC for the Kwazulu Natal province case. Appendices 14 and 15 provide a detailed account of the preliminary thematic analysis.

The second level analysis consisted in grouping the preliminary identified concepts into emerging themes. We used the code IDT (initially identified themes) and hence ended up with 23 themes and/or codes WCP IDT for the Western Cape province case and 28 themes and/or codes KZN IDT for the Kwazulu Natal province case. Further grouping on these initially developed themes, using the code SF (summarised findings), resulted into 15 WCP SF and 13 KZN SF summarised themes and/or codes for the Western Cape province case and the Kwazulu Natal province case respectively. We then merged the summarised themes from the two case studies and integrated them into 16 final themes using the code FSF (final summarised findings) as summarised in Table 6.3. In the end we grouped the final summarised themes into 6 categories that we termed zones as illustrated in Table 6.4. Using model building and following an iterative approach, we later integrated the findings into the SRI framework for IS strategy implementation in public hospitals in South Africa. The framework maps the interrelations between the identified themes.

6.3 Findings of the Western Cape province case study

The thematic analysis of the ActAD-based results of the Western Cape Province case study led to the identification of 67 preliminary codes as illustrated in Appendix 14. These preliminary codes were then grouped into 23 themes which were then summarised into 15 final concepts as illustrated in Table 6.1. Each of these concepts will be described in turn.

Table 6.1: Thematic analysis of findings from the Western Cape province case

| Western Cape Province case study Initially Developed themes (WCP IDT) | Grouping of themes | Western Cape Province case study summarised findings (WCP SF) |
|---|--------------------|--|
| WCP IDT 1: Stakeholder groups and their respective roles and expertise | WCP IDT 1, | WCP SF 1: Network, hierarchy and roles of stakeholder groups |
| WCP IDT 2: Stakeholder groups related hierarchical activity levels | 16 | |
| WCP IDT 3: Stakeholder groups respective level of in-put in IS strategy implementation activities | WCP IDT 2, | WCP SF 2: IS strategy implementation activities' hierarchical levels |
| WCP IDT 4: The structure of the implementation team and the province approach | 17 | |
| WCP IDT 5: The hierarchical structures characterising stakeholder groups and the interactions between stakeholder groups | WCP IDT 2, | WCP SF 3: Strategic activities and activities for the operationalization of the IS strategy |
| WCP IDT 6: Scoping of the IS strategy and development of IS strategic initiatives | 17, 20 | |
| WCP IDT 7: IS strategy flexibility to accommodate new guidelines or requirements | WCP IDT 5, | WCP SF 4: Hierarchical levels of stakeholder groups |
| WCP IDT 8: Integration of national strategic vision into provincial IS strategy | | |
| WCP IDT 9: Engagement between different stakeholder groups | WCP IDT 3, | WCP SF 5: Engagement between stakeholder groups and the level of in- |
| WCP IDT 10: Procedures and means for the operationalization of IS strategy | 9 | put in IS strategy implementation activities |
| WCP IDT 11: Stakeholder engagements mechanisms | | |
| WCP IDT 12: Existence of contracts for the management of stakeholder groups respective obligation | WCP IDT 4 | WCP SF 6: The provincial approach |
| WCP IDT 13: The timeliness of deliverable from stakeholder groups and implications for the IS strategy implementation. | WCP IDT 6, | WCP SF 7: IS strategy formulation and IS strategic initiative development |
| WCP IDT 14: Existence of IS initiative funding mechanism | 7, 8 | |
| | WCP IDT 10 | WCP SF 8: Tools and techniques of IS |

| | | |
|--|----------------|---|
| <p>WCP IDT 15: Contextual factors affecting the engagements between stakeholder groups as well as the implementation of IS strategy in public hospitals in the Western Cape</p> <p>WCP IDT 16: Invisible but focal stakeholder and the classification of stakeholder groups such as the patients</p> <p>WCP IDT 17: Strategic activities and IS strategy operationalization processes</p> <p>WCP IDT 18: IS strategic decisions and strategy operationalization decisions</p> <p>WCP IDT 19: Adherence to guidelines, requirements and other IS strategy implementation prescriptive recommendations</p> <p>WCP IDT 20: Deployment of IS in public hospitals in the Western Cape Province</p> <p>WCP IDT 21: : IS strategic decision resulting from the learning from good strategic initiative from provincial stakeholders or other stakeholder groups</p> <p>WCP IDT 22: IS strategic goals achievement.</p> <p>WCP IDT 23: The challenge of focusing on technology and not on people issues in the deployment process</p> | | strategy implementation activities |
| | WCP IDT 11, 12 | WCP SF 9: Mechanisms of the engagement between stakeholder groups |
| | WCP IDT 13 | WCP SF 10: Timeliness of IS strategy implementation related activities |
| | WCP IDT 14 | WCP SF 11: IS strategic initiative funding mechanism |
| | WCP IDT 15 | WCP SF 12: Contextual factors' influence |
| | WCP IDT 18, 21 | WCP SF 13: Decisions regarding the implementation of the IS strategy |
| | WCP IDT 19 | WCP SF 14: Adherence to guidelines, mechanisms, etc. |
| | WCP IDT 22, 21 | WCP SF 15: Attainment of strategic goals |

6.3.1 Network, hierarchy and roles of stakeholder groups

The findings show that there is a wide network of stakeholder groups that are essential in the implementation of the IS strategy in public hospitals of the Western Cape Province. These stakeholder groups have play different roles in the implementation of the IS strategy. The stakeholder groups include actors at different levels being it international level, national level, provincial level, district level, hospital level, or service providers' level. These stakeholder groups/actors have differing levels of in-put into different activities related to the implementation of the IS strategy. Every stakeholder group has its expertise and responsibilities in IS strategic activities as well as the IS strategy operationalization processes.

At international level, there are stakeholder groups such as the World Health Organisation (WHO) and other international bodies that provide technical or technological guidelines. At national level the following stakeholder groups have been identified: the national leadership and the minister of health, the Department of Health, other departments such as Home Affairs that provide specific support to the Department of Health, relevant state-owned organisations such as State Information Technology Agency (SITA), the Council for Scientific and Industrial Research (CSIR) that provide different support role to the department of health. At the provincial level there are established structural bodies such as the centre for e-innovation (CEI) that is responsible for driving the implementation of IS strategy, the Central IT Committee (CITCOM) that is responsible for the provincial general IT related decision making process. Other internal structures include the Department IT committee (DITCOM) that makes IS strategic recommendations at department level. These recommendations need to be approved by top management at provincial level before embarking on implementation. At hospital level there is the hospital management team, the hospital's clinical and non-clinical staff and most importantly the patients. The service provider stakeholder groups include the various technology suppliers that are contracted for the attainment of specific IS strategy implementation goals and objectives. Other relevant stakeholder groups include but are not limited to universities, research institution and expert consultants.

6.3.2 IS strategy implementation activities' hierarchical levels

The activities for the implementation of the IS strategy are characterised by a certain hierarchical structure which is a parallel attribute of the related stakeholder groups hierarchical roles and responsibilities regarding the implementation of the IS strategy. For example activities related to IS strategic decisions occur at national and provincial levels while IS strategy operationalization processes focus on hospital level implementation goals. This does not imply that it is the responsibility of the hospital to operationalize the IS strategy.

6.3.3 Strategic activities and activities for the operationalization of the IS strategy

The implementation of the IS strategy is linked to different activities that are part of the IS strategy implementation cycle. For example it has been noted that the IS strategy often exist in a non-standard form and is likely to be the result of integration of different healthcare service improvement objectives specified in different strategic documents such as the National e-Health strategy. Hence the approval of strategic documents such as the National e-Health strategy become relevant to the implementation of the IS strategy. The approval of national e-health strategy occurs at national strategic level. There are similar related activities that occur at strategic level. Other activities are concerned with the operationalization of the IS strategy. Hence the different IS strategy implementation related activities can be grouped in two categories: the IS strategic activities and the IS strategy operationalization processes.

6.3.4 Hierarchical levels of stakeholder groups

There is a hierarchical structure that characterise the stakeholder groups involved in the implementation of the IS strategy. This hierarchy also characterise the respective roles and responsibilities of the different stakeholder groups and determines the levels of occurrence of the different IS strategy implementation activities. Hence there are stakeholders at international level, national level, provincial level, service provider level, provincial IT department head office level, public hospital levels and

intermediate level. There is also a hierarchical structure within individual stakeholder groups.

6.3.5 Engagement between stakeholder groups and the level of in-put in IS strategy implementation activities

The relationship between the different stakeholder groups are formed through related engagements and interactions. There are structures and mechanisms that guide the interaction engagement between/among stakeholder groups and the manageability of the engagements between the related stakeholders. The engagements are generally through meetings and established bodies such as the different committees. Associated with the engagement between stakeholder groups is stakeholder groups' levels of in-put in IS strategy implementation activities. The engagements between the different stakeholder groups aim at specifying and coordinating actions regarding the implementation of the IS strategy in public hospitals in the Western Cape Province. The engagements can be between different stakeholder groups or within actors of the same stakeholder group. A key identified aspect of the engagement between stakeholder groups was the potential learning from different stakeholder groups' expertise and the potential of this learning to contribute to the attainment of strategic goals.

There are challenges associated with the engagement between stakeholder groups. Some of these challenges include but are not limited to the timeliness and appropriateness of the engagements, the frequency of engagements, underestimating or overestimating the relevance of engagement with certain stakeholder groups, the quality (and use of) of outcome of engagements and the inclusiveness of various stakeholder groups views and suggestions. All these challenges have implications of the implementation of the IS strategy in public hospitals of the Western Cape Province. A direct implication of these challenges is the delay in IS strategy implementation activities' related outcome and the delay in achieving the sought strategic objectives.

6.3.6 The provincial approach

The Western Cape Province has a specific approach to the implementation of the IS strategy. There exist an in-house structure/body, the CEI, that oversees all the provincial departments' IT related matters in general and the implementation of the IS strategy in public hospitals in particular. This approach can be described as a centralised IS strategy deployment approach. This approach dictates not only the composition of the implementation team at provincial level and at project level but also the approach to the deployment of IS strategic initiatives.

6.3.7 IS strategy formulation and IS strategic initiative development

The IS strategy for public hospitals in the Western Cape Province exists in a non-standard form. The strategy should be understood in the specific context of the public sector in general and the healthcare sector in particular. The strategy is guided by different strategic documents and guidelines such as the National e-Health Strategy goals, Provincial Health Strategy and the Provincial 2020 Health Objectives. As such the IS strategy is the outcome of a process of decomposition of strategic goals into objectives, the integration of national and provincial health objectives and the development of IS strategic initiatives. The strategy is very complex and reflects the complexity of the public hospital environment.

This process entails the scoping of the IS strategy, translating various strategic documents into an IT-centric strategy which addresses different needs and concerns of different stakeholder groups, and the identification of This is a complex process. Not only does this process have to address the complexity of IS strategy scoping in the complex environment of public sector and public hospital in South Africa. It also addressed aspects regarding the envisioning of IS deployment in this complex environment, aspects related to the DHIS, aspects related to HIS, aspects related to the changing healthcare context and the associated technological innovations, and aspects of new governmental visions objective such as the current National Health Insurance (NHI) project.

Challenges such as the following affect the IS strategy formulation and the identification of IS strategic initiatives for public hospitals: hospitals with differing technological requirements, the extent to which a strategy can be divided into components and the responsibilities assigned to different stakeholder groups achieved, the poor engagement between stakeholder groups, not taking advice from experts (internal hierarchical/structural) regarding what needs to be done in terms of IS strategy implementation and the associated deployment of IS at public hospitals, dealing with changes that requires adjustment/modification of strategy and implementation, incorporation of strategic workshops' outcome in strategic documents and IT strategy, and difficulties in prioritisation of related actions.

6.3.8 Tools and techniques of IS strategy implementation activities

The different stakeholder groups use different tools that assist them in attaining the outcome of their respective activities. We mentioned earlier that the different stakeholder groups have different expertise. The stakeholder groups' respective skills and expertise are the preliminary tools. In addition to this, stakeholder groups make use of additional tools both mental and physical such as the frameworks for IS projects management, IS projects implementation frameworks, and software development guidelines. In addition to these they also make use of communications tools such as the following to get the work done workshops. In addition to these tools are contractual agreements that specify stakeholder groups' respective responsibilities and means of enforcing delivery of the related services. However it should be noted that in some instances a stakeholder groups own tools such as internal policies can be a source of delay for the entire IS strategy implementation process.

6.3.9 Mechanisms of engagement between stakeholder groups

The mechanism of engagement between the different stakeholder groups is broad and consists of general communication tools, established bodies, defined rules and other modalities of engagements that are contained in various strategic and contractual documents. One common form of engagement is through meetings. The

meetings are held at different levels of the hierarchical structure with different stakeholder groups' representatives, within the established bodies such as the CITCOM, the DITCOM, but also within respective stakeholder groups' internal structures. In some instances depending on the objective of the meeting and the interaction with specific stakeholder groups' representatives, the meeting can take the form of a workshop or a forum. In addition to meetings, stakeholder engagement occurs through normal office setting communication tools such as emails and telephonic exchanges.

The engagements between stakeholders is generally governed by defined rules of engagements specified in governance structures, defined service level agreements and defined principles highlighting the engagements procedural considerations such as the prerogative of the engagements, the frequency of the engagement and the participants in the engagement. The frequency of the engagements and the forms of the engagements are essential factors in terms of achieving appropriate information sharing goals between the stakeholder groups and the associated interactions' benefits. Hence the necessity of having in place efficient, appropriate, defined and established mechanisms and modalities of engagement between the different stakeholder groups.

6.3.10 Timeliness of IS strategy implementation related activities

The implementation of IS strategy in public hospitals of the Western Cape Province is an intertwinement of various activities. The combined outcomes of these activities contribute to the attainment of the Western Cape Province's ultimate IS strategic goal for the public hospitals in general and for the improvement of service delivery to patients in particular. There are different factors that are related to the engagement between stakeholder groups, individual stakeholder groups' performance that affect the timeliness of completion of the respective tasks. These factors include but are not limited to delayed approval or definition of strategic objectives at higher hierarchical levels, delayed interactions with relevant stakeholder groups, individual stakeholder groups' internal policies regarding certain

tasks and the associated procedural requirements and time frame of deliverability of expected outcome. Associated with these are delayed in related activities and difficulties in making good progress in the implementation of the IS strategy.

6.3.11 IS strategic initiative funding mechanism

The implementation of IS strategy in public hospitals in the Western Cape Province can be associated with the implementation of the IS strategic initiatives that are identified and developed through the process of scoping of the IS strategy for public hospitals in this province. Funding and mobilisation of resources for this endeavour is a key aspect in the attainment of the sought IS strategy implementation based service delivery improvement targets. There exists a standard model of funding of these IS strategic initiatives. This model specifies hierarchical responsibilities at national level, provincial level and department levels with regards to the funding process. Hence the funding decisions are based on national, provincial and department lines of conduct and funding guidelines. The funding model also specifies the funding modalities and procedural requirements for approval of IS strategic initiatives to be funded and deployed in different public hospitals of the Western Cape Province.

The standard funding mechanism is not always appropriate in addressing the complexity and peculiarities of the public hospitals in the Western Cape Province. In this regard the following two aspects were noted: firstly, a section that has available funds is likely to proceed with the implementation of the approved IS strategic initiatives, secondly, some public hospitals are lagging behind in the implementation of IS strategic initiatives a decade after the IS strategy and the IS strategic initiatives were approved. This brings up the question of the appropriateness of the funding model and the implications for scaling up the implementation of IS strategic initiatives to the different public hospitals.

6.3.12 Contextual factors

There is an array of contextual factors that directly or indirectly affect the relationships between stakeholder groups and the implementation of the IS strategy in public hospitals in the Western Cape Province. Some of these contextual factors include the following: the international guidelines and trends in health and hospital IS, the role of national in terms of providing guidelines and in decision making, the role of Provincial head office entities in the implementation of the IS strategy, the complexity and peculiarities of the public sector in SA, the hierarchical and political structures, the healthcare environment, the long term nature of IS for health project, public hospital ICT infrastructure readiness, levels of awareness of existing strategic documents, stakeholder' groups awareness of IS strategy and implementation, and the maturity level of the public hospitals.

6.3.13 Decisions regarding the implementation of the IS strategy

We noted earlier the network of the different stakeholders and their different roles and responsibilities in the implementation of the IS strategy. We also highlighted the hierarchical structure of the activities related to the implementation of the IS strategy in the Western Cape Province and the relevance of the engagement between the stakeholder groups in this regard. In parallel with these three aspects is the notion of decision making and the associated decisions regarding the implementation of the IS strategy in public hospitals of the Western Cape Province. The decision making aspect is critical in the sense that it is the essence of the engagement between the stakeholder groups, their actions.

The decision making process is guided by established processes defined in strategic documents, governance mechanisms and the provincial approach. These decisions can also be a dependant on new national strategic vision such as in the case of the current National Health Insurance (NHI) projects. The decisions taken at different levels by different stakeholder groups are the cornerstone of the materialisation of IS strategy implementation in public hospitals in the Western Cape Province. These decisions include IS strategic decisions as well as IS strategy operationalization

decisions. These decisions address aspects such as the choice of IS strategy implementation approach, the choice of the funding model, the scope of the IS strategy and the selection of IS strategic initiatives, the specification of the stakeholder groups to be involved, the choice of specific IS to be deployed at public hospitals, and the prioritisation of strategic actions.

6.3.14 Adherence to guidelines and mechanisms

It has been noted that there are various guidelines and mechanisms that govern not only the engagements between the different stakeholder groups, but also the different aspects of the implementation of IS strategy in public hospitals in the Western Cape Province. The level of stakeholder groups' adherence to these guidelines is essential to the smooth flow of activities, the ideal stakeholder groups' respective performance of assigned roles and responsibilities, the potential attainment of IS strategic initiatives implementation objectives and the ultimate achievement of the sought health service delivery improvement goals for public hospitals in the Western Cape province.

Adherence to these mechanisms is not a given as there are always instances of non-adherence to the guidelines. There are critical implications of non-adherence to the guidelines. Non-adherence to the guidelines can lead to the emergence of implicit alternative guidelines that guide the actions of certain stakeholder groups. Although these guidelines exist, it is important to have enforcement measures to avoid the challenges that emerge from stakeholder groups' non-adherence to guidelines and procedures. It is therefore essential to develop appropriate SLAs. This ensures not only the attainment of the required performance targets from the concerned stakeholder groups but also the enforcement of adherence to the defined norms.

6.3.15 Attainment of IS strategic goals

The ultimate IS strategic goal is the provision of better healthcare service to patients through the implementation of appropriate innovative IS at public hospitals in the Western Cape Province. This is generally achieved through the operationalization of

the identified IS strategic initiatives. The consequential implementation of IS systems in public hospitals in the western cape province has improved service delivery at selected public hospitals where the systems have been deployed. It should be noted that in the complex environment of public hospitals in the Western Cape it is a challenge to attain the long term IS strategic goals. However the short term objectives are generally achieved. It was for example highlighted that in the space of a decade since the deployment of one system started, 80 per cent of the population, not 80 per cent of public hospitals in the Western Cape Province, are benefiting from the implementation of appropriate IS in public hospitals in the Western Cape.

It is not unusual to find certain IS strategic initiatives that are unique to the Western Cape Province. The strategic aim of having these initiatives is the attainment of the goal of being the province of reference in terms of making innovative use of emerging technologies in a changing/evolving healthcare environment but still within the national strategic objectives and with the hope that these innovative solutions can be scaled to other public hospitals and other provinces. This is the case with the Western Cape Province's successful case of the Electronic Content Management (ECM) project at the Khayelitsha hospital.

6.4 Findings of the Kwazulu Natal province case study

The thematic analysis of the ActAD-based results of the Kwazulu Natal Province case study led to the identification of 51 preliminary concepts (KZN PIC) as illustrated in Appendix 15. These preliminary concepts were then grouped into 28 themes (KZN IDT) which were then summarised into 13 final concepts (KZN SF) as illustrated in Table 6.2 below.

Table 6.2: Thematic analysis and findings of the Kwazulu Natal province case

| Kwazulu Natal province case study Initially developed themes (KZN IDT) | Grouping of themes | Kwazulu Natal province case study Summarised Findings (KZN SF) |
|---|-------------------------|---|
| KZN IDT 1: Stakeholder landscape | KZN IDT 1, 4, 19 | KZN SF 1: Stakeholder groups landscape and respective roles |
| KZN IDT 2: Activities (and levels) related to IS strategy implementation and deliverables of activities | KZN IDT 2, 4, 19, 21 | KZN SF 2: Hierarchy of stakeholder's groups and respective activities in implementation of IS strategy |
| KZN IDT 3: Engagement between stakeholder groups | KZN IDT 3, | KZN SF 3: Engagements between stakeholder groups and the relations between stakeholder groups |
| KZN IDT 4: The actions and responsibilities of different stakeholder groups | KZN IDT 5, 6, 16 | KZN SF 4: Modalities of engagement and IS strategy implementation |
| KZN IDT 5: Modalities regarding the engagement between stakeholder groups | KZN IDT 7, 8, 9, 24, 25 | KZN SF 5: Contextual factors |
| KZN IDT 6: Modalities regarding stakeholder groups' roles in IS strategy implementation activities and processes | KZN IDT 10, 12, 23, 26 | KZN SF 6: Decision regarding IS strategy implementation and related aspects |
| KZN IDT 7: Contextual realities regarding ICT for health projects and the healthcare environment | KZN IDT 11, 12, 17, 22 | KZN SF 7: Model of deployment and approach to the implementation of IS strategy |
| KZN IDT 8: The long term nature of IS/ICT for health projects | | |
| KZN IDT 9: The nature of the public healthcare sector | | |
| KZN IDT 10: Decision making in the implementation of IS strategy | | |
| KZN IDT 11: The provincial approach and the model of procurement | | |
| KZN IDT 12: Exceptions to defined /standard approach or model of procurement of IS for certain public hospitals | | |
| KZN IDT 13: Nature of IS strategy. | | |
| Scope of IS strategy and development of strategic initiatives | | |
| KZN IDT 14: Timeliness of deliverables from IS strategy implementation related activities and the | | |

| | | |
|---|----------------|--|
| <p>completeness of related activities</p> <p>KZN IDT 15: The actual state of IS strategy implementation and the ideal state of IS strategy implementation</p> <p>KZN IDT 16: Procedures for the IS strategy implementation and the procurement of IS strategic initiatives</p> <p>KZN IDT 17: Effectiveness of model of procurement, funding and deployment</p> <p>KZN IDT 18: Effectiveness of the model of management of contracts</p> <p>KZN IDT 19: Stakeholder groups level of input and involvement in IS strategy implementation related activities</p> <p>KZN IDT 20: Extent of attainment of IS for public hospital strategic goals and objectives</p> <p>KZN IDT 21: Activities and processes for the implementation of the IS strategy</p> <p>KZN IDT 22: Model/approach to the implementation of IS strategic initiatives</p> <p>KZN IDT 23: Decisions for the implementation of IS strategy</p> <p>KZN IDT 24: Contextual factors influencing engagements between stakeholder groups and the implementation of the IS strategy in public hospitals in Kwazulu Natal</p> <p>KZN IDT 25: Implications of non-adherence to the contextual factors</p> <p>KZN IDT 26: Motivation for the choice of funding/deployment of IS strategic initiatives</p> <p>KZN IDT 27: Approach for the continuity of project/management of continuity of IS strategic projects/initiatives</p> <p>KZN IDT 28: Adherence to contractual obligations and defined modalities of engagements and IS strategy implementation</p> | KZN IDT 13, | KZN SF 8: IS strategy form and scoping |
| | KZN IDT 14, 20 | KZN SF 9: Timeliness of deliverables from IS strategy implementation related activities and Strategic objectives/ goals achievement |
| | KZN IDT 15, 20 | KZN SF 10: Ideal vs. actual state of IS strategy implementation |
| | KZN IDT 25, 28 | KZN SF 11: Adherence to contractual obligations, modalities and contextual requirements |
| | KZN IDT 18 | KZN SF 12: Model of management of contract |
| | KZN IDT 27 | KZN SF 13: Approach to continuity of projects |

6.4.1 Stakeholder groups landscape and respective roles

Similarly to the Western Cape Province case study, there are various stakeholder groups that are involved in the implementation of the IS strategy in public hospitals in the KZN province. The different stakeholder groups play different roles and have different responsibilities in the implementation of the IS strategy. They include actors at international level, national level, provincial level, department level, service provider level, intermediate level and public hospital level. The implementation of the IS strategy is the foreseen by the KZN provincial department of health in line with national guidelines.

We have identified the following six groups of stakeholder groups' roles:

- (1) The provision of national guidelines and leadership at national level
- (2) The provision of leadership at provincial level
- (3) The provision of expert advice and guidance
- (4) The provision of leadership at the provincial department of health level
- (5) The provision of IS support services to the provincial department of health
- (6) The operationalization of the IS strategy.

Some stakeholder groups have responsibilities in strategic activities while others have responsibilities in the IS strategy operationalization activities. Hence there are stakeholder groups who are responsible for the formulation and scoping of the IS strategy, stakeholder groups responsible for making technological recommendations, stakeholders responsible for the implementation of the identified IS at public hospitals in Kwazulu Natal, stakeholder groups who provide technological support.

The roles and responsibilities of the various stakeholder groups can be better understood when explored within the stakeholder hierarchical levels and the associated hierarchy of activities. We describe the hierarchy of stakeholder groups and the related activities in the next section.

6.4.2 Hierarchy of stakeholder's groups and respective activities in implementation of IS strategy

The exploration of stakeholder relations and the implementation of the IS strategy in Kwazulu Natal reveals that there is a hierarchical structure of stakeholder groups and related activities that affect different aspects of the implementation of the IS strategy of which stakeholder engagements and the flow of related activities. The stakeholder relations for example occur within hierarchical structures that characterise the stakeholder groups and the associated hierarchical activities.

The following six hierarchical levels have been identified:

- (1) The national level
- (2) The provincial level
- (3) The provincial departmental level
- (4) The service providers level,
- (5) The public hospital level
- (6) The stakeholder at intermediate and/or international level.

6.4.3 Engagements between stakeholder groups and the relations between stakeholder groups

The relationships between the different stakeholder groups' actors who are involved in the implementation of the IS strategy in public hospitals in the Kwazulu Natal province are formed based on the engagements between them. Although the aims of the engagements are multiple, their outcomes are channelled towards achieving the IS strategy for public hospitals objective in the Kwazulu Natal province: to improve healthcare service delivery through the use of appropriate IS solutions. The engagements occur at different levels with the relevant stakeholder groups and with specific objectives. For example there are engagements between hospital level stakeholder groups and the provincial department of health in the gathering of requirements for the implementation of IS strategic initiatives.

The engagement between the different stakeholder groups have various implications regarding the implementation of the IS strategy. As such the engagements between the stakeholder groups are the cornerstone of the formation of the relationships between the stakeholders and the associated influential aspects on the implementation of the IS strategy in public hospitals in the Kwazulu Natal province. The frequency and forms of these engagements are critical in the attainment of mutual agreements regarding various aspects of the implementation of strategic initiatives. It was noted that in some instances the frequency of the engagements is low leading to less productive engagements and frustrations at certain stakeholder groups' level. The engagements between the stakeholder groups are governed by some mechanisms. We discuss this in the next section.

6.4.4 Modalities of engagement and IS strategy implementation

Just as with the Western Cape Province case, there are mechanisms for the engagement between stakeholder groups and the implementation of the IS strategy in public hospital in Kwazulu Natal. These mechanisms are the modalities of engagements and the IS strategy implementation. They include defined rules, tools and means for communication and coordination of activities related to the engagement between stakeholder groups and the implementation of the IS strategy in public hospitals in the Kwazulu Natal province.

Some of these modalities are specified in document such as the health ACT, defined policies and contractual agreements. The tools for the engagements between stakeholder groups include meetings, telephonic calls and emails. The tools for the implementation of the IS strategy include the respective expertise of the different stakeholder groups, the various IS implementation guidelines, project management tools and governance framework.

There are however challenges to the engagement and the implementation of the IS strategy in public hospitals in the Kwazulu Natal province that are a consequence to non-adherence to the modalities of engagements and IS strategy implementation.

These include and are not limited to stakeholder groups' poor performance of the required contractual service targets. In this regard, it emerged that there is a necessity to develop measures to enforce adherence to the modalities of engagements and IS strategy implementation to achieve the necessary activities' related output targets. One challenge that was the lack of modalities for the transmission/relay and follow up of previous IS strategy implementation activities and guidelines, and decisions in the case of change of stakeholder groups' actors.

To these modalities, there is a need to add the contextual factors which implicitly affect the engagement and the implementation of IS strategy in public hospitals in the Kwazulu Natal province.

6.4.5 Contextual factors

The contextual factors identified in the Western Cape Province case study are to a large extent applicable to the Kwazulu Natal case study. Contextual factors such as the provincial approach, the maturity of public hospitals in the Kwazulu Natal province, the nature and context of the public sector, the complexity of the public hospitals environment, the long-term nature of IS projects for health/public hospitals, the cost of IT, health inability to afford IT, complexity of healthcare environments particularly public health, infrastructural deficit and infrastructural readiness have been identified as being influential in the engagements between stakeholder groups and the implementation of the IS strategy in public hospitals in the Kwazulu Natal province.

6.4.6 Decisions regarding IS strategy implementation and related aspects

Associated with the engagements between the different stakeholder groups are the different decisions that are taken to address different aspects of the IS strategy implementation. These decisions can be taken at national level and then relayed to the different levels of the hierarchical levels. It will then be the responsibility of each stakeholder groups to take due actions in the execution of the decisions. These

decisions address aspects such as the choice IS strategic initiatives to be rolled out, the choice of the model of deployment, the selection of the model of procurement, the selections of stakeholder groups to be involved and the assignment of roles and responsibilities. These decisions affect the implementation of the IS strategy in public hospitals in the Kwazulu Natal province in different ways.

The concept of decision regarding IS strategy implementation brings to the fore issues of appropriateness of the decision taken. These issues include but are not limited to the scope of the IS strategy and the selected IS strategic initiatives, the landscape of stakeholder groups involved, the engagement mechanisms, the effectiveness of the choice of the model of deployment, the effectiveness of the model of management of contracts, the effectiveness of the model of funding, etc. There are strategic decisions that can unpredictably be taken at certain points of time and that can change the directions of strategic initiative drastically.

6.4.7 Model of deployment and funding approach to the implementation of IS strategy

There is a model of deployment and IS strategic initiative funding that is followed in the implementation of IS strategy in the Kwazulu Natal province. This model of deployment makes provisions for the different aspects of the implementation such as the choice between a centralised and non-centralised approach to the deployment, the prioritisation of IS strategic initiatives, the mobilisation of resources, the approach to scaling up piloted IS strategic initiatives and the exploration of the effectiveness of different deployment approaches.

There exists a standard approach to the funding and deployment of IS strategic initiatives for public hospitals in the Kwazulu Natal province. However it is possible to identify exceptions to the applicability of the standard model of deployment. In certain cases the prerogative for the exception is to explore the potential and effectiveness of alternative mode of deployment and/or funding such as the public private partnership deployment model. In general the motivation in these cases is to

learn from the experience or the associated IS strategic initiative deployment experience of a given hospital with the aim of replicating the experience in other hospitals.

6.4.8 IS strategy form and scoping

Just as with the Western Cape Province case, the IS strategy in the Kwazulu Natal province exists in a non-standard strategy form. In this regard, it transpired that there are strategic projects or projects plans that constitute the strategy. Awareness of its existence can be sometimes limited to certain stakeholder groups. The scope of the strategy at provincial level is broad and does not only cater for hospitals but also the clinics and covers aspects such as connectivity, DHIS, IT infrastructure, and hospital IS. The process of scoping of the IS strategy and identification of IS strategic initiatives for public hospitals in Kwazulu Natal is therefore critical.

This process entails identifying strategic initiatives by matching national objectives, provincial goals and deriving IT/IS related practical solutions for healthcare service improvement at public hospitals. This is done in a systematic manner where various strategic documents such as the national ehealth strategy, the telehealth are used as guidelines. In other words activities regarding the implementation of IS strategy elements are focused on the operationalization of IS/IT projects/plans for public hospitals extracted from the national ehealth strategy, the provincial IT plan and

6.4.9 Timeliness of deliverables from IS strategy implementation related activities and Strategic objectives/ goals achievement

The achievement of good progress in the implementation of the IS strategy in public hospitals in the Kwazulu Natal Province is dependent of the timeliness of the deliverables from the various related activities. In this regard stakeholder groups' timely execution of their respective tasks becomes a key determining factor. Among the different difficulties in attaining the IS strategic goals in the case of public hospitals in the Kwazulu Natal province is the challenge of the timeliness of

deliverables of IS strategic initiative implementation related activities. Associated with this are various factors such as the time gap between approval of IS strategic initiatives and the actual launch of IS strategy implementation activities, certain stakeholder groups inadequate performance and the timeliness of engagements between the relevant stakeholder groups.

In general delayed deliverables from stakeholders result in delayed strategy implementation activities. In certain cases, these delays can be as long as five years. This can have a paralysing effect in the flow of IS strategy implementation activities and the attainment of IS strategic objectives. In general this leads to a wide gap between the ideal state of IS strategy implementation and the extent to which the IS strategy has been implemented. We discuss this in the next section.

6.4.10 Ideal vs. actual state of IS strategy implementation

There is a gap between the ideal state of the IS strategy implementation and the actual extent of IS strategy implementation in public hospitals of the Kwazulu Natal province. Ideally, the IS strategy should have been widely implemented but due to stakeholder relations related factors, the progress in implementing IS strategic initiatives is generally slow. These stakeholder relations' related factors include but are not limited to stakeholder groups respective extent of execution of their respective IS strategy implementation tasks, the timeliness of deliverables from IS strategy implementation related activities and the extent of stakeholder groups adherence to contractual obligations and modalities for engagement and IS strategy implementation.

6.4.11 Adherence to modalities contractual obligations and contextual requirements

There is a need for adherence to the various modalities for the engagement between stakeholder groups and IS strategic initiative implementation to ensure that the different stakeholder groups appropriately execute their respective tasks and that

the various IS strategy implementation activities flow smoothly. Poor adherence to the modalities, contractual agreements and contextual factors lead to an array of difficulties in the implementation of IS strategic initiatives. To avoid poor adherence and the associated difficulties it is essential to develop and implement effective measures to enforce adherence to the modalities, contractual obligations and contextual factors. In this regard and in regard to contractual agreements between stakeholder groups it is essential to have appropriate contract management frameworks or model. We discuss this in the next section.

6.4.12 Model of management of contract

Contracts and contractual agreements between different stakeholder groups are among the various modalities of engagement and IS strategic initiative implementation. The management of these contracts and contractual agreements is essential in ensuring that every party meets its contractual obligations. Hence it is essential to have an appropriate and effective model or approach of management of contract. This approach should provide means to address matters such as issues of non-compliance and non-adherence to contractual agreements and issues of penalties. In the specific context of public hospitals and the public sector there are various contractual agreements between governmental stakeholders and non-governmental stakeholder groups. In this environment, governmental stakeholder groups hold a strong power in the sense that they are the one who are paying. In this environment certain stakeholder groups might not be able to raise non-compliance issues to protect their fiscal interests. In this particular context need is to ensure impartiality and, this goal can be achieved by the use of an independent body. However this is not easily doable.

6.4.13 Approach to continuity of projects

IS strategic initiatives for public hospitals and projects are undertaken in the public sector environment. In this environment it is common that leadership, team structures changes occur at different hierarchical levels in government institutions

before the completion of IS strategic initiatives which are long term in nature. These changes have implications in the transmission and relaying of IS strategic initiatives for public hospitals in the Kwazulu Natal province. One of the direct implications regarding the implementation of IS strategic initiatives in public hospitals in Kwazulu Natal is the challenge of continuity of the already started IS strategic initiatives. Hence it is essential to have an appropriate approach to address issues of continuity of IS strategic projects in the event that there is a change in leadership or team dynamics within any stakeholder groups structure in general and within different levels of hierarchical structures of government institutions' stakeholders in particular.

6.5 Integration of the findings from the two case studies

A thematic analysis of the two case studies has resulted in the development of key concepts that capture different aspects of stakeholder relations and the influence of these relations on the implementation of IS strategy in public hospitals of the two provinces of South Africa. We then integrated the findings of these two case studies as illustrated in Table 6.3. We integrated the findings by grouping the concepts in a systematic manner: similar concepts and the isolated concepts are grouped in respective conceptual themes. We identify 16 concepts that capture the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa.

Table 6.3: Integrated findings of the thematic analysis of the two case studies

| Western Cape province summarised findings (WCP SF) | Kwazulu Natal case summarized findings (KZN SF) | Integration of findings | Final summarised findings (FSF) |
|--|---|---|---|
| WCP SF 1: Network, hierarchy and roles of stakeholder groups and roles WCP SF 2: IS strategy implementation activities' hierarchical levels WCP SF 3: Strategic activities and activities for the operationalization of the IS strategy WCP SF 4: Hierarchical levels of stakeholder groups WCP SF 5: Engagement between stakeholder groups and the level of in-pu t in IS strategy implementation activities WCP SF 6: The provincial approach WCP SF 7: IS strategy formulation and IS strategic initiative development WCP SF 8: Tools and techniques of IS strategy implementation activities | KZN SF 1: Stakeholder groups landscape and respective roles KZN SF 2: Hierarchy of stakeholder's groups and respective activities in implementation of IS strategy KZN SF 3: Engagements between stakeholder groups and the relations between stakeholder groups KZN SF 4: Modalities of engagement and IS strategy implementation KZN SF 5: Contextual factors KZN SF 6: Decision regarding IS strategy implementation and related aspects KZN SF 7: Model of deployment and funding approach to the implementation of IS strategy KZN SF 8: IS strategy form and scoping KZN SF 9: Timeliness of deliverables from IS strategy | WCP SF 1 , 4; KZN SF1,2 >>>>> FSF 1 | FSF 1: Network, hierarchy of the relevant stakeholder groups and their respective hierarchical roles |
| | WCP SF 2 ; KZN SF 2 >>>>> FSF 2 | FSF 2: The hierarchical levels of activities related to the implementation of IS strategy | |
| | WCP SF 1 ; KZN SF1 >>>>> FSF 3 | FSF 3: | |
| | WCP SF 5 ; KZN SF 3 >>>>> FSF 4 | FSF 4: Situational dynamics of stakeholder relations and situational IS strategy implementation | |
| | WCP SF 8, 9 ; KZN SF 4 >>>>> FSF 5 | FSF 5: Modalities of engagements between stakeholder groups and IS strategy implementation | |
| | WCP SF 12; KZN SF 5 >>>>> FSF 6 | FSF 6: Contextual factors affecting the engagements between stakeholder groups and the implementation of IS strategy | |
| | WCP SF 13 ; KZN SF 6 >>>>> FSF 7 | FSF 7: Decisions regarding various aspects of IS strategy implementation | |
| | WCP SF 3; KZN SF 2 >>>>> FSF 8 | FSF 8: Group of activities and processes related to IS strategy implementation | |
| | WCP SF 7; KZN SF 8 >>>>> FSF 8 | FSF 9: IS strategy form, formulation, scoping, revision and development of IS strategic initiatives | |

| | | | |
|---|---|---|---|
| <p>WCP SF 9: Mechanisms of the engagement between stakeholder groups</p> <p>WCP SF 10: Timeliness of IS strategy implementation related activities</p> <p>WCP SF 11: IS strategic initiative funding mechanism</p> <p>WCP SF 12: Contextual factors' influence</p> <p>WCP SF 13: Decisions regarding the implementation of the IS strategy</p> <p>WCP SF 14: Adherence to guidelines, mechanisms, etc.</p> <p>WCP SF 15: Attainment of strategic goals</p> | <p>implementation related activities and Strategic objectives/ goals achievement</p> <p>KZN SF 10: Ideal vs. actual state of IS strategy implementation</p> <p>KZN SF 11: Adherence to contractual obligations, modalities and contextual requirements</p> <p>KZN SF 12: Model of management of contract</p> <p>KZN SF 13: Approach to continuity of projects</p> | <p>WCP SF 10; KZN SF 9 >>>>> FSF 10</p> | <p>FSF 10: Timeliness of stakeholder groups' activities deliverables and impact on the attainment of IS strategy implementation objectives</p> |
| | | <p>WCP SF 6; KZN SF 7 >>>>> FSF 11</p> | <p>FSF 11: Model of deployment of IS strategic initiative</p> |
| | | <p>WCP SF 14; KZN SF 11 >>>>> FSF 12</p> | <p>FSF 12: Adherence to contractual obligations, modalities and contextual requirements</p> |
| | | <p>WCP SF 11; KZN SF 7 >>>>> FSF 13</p> | <p>FSF 13: Model of funding of IS strategic initiatives</p> |
| | | <p>WCP SF 9; KZN SF 12 >>>>> FSF 14</p> | <p>FSF 14: Model of management of contracts</p> |
| | | <p>KZN SF1,2 >>>>> FSF 15</p> | <p>FSF 15: Approach to continuity of projects and IS strategic initiatives</p> |
| | | <p>WCP SF 15; KZN SF 10 >>>>> FSF 16</p> | <p>FSF 16: Attainment of strategic goals</p> |

We further grouped the 16 concepts into six categories of concepts that we term zones as illustrated in table below.

Table 6.4: Categorisation of identified concepts

| Categories (Zones) | Associated concepts |
|---|--|
| Zone 1: Stakeholder groups for IS strategy implementation | FSF 1: Network, hierarchy of the relevant stakeholder groups and their respective hierarchical roles |
| | FSF 2: The hierarchical levels of activities related to the implementation of IS strategy |
| Zone 2: Stakeholder relations and IS strategy implications | FSF 4: Situational dynamics of stakeholder relations and situational IS strategy implementation |
| | FSF 7: Decisions regarding various aspects of IS strategy implementation |
| Zone 3: Modalities (rules and contextual factors) | FSF 5: Modalities of engagements between stakeholder groups and IS strategy implementation |
| | FSF 6: Contextual factors affecting the engagements between stakeholder groups and the implementation of IS strategy |
| Zone 4: Stakeholder groups' Interactions | FSF 3: Level and motive of interaction, involvement and participation in activities and processes |
| | FSF 10: Timeliness of stakeholder groups' activities deliverables and impact on the attainment of IS strategy implementation objectives |
| Zone 5: Stakeholder groups' actions | FSF 8: Group of activities and processes related to IS strategy implementation |
| | FSF 9: IS strategy form, formulation, scoping, revision and development of IS strategic initiatives |
| | FSF 11: Model of deployment of IS strategic initiative |
| | FSF 12: Adherence to contractual obligations, modalities and contextual requirements |
| | FSF 13: Model of funding of IS strategic initiatives |
| | FSF 14: Model of management of contracts |
| Zone 6: IS strategic achievement | FSF 15: Approach to continuity of projects and IS strategic initiatives |
| | FSF 16: Attainment of strategic goals |

These concepts are later integrated into a framework: the SRI framework for IS strategy implementation in public hospitals in South Africa which depicts the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa. We now describe these final concepts.

6.5.1 Stakeholder groups for IS strategy implementation

6.5.1.1 Network, hierarchy of the relevant stakeholder groups and their respective hierarchical roles

There are different stakeholders/stakeholder groups that are relevant in the implementation of IS strategy in public hospitals in South Africa. These stakeholders include but are not limited to: the government, international bodies, research institutions and universities, national level stakeholders, provincial level stakeholders, hospital management, hospital staff members, ICT service providers, patients. The different stakeholder groups are responsible for different activities regarding the implementation of the IS strategy in public hospitals of South Africa. This is a characteristic of complex systems.

The network of stakeholder groups/actors is one of the factors that contribute to the complexity of the healthcare environment. The grouping of these stakeholder groups should be further understood based on different other classification parameters such as the level and type of involvement influence that are not easily captured by the proposed vertical structural vertical level of influence and responsibility or stakeholder theory's proposed power, urgency and legitimacy factors. For example it has been noted that patients are auxiliary but compulsory stakeholders. There are also shadow stakeholders identified in the case studies such as the international bodies that determine standards, or guidelines regarding IS strategy, IS implementation in the healthcare sector and whose actions can be comparable to that of an invisible hand. Some other stakeholder groups such as nurse and doctors can be seen as emblematic or embellishing, and not always involved. Other stakeholders can be classified as political stakeholders. From a hierarchical perspective we have identified the following six stakeholder groups:

- (1) National stakeholders
- (2) Provincial stakeholders
- (3) Intermediate stakeholders

- (4) Provincial department of health stakeholders
- (5) Service provider stakeholders
- (6) Public hospitals level stakeholders

Associated with this hierarchy is the hierarchy of related IS strategy implementation activities which we describe below.

6.5.1.2 The hierarchical levels of activities related to the implementation of IS strategy

The activities related to the implementation of the IS strategy in public hospitals in South Africa occur at different hierarchical levels and are associated with respective stakeholder groups' hierarchical levels, roles and responsibilities. All the relevant stakeholder groups are not always involved in the IS strategy implementation process due to the lack of direct interaction with some of these stakeholders/stakeholder groups. The direct implication of the non-involvement of certain stakeholder groups is the omission of specific stakeholder groups' related IS strategy implementation considerations and the resulting challenges in the implementation of the IS strategy. The level of delegated authority could be used as one determining factor. However delegated authority is not the key determining factor. In this regard, a key challenge is the definition of the extent of involvement of different stakeholder groups/actors at which levels in this vertical and horizontal hierarchy of activity and division of responsibilities.

6.5.2 Stakeholder relations and IS strategy implications

6.5.2.1 Situational dynamics of stakeholder relations and situational IS strategy implementation

Stakeholder relations are formed based on the engagement between the various stakeholder groups that directly or indirectly affect the implementation of the IS strategy in public hospitals in South Africa. The engagement between different

stakeholder groups is guided by implicit and explicit regulations. The relations between stakeholder groups are also formed based on the extent of stakeholder groups/actors involvement in different processes or levels of the implementation process and through contact establishment between various stakeholder groups.

The engagement between stakeholder groups results in the definition, development and application of more regulations that guide/dictate/inform the actions and responsibilities of each stakeholder group actors regarding the execution of their respective activities and their contribution towards achieving the general aim of the broad activity system of implementing the IS strategy in public hospitals in South Africa. This leads to situational dynamics of stakeholder groups' relations and situational IS strategy implementation. These are key concepts of stakeholder relations influence on the IS strategy implementation process. There are different types of relationships that exist between the different stakeholder groups and that influence different aspects of the implementation of the IS strategy in public hospitals in South Africa.

6.5.2.2 Decisions regarding various aspects of IS strategy implementation

There are various IS strategic initiatives for public hospitals in South Africa implementation decisions that are taken as a result of the engagements and interactions that occur between various stakeholder groups at different levels. These decisions pave the way forward in attaining the IS strategy implementation objectives. These decisions address issues at strategic as well as operational levels. The decisions taken cover IS strategy implementation aspects such as: the appointment of leadership teams, the choice of funding and deployment mechanism, the selection of service providers, the approval of IS strategic initiative, the choice of the model of deployment, and the selection of innovative IS to be deployed at public hospitals in South Africa.

6.5.3 Modalities (rules and contextual factors)

6.5.3.1 Modalities of engagements between stakeholder groups and IS strategy implementation

There are modalities for the engagement between the different stakeholder groups and the implementation of IS strategy in public hospitals. These are established rules and regulations that can be explicit or implicit. Explicit modalities are predefined or developed through mutual agreements between stakeholder groups. Implicit modalities are a result of non-adherence to explicit rules and regulations. Implicit modalities can also be contextual realities-based rules and regulations. These modalities can sometimes be defined or not defined. The relations between the different stakeholders are a function of these rules and modalities of interaction.

The interactions between different stakeholder groups are determined by two major factors: the established rules/regulations and the role that each stakeholder groups is to play in the implementation of the IS strategy. These modalities and rules are in some instances the result of previous stakeholder engagements and agreements between different stakeholder groups. In general these modalities are defined in pre-existing policies and documents which can be national or provincial and contractual agreements. These pre-existing policies and documents include: the health act, the national e-strategy, provincial IT strategy and vision, the contracts and SLA between stakeholder groups, project management frameworks, IS/IT implementation guidelines, etc.

These explicit and implicit modalities of engagement and IS strategy implementation lead to practical mode of engagements for the implementation of IS strategy in public hospitals in South Africa. These include the different established body/committees of internal communication and their scheduled meetings, the various other meetings, forums, workshops, telephonic calls and emails.

6.5.3.2 Contextual factors affecting the engagements between stakeholder groups and the implementation of IS strategy

There are various contextual factors that affect not only the engagement between stakeholder groups but also the implementation of IS strategic initiatives in public hospitals in South Africa. These include the following: the complexity and peculiarities of the public sector, the hierarchical and political structures, the healthcare environment, the long term nature of IS for health project, public hospital ICT infrastructure readiness, level of awareness of existing strategic documents, stakeholder' groups awareness of SISP, and the maturity level of the public hospitals, etc. In the various activities regarding the implementation of IS strategic initiatives in public hospitals in South Africa it is imperative to take cognisance of these contextual factors and to adhere to their consequential requirements.

6.5.4 Stakeholder groups' interactions

6.5.4.1 The Level and motive of interaction, involvement and participation in activities and processes

The different stakeholder groups have different roles and responsibilities in the implementation of the IS strategy. Different stakeholder groups can therefore be involved in different activities at different hierarchical levels with different levels of in-puts.

The roles that the different stakeholder groups/actors play can be in the following two groups of activities: strategic level or IS strategy operationalization level. In both cases the engagement between and the relationships between the interacting stakeholder groups/actors is critical. However the level of involvement in these activities differs and have implication on the IS strategy implementation process. In some cases certain stakeholder groups are not involved in certain activities that they should be involved in. Generally when stakeholder groups/actors feel that they were not involved in activities that they should have been involved in, they tend to become disengaged in the other processes.

6.5.4.2 Timeliness of stakeholder groups' activities deliverables and impact on the attainment of IS strategy implementation objectives

The timeliness of deliverables of stakeholder groups' respective activities is critical in ensuring a smooth flow of activities and the attainment of IS strategy implementation goals. There are often delays by certain stakeholder groups or in completing their tasks on time. These delays can occur at different levels of the hierarchies of stakeholders or activities. As such the timeliness of deliverables from every activity affects the state of IS strategy implementation as unplanned changes occur as a result of the delays. The delays are generally related to stakeholders' own internal policies, non-adherence to modalities of engagement and IS strategy implementation, and some contextual factors.

6.5.5 Stakeholder groups' actions

6.5.5.1 Group of activities and processes related to IS strategy implementation

There are various activities that are undertaken by different stakeholder groups as each stakeholder group undertakes to execute its respective IS strategy implementation related tasks. These activities occur at different hierarchical levels. These activities can be grouped into two major groups: the strategic activities and the IS strategy operationalization activities. There are different factors that are essential to the execution of these activities. Among these factors are the following: timeliness of engagement between stakeholders and the extent of involvement of stakeholder groups, the competencies of different stakeholder groups/actors and the extent of adherence to the regulations. Associated with these groups of activities is the timeliness of their respective deliverables. These activities and processes are necessary throughout the IS strategy implementation process but also in related SISP processes such as the IS strategy formation process.

6.5.5.2 IS strategy form, formulation, scoping, revision and development of IS strategic initiatives

The IS strategy for public hospitals in South Africa exists in a peculiar form with a broad scope. The form and scope of the IS strategy in public hospitals in South Africa make it hard to understand. Hence it is imperative to understand and explore the IS strategy for public hospital in its complexity and with the intricacies of its development, revision and execution. A related key consideration in this regard is the scoping of the IS strategy and the identification of IS strategic initiatives for public hospitals. This is a key stage in the IS strategy implementation process that calls for the practice of SISP and IS strategy planning process.

The scoping of the strategy is a complex process that entails the integration of various strategic objectives into practical ICT-related strategic initiative for public hospitals in South Africa. As such the strategy development entail combining goals, guidelines and strategic objectives from international, national, provincial and hospital levels. The strategy also entails the deployment of not only hospital IS but also other health IS at hospital level. Hence the strategy includes objectives for the deployment of DHIS, Hospital management systems, clinical systems and specialized IS but also new strategic initiative such as the NHI.

6.5.5.3 Model of deployment of IS strategic initiative

The deployment of IS strategic initiatives in public hospitals is undertaken following a particular approach or model. The approach provides guidelines regarding aspects such as the IS strategy implementation approach, the approach to the implementation of the related IS for deployment at public hospitals, the associated approach to change management, training of staff, etc. At the provincial level, the approach is centralised in general and can have some variations in the levels of centralisation depending on the provincial strategy of implementation. The centralised approach is a direct consequence of the federal political system in South Africa.

One of the key considerations regarding the model of deployment of IS strategic initiatives is the approach of each province. It has been mentioned earlier in the literature that the implementation of the IS strategy in public hospitals of South Africa is the responsibility of the province. Although the general approach is centralised each province has a different approach to the implementation of the IS strategy in terms of the level of centralisation, the structure and composition of the implementation team and the housing of the IS strategy implementation team.

In both cases there existed an in-house team that was responsible for all or some aspects of the IS strategy implementation. In some instances certain services were outsourced to service providers. In some instance there was a combination of both approaches depending on the department/ provincial approach and the availability of the necessary skills and resources required for a certain type or level of service.

6.5.5.4 Adherence to modalities, contractual obligations and contextual requirements

Taking cognisance of the modalities of engagements and IS strategy implementation, the defined contractual obligations and the contextual factors is critical in the engagements and the implementation of IS strategy in public hospitals in South Africa. So is the adherence to these modalities, contractual obligations and contextual requirements. Poor adherence or non-adherence to modalities, contractual obligations and contextual factors have negative implications on the overall implementation of the IS strategy in public hospitals in South Africa. The implications are multiple and include aspects such as the following: delayed deliverables, inability to make good progress in the various IS strategy implementation related activities and tasks, poor stakeholder groups' performance and non-attainment of stakeholder groups engagement and IS strategy implementation goals. It is therefore critical to develop measures to ensure and enforce adherence to the modalities, contractual obligations and contextual factors

to avoid the above mentioned negative implications and to ensure that the sought stakeholder engagement and IS strategy implementation goals are achieved.

6.5.5.5 Model of funding of IS strategic initiatives

The model of funding of implementation of IS strategy and/or strategic initiatives in public hospitals in South Africa is critical in the operationalization of the IS strategy. Unlike the private health sector where the funding decisions are taken at the hospital level, in public hospitals of South Africa, funding decisions are taken at higher hierarchical levels following established protocols and based on national and provincial budget allocation models. Although there is a model of funding IS strategic initiatives in public hospitals in South Africa, there are concerns regarding the appropriateness, the rigidity and flexibility of the funding approach used.

6.5.5.6 Model of management of contracts

There are various contracts and contractual agreements that exist between different stakeholder groups involved in the implementation of IS strategic initiatives in public hospitals in South Africa. These contracts are essential in defining the obligations of the different stakeholder groups. However there are challenges in ensuring adherence to contractual agreements and in applying adherence/compliance enforcement measures. Associated to this are difficulties in attaining IS strategy implementation goals due to non-compliance to contractual obligations. Hence there is a need for effective model of management of contracts.

6.5.5.7 Approach to continuity of projects and IS strategic initiatives

In an environment where there is unavoidable changes in stakeholder groups team dynamics and where the deployment of IS strategic initiatives is a long term endeavour, need is to have measures in place to ensure continuity of initiated projects in the absence of the initiator stakeholder groups particularly taking in consideration the long term benefits of these strategic initiatives. The public sector is generally prone to structural and leadership changes at different hierarchical levels.

These changes might occur at the hospital level, at provincial level, or at national level while various relevant IS strategic initiatives have been initiated and different agreements with certain stakeholder groups reached beforehand. In this regard there are challenges that arise in ensuring that these relevant strategic initiatives are not discarded or abandoned as a result of the team dynamics change. This brings to fore the notions of continuity of IS strategic initiatives and the approach to ensure continuity of these strategic initiatives.

6.5.6 IS strategic achievement: attainment of IS strategic goals

The implementation and use of IS at public hospitals are among the IS strategic objectives. Associated with this is the role, needs and expectations of the different stakeholder groups/actors.

In comparing the ideal and the actual state of the IS strategy implementation, we note that there will have been alternative actions that will have been taken alternative regulations that will have been developed or defined directly or indirectly. These alternative activities and regulations are strongly engrained in the stakeholder groups' actions and lead to a questionable state of the implementation of IS strategy. Although the state of the implementation of the IS strategy will have been questionable, it is not surprising to note that the minimal steps towards attaining the business objectives and the IS strategy will have led to the implementation of some form of IS in public hospitals in South Africa.

However there are also exceptions to the defined regulations and flow of activities that also affect the actual state of IS strategy implementation. There is also an imbalance between regulations, deliverables of related activities, and stakeholder groups/dynamics leading to a destabilization of the ideal flow of activities and the consequential progress in the implementation of the IS strategy in public hospitals in South Africa. This leads to the development of alternative measures/rules/regulations and the embankment on corrective/palliative actions or activities targeted at achieving minimal objectives of the IS strategy and the business objectives.

6.6 Integration of findings into a theoretical framework

There have been 16 final concepts that have emerged from the data and that were further grouped into 6 categories that we termed zones as illustrated in Table 6.4. Using model building principles, we mapped the interrelations between these concepts and integrated them into the following theoretical SRI framework.

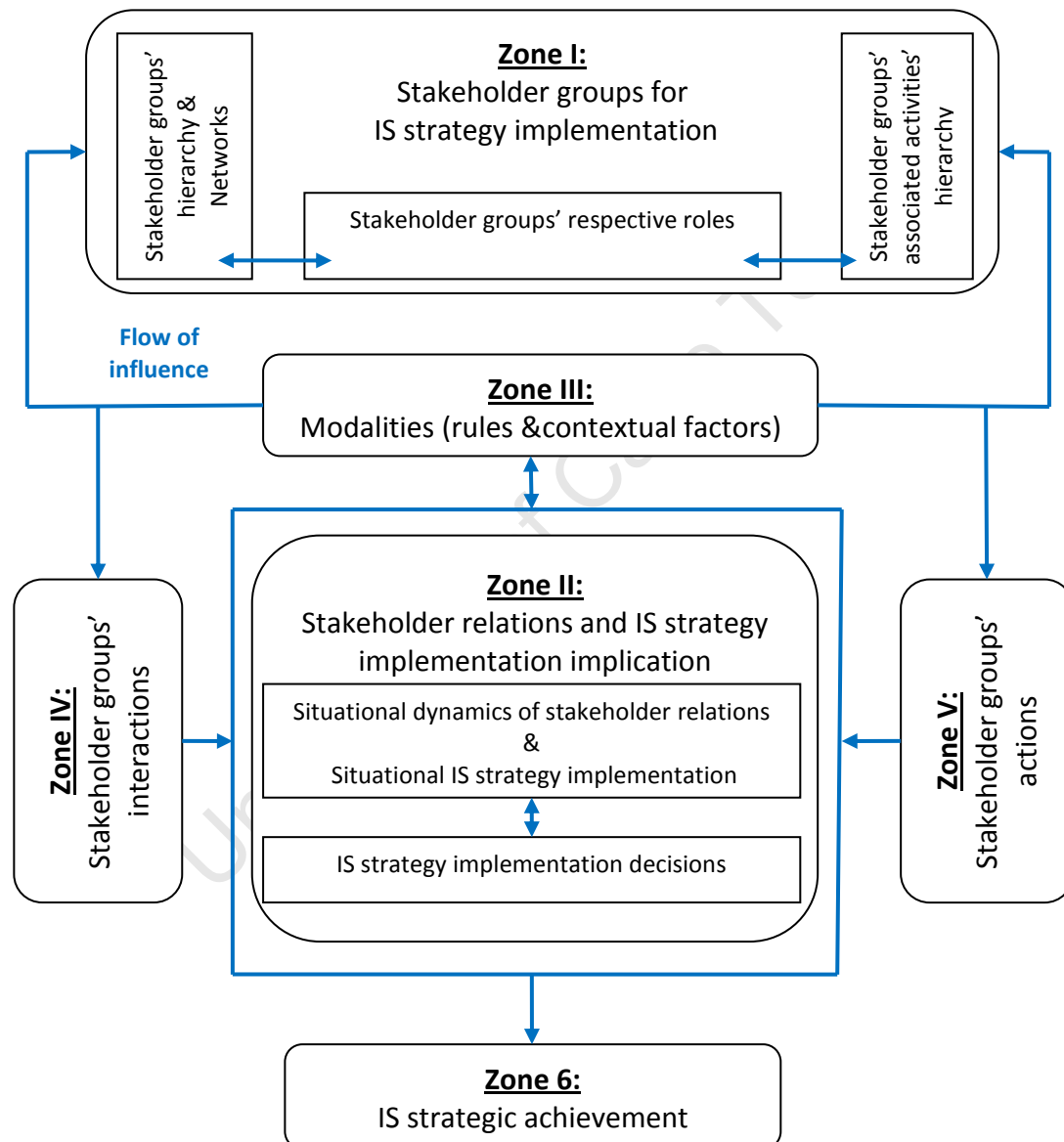


Figure 6.2: Stakeholder Relations Influence (SRI) theoretical framework for IS strategy implementation in public hospitals in South Africa

The framework is an integrative representation of the findings. It allows the amalgamation of the identified concepts into clusters of elements and the mapping of the relationship between these elements as described below.

There are different stakeholder groups at different hierarchical levels who are involved at different levels of the implementation of IS strategy in public hospitals in South Africa. These stakeholder groups interact at different levels in various activities related to the implementation of the IS strategy, hence forming relationships between them. The formation of stakeholder relations is governed by modalities of engagement and IS strategy implementation, both explicit and implicit, and the various contextual factors. This translates into the situational stakeholder relations dynamics and or stakeholder relations factors that influence the implementation of IS strategy.

Aiming to implement the IS strategy, stakeholder groups take decisions that are dependent of the interactions between them and the situational stakeholder relations dynamics. These decisions inform stakeholder groups' actions. The actions of stakeholder groups are governed by underlying mechanisms which are aligned with the modalities of engagement and IS strategy implementation. The overall situational stakeholder relations dynamics influence the level of progress in the implementation of IS strategy in public hospitals in South Africa. This translate into the situational IS strategy implementation which in turn will be indicative of the attainment of IS strategic goals.

There exists a flow of influence between the different elements described above. The flow of influence can be mono-dimensional and linear in cases of hierarchical and chronologic flow/progress factors. The flow of influence can be multi-dimensional and interactive in the case of more complex factors of interaction and IS strategy implementation.

6.7 Chapter summary and conclusion

This chapter presented the integrated findings from the case studies. We firstly described the thematic analysis procedure that we followed. We then presented the findings of the thematic analysis of the Western Cape province. This was followed by the presentation of the findings of the thematic analysis of the Kwazulu Natal province. The findings of the two case studies were then integrated, summarised and mapped into the theoretical SRI framework for IS strategy implementation in public hospitals in South Africa. The findings indicate that there are various stakeholder relations factors that influence the implementation of IS strategy in public hospitals. The intricacies of these factors are captured through six zones and the flow of influence.

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CHAPTER SEVEN: A DETAILED SRI FRAMEWORK FOR IS STRATEGY IMPLEMENTATION IN PUBLIC HOSPITALS IN SOUTH AFRICA

7.1 Introduction

This chapter presents the detailed SRI framework for IS strategy implementation in public hospitals in South Africa. The aim of the development of the detailed SRI framework has been twofold: firstly, to provide an elaboration of the intricacies of the relationships between the elements of the theoretical SRI framework and, secondly to develop a practical tool for the assessment of how stakeholder relations factors influence the implementation of IS strategy in public hospitals in South Africa.

The detailed SRI framework has been developed through multiple iterations in parallel with the thematic data analysis process. Making reference to the theoretical SRI framework's six zones as illustrated in Figure 6.2 and the zones' respective associated themes as summarised in Table 6.4, we further mapped the interrelations between these zones and the associated themes with an emphasis on the detailed elements of each zone as from the case studies' findings.

The rest of this chapter is structured as follow: firstly we provide a description of the framework development process, secondly we present an elaboration of the framework's constitutive elements and, lastly we conclude the chapter.

7.2 Development process of the detailed SRI framework

The relationships between the elements that emerged from the thematic analysis were manually integrated into a preliminary framework that was continuously revised as additional data was gathered. The continuous revision of the preliminary framework shaped the final detailed SRI framework.

The preliminary framework was developed based on the findings from the Western Cape province case study. Groups of elements such as the network of stakeholder groups, the hierarchical levels of stakeholder groups, and the IS strategy implementation activities were firstly captured with an emphasis on the hierarchical levels and the constitutive sub elements. This preliminary framework was revised continuously as we continued to explore the complexity of the research phenomenon and as additional data was gathered from the Kwazulu Natal case study findings. We continued to examine the relationships between the different identified concepts as additional groups of elements emerged from the analysis of additional data from the Kwazulu Natal case study.

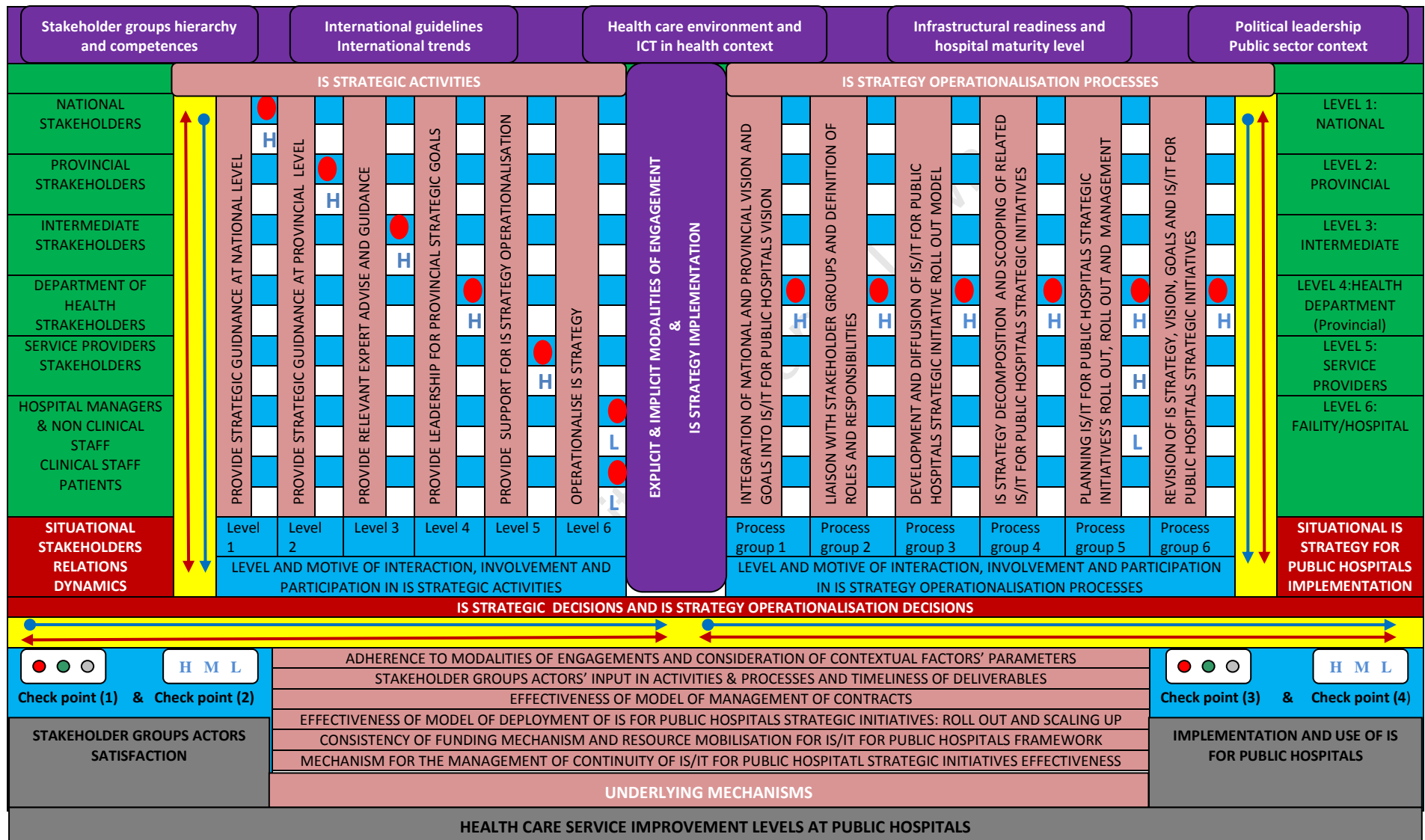
The preliminary framework provided a glimpse of the intricacies of the relationships between the different elements by highlighting aspects such as the stakeholders and strategic activities, the formation of relations between stakeholders through engagements between the different stakeholder groups, the procedures, processes and modalities of stakeholder engagement and the implementation of IS strategy, and the possible stakeholder relations influence factors. Aspects such as stakeholder relations multidimensionality, IS strategy multidimensionality and the individual stakeholder groups' levels of action that have been identified to be critical in the engagements related to the implementation of the IS strategy in public hospitals in South Africa were further captured by specifying stakeholder groups hierarchical levels, the associated hierarchical levels of activities, the flow of influence in the stakeholder interaction zone, and the hierarchical roles in the stakeholder actions zone.

We mapped the concept of the flow of influence across the interactions between the different stakeholder groups, the different stages of the implementation of the IS strategy, the related stakeholder groups' actions and the IS strategy implementation activity system. We specified two major flows of influence: the one-dimensional linear block of the flow influence represented by four single-headed blue arrows and the multi-dimensional interactive flow block of influence represented by four double-headed red arrows.

We mapped the interactions between the different stakeholder groups in parallel with the different stakeholder groups' actions through what we termed interactions' barometers and four check points. This highlighted the implications of stakeholder groups' interactions and relations on the implementation of IS strategy in public hospitals in South Africa. The four check points are: (1) the prerogative of stakeholder groups/actors' involvement in the hierarchical levels of activities, (2) the necessity of stakeholder groups/actors' involvement in IS strategic activities, (3) stakeholder groups/actors responsibility in IS strategy operationalization process and (4) stakeholder groups/actors' participation in IS strategy operationalization processes. The check points depict the high, medium or low scale of assessment and are symbolically represented by a red circle, a green circle and a grey circle for check points (1) and (3) and the letters H, M, L for check points (2 and 4).

In the end we re-grouped and re-organised the elements and the relationships between them. Once the re-grouping process ended, we colour-coded the six zones and the blocks of the flow of influence and provided a legend as illustrated in Figure 7.1 below. This allowed the integration and structuring of the findings of the thematic analysis in a detailed descriptive practical framework. The framework highlights the intricacies of the relationships between stakeholder relations factors and the influence of these factors on the implementation of IS strategy in public hospitals in South Africa. We denominated the final framework the Stakeholder Relations' Influence (SRI) framework for IS strategy implementation in public hospitals in South Africa.

We now describe the elements of the detailed SRI framework for IS strategy implementation in public hospitals in South Africa.



Legend

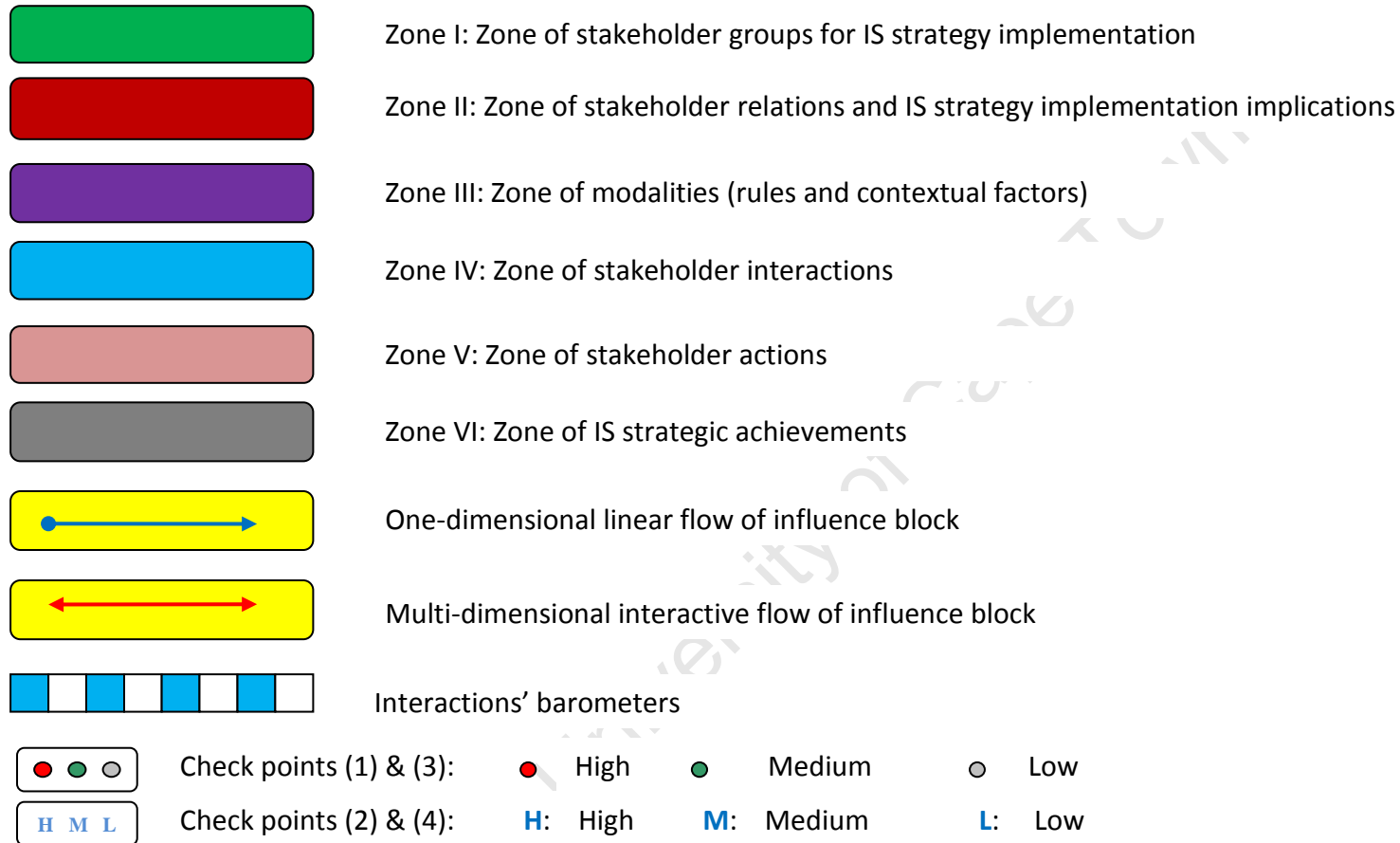


Figure 7.1: The detailed SRI framework for IS strategy implementation in public hospitals in South Africa

7.3 Description of the detailed SRI framework elements

The detailed SRI framework for IS strategy implementation in public hospitals in South Africa is a practical depiction of the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa. We now provide an elaboration of the framework's six zones and two blocks of the flow of influence.

7.3.1 Zone I: Zone of stakeholder groups for IS strategy implementation

The zone of stakeholder groups for IS strategy implementation has the following three characteristics: the stakeholder landscape (and hierarchical responsibilities) and the stakeholder activity levels.

7.3.1.1 The stakeholder landscape

There are different stakeholder groups that are involved in the implementation of the IS strategy in public hospitals in South Africa. These stakeholder groups/actors have different competencies and responsibilities at different hierarchical levels. The following stakeholder groups can be identified in a hierarchical manner: the national stakeholders, the provincial stakeholders, the intermediate stakeholders, the department of health stakeholders, service provider stakeholders, and hospital level stakeholders. Each stakeholder group has its own internal hierarchical structure, own possible policies/strategies and own set of competencies.

It is important to understand the level of influence of these stakeholder groups in the IS strategy implementation process as different stakeholder groups are responsible for different activities at different levels of the IS strategy implementation process. We propose a vertical classification of these stakeholder groups based of their structural level of influence and the related responsibilities in the assumptive vertical flow of activities.

7.3.1.2 The stakeholder activity groups' levels

Similarly and symmetrically to the stakeholder landscape, there are different activities whose outcome contribute to the implementation of IS strategy in public hospitals in South Africa. These activities occur at different hierarchical levels. We identify the following six hierarchical levels: National level, provincial level, intermediate level, health department level, service provider level and public hospitals or facility level. However a given stakeholder group/actor can intervene at different levels in the hierarchy of activities. In this regard problems might arise when this intervention becomes or is perceived to be an interference.

7.3.2 Zone II: Zone of stakeholder relations and IS strategy implementation implications

The key characteristics of this zone are the situational stakeholder relations dynamics, the IS strategic and IS strategy operationalization decisions, and the situational IS strategy implementation. These characteristics emphasise the time factor and the implications of the time factor on the relations between stakeholders and the implementation of the IS strategy in public hospitals in South Africa.

7.3.2.1 Situational stakeholder relations dynamics

The situational stakeholder relations dynamics reflects the state of the relationships between different stakeholders at a given time period of the IS strategy implementation within the specific context of the public hospital environment in South Africa. This illustrates the multi-dimensional nature of the factors influencing the interactions between stakeholder groups and the implications thereof for the implementation of IS strategy in public hospitals in South Africa. The situational stakeholder relations dynamics directly affect all the other components of the framework therefore influencing the attainment of IS strategic goals and leading to a situational IS strategy implementation at a given time period.

Situational stakeholder relations dynamics provide lenses to explore internal interactions, engagements between stakeholder groups and the implications for the implementation of IS strategy in public hospitals in South Africa. The situational stakeholder relations dynamics allow the exploration of the state of stakeholder relations at a given time at the following levels:

- ❖ Hierarchical structure level
- ❖ Individual stakeholder groups internal structures
- ❖ Strategic leadership team
- ❖ IS strategy operationalization team
- ❖ Teams responsible for respective strategic activities and operationalization processes

7.3.2.2 IS strategic decisions and IS strategy operationalization decisions

The implementation of the IS strategy in public hospitals in South Africa is primarily a result of various decisions both strategic and operational. These decisions are taken by different stakeholder groups depending on their role and involvement in IS strategy implementation activities and processes. These decisions are a result of interactions between certain stakeholder groups throughout the IS strategy implementation process at different hierarchical levels. Decisions taken at strategic level have direct implications on the operationalization processes and can, in some cases, drastically change the course of the implementation of the IS strategy in public hospitals.

IS strategic and IS strategy operationalization decisions can sometimes be taken in cases where a stakeholder group's strategic initiative or project proves to be of relevance to the attainment of the national strategic vision for public hospitals in South Africa. These decisions can in some instances be in contradictions with the existing, established mode of IS strategy operationalisation. Exceptional IS strategic decisions and IS strategy operationalization decisions can be taken by national and provincial stakeholders with a specific strategic goal. However these exceptional decisions are not always followed through and can lead to isolated cases of

incomplete experiential IS strategic initiatives implementation. Associated with these exceptional decisions are exceptional procurement and funding mechanisms. We describe these further in the discussion of the model of procurement as one of the underlying mechanisms.

One major challenge in the decision making process is the issue of alignment between the national stakeholder goals, the provincial goals, the overall IS strategy for public hospitals.

7.3.2.3 Situational IS strategy implementation

The situational IS strategy implementation reflects the multi-dimensionality of the state of progress in the implementation of IS strategic initiatives in public hospitals in South Africa at any given time and within the specific context of the public hospitals in South Africa. The situational IS strategy implementation allows the exploration of the state of the IS strategy implementation at public hospitals level and the progress thereof at the different levels.

7.3.3 Zone III: Zone of modalities (rules and contextual factors)

The zone of modalities consists of the following three elements: (1) the explicit modalities, (2) the implicit modalities and (3) the contextual factors.

7.3.3.1 Explicit modalities

Explicit modalities include the different rules, means of coordination, means of communication and means of work that are defined in existing documents such as the Health Act and the various contractual agreements, that directly govern the engagement between stakeholders and the implementation of IS strategy in public hospitals. Among explicit modalities are: contractual obligations and the general body of relevant knowledge in areas related to the implementation of IS strategy in general and public hospitals in South Africa in particular.

7.3.3.2 Implicit modalities

Implicit modalities are those means of coordination, means of communication and means of work that are undefined but that are critical to the attainment of the IS strategy implementation objectives. Among these implicit modalities are the skills, knowledge and expertise of stakeholder groups, the level of commitment of the different stakeholder groups and the common (sometime with a negative connotation) mode of operation of public institutions.

7.3.3.3 Contextual factors

There are different contextual factors that affect not only the relations between stakeholder groups/actors but also the implementation of the IS strategy in public hospitals in South Africa. These factors include the following: stakeholder groups/actors hierarchy and competencies, international guidelines and trends, the healthcare environment and ICT in health context, infrastructural readiness and hospital maturity level, the political leadership and the public sector context.

7.3.4 Zone IV: Zone of stakeholder interactions

The zone of interactions highlights the following three elements: (1) the level and motive of interaction, involvement and participation in IS strategic activities; (2) the level and motive of interaction, involvement and participation in IS strategy operationalization processes and (3) the interactions' barometers and the four check points.

7.3.4.1 The level and motive of interaction, involvement and participation in IS strategic activities

The level and motive of interaction, involvement and participation in IS strategic activities is a key aspect of the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa. Various stakeholder

groups are involved at different levels in IS strategic activities with different degrees of participation in these activities. The motive of interaction with stakeholder groups or involvement of stakeholder groups differs. This affects the situational stakeholder relations dynamics and has implications on the implementation of the IS strategy in public hospitals in South Africa. When the level of engagement between stakeholder groups/actors, involvement and participation in IS strategic activities is inadequate, delays in deliverables of stakeholder groups' respective activities are imminent.

7.3.4.2 The level and motive of interaction, involvement and participation in IS strategy operationalization processes.

Similarly to the level and motive of interaction, involvement and participation in IS strategic activities, the level and motive of interaction, involvement and participation in IS strategy operationalization processes is a key aspect of the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa. Although there are various stakeholder groups/actors who are involved at different levels in IS strategy operationalization processes, the motive of interaction, involvement and participation differs. This has implications on the implementation of the IS strategy in public hospitals in South Africa as the levels of engagement between stakeholder groups/actors, involvement and participation in IS strategy operationalization processes might be inadequate.

7.3.4.3 The interactions' barometers and the check points

The interactions' barometers provide a means to practically evaluate the interactions between stakeholder groups in each IS strategic activity and each IS strategy operationalisation process through their four check points:

- (1) The prerogative of stakeholder groups/actors' involvement in the hierarchical levels of activities
- (2) The necessity of stakeholder groups/actors' involvement in IS strategic activities

- (3) Stakeholder groups/actors responsibility in IS strategy operationalization process
- (4) Stakeholder groups/actors' participation in IS strategy operationalization process.

These are necessary in understanding the situational dynamics of stakeholder relations and the implications for the situational IS strategy for public hospital implementation. Check points (1) and (2) are concerned with the IS strategy activities while check points (3) and (4) are associated with the IS strategy operationalisation processes. These four check points are critical elements of the framework.

A. The prerogative of stakeholder groups/actors involvement in the hierarchical levels of activities

There is always a prerogative of involvement of a stakeholder group/actor in a given IS strategic activity. The prerogative of involvement can be high, medium or low due to different parameters. The prerogative of involvement can be particularly high when a given stakeholder group/actor has the hierarchical responsibility of a given activity or IS strategy implementation related strategic initiative. We represented the high, medium and low prerogative by a red circle, a green circle and a grey circle respectively.

B. The necessity of stakeholder groups/actors' involvement in IS strategic activities

Associated with the prerogative of stakeholder groups/actors' involvement in the hierarchical levels of activities is the necessity of stakeholder groups/actors' involvement in IS strategic activities. This might be high, medium or low. The high, medium and low necessity of involvement criteria are represented by capital H letter, capital M letter and capital L letter respectively.

C. Stakeholder groups/actors' responsibility in IS strategy operationalization processes

Different stakeholder groups/actors have different responsibilities in the IS strategy operationalization processes. These responsibilities might be high, medium or low depending on parameters such hierarchical responsibility and ownership of operationalization process. The provincial DoH for example is structurally mandated to operationalize IS strategy implementation in public hospitals. We represent the high, medium and low responsibilities by red circle, a green circle and a grey circle respectively.

D. Stakeholder groups/actors' participation in IS strategy operationalization process

Associated with stakeholder groups/actors' responsibility in IS strategy operationalization processes is stakeholder groups/actors' participation in IS strategy operationalization process. Different stakeholder groups/actors participate in IS strategy operationalization processes. However their levels of participation vary and can be high, medium or low depending on certain parameters. We represent the high, medium and low levels of participation in IS strategic operationalization processes by capital H letter, capital M letter and capital L letter respectively.

7.3.5 Zone V: Zone of stakeholder actions

The zone of actions consists of three elements: (1) the underlying mechanisms, (2) the IS strategic activities and (3) the IS strategy operationalization processes.

7.3.5.1 The underlying mechanisms

The underlying mechanisms are mechanisms that govern the actions of stakeholder groups. There are six underlying mechanisms regarding stakeholder relations and the implementation of IS strategy in public hospitals in South Africa:

- A. Adherence to modalities and consideration of contextual factors
- B. Stakeholder groups/actors input in activities and processes and timeliness of activities and processes deliverables

- C. Effectiveness of model of management of contracts
- D. Effectiveness of model of roll out and scaling up IS strategic initiatives
- E. Effectiveness of the mechanism of IS strategic initiatives funding and resource mobilisation
- F. Effectiveness of the mechanism of management of continuity of IS strategic initiatives.

A. Adherence to modalities and consideration of contextual factors

We described the modalities and contextual factors in zone III. Adherence to these modalities ensures compliance at the different levels of the interactions between the different stakeholder groups and in the stakeholder groups' actions. Although adherence to these modalities is critical, adherence challenges are common among stakeholder groups. These challenges affect negatively the implementation of IS strategy in public hospitals in South Africa. Poor adherence to the modalities is dependent of factors such as stakeholder groups' poor awareness of the modalities, poor controls and governance, stakeholder groups' conflicting internal structural parameters, stakeholder groups' incompetence and stakeholder groups' lack of commitment.

B. Stakeholder groups/actors' input in activities and processes and timeliness of deliverables

Different stakeholder groups partake in different IS strategic activities and IS strategy operationalisation processes at different levels during the implementation of IS strategy in public hospitals in South Africa. However their levels of involvement and active participation in related activities and processes differ. This affects the type and timeliness of their respective inputs into IS strategic activities and IS strategy operationalisation processes. Their respective inputs into IS strategic activities and IS strategy operationalisation processes in turn affect the timeliness of deliverables of these activities and processes.

C. Effectiveness of model of management of contracts

Although there are contracts that define the role, responsibilities and obligations of the various stakeholder groups/actors, the management of these contracts can be a challenge. Most of the associated challenges are dependent of appropriateness and effectiveness of the model of management of contracts. There are two major considerations in terms of the management of contracts: enforcement of adherence to contractual obligations and maintaining impartiality and consistency in the management of contracts. An appropriate model of management of contract should address these two aspects.

D. Effectiveness of model of roll out and scaling up of IS strategic initiatives

There are various challenges in the roll out and scaling up of IS strategic initiatives in public hospitals in South Africa. These challenges are generally a consequence of inadequacies and ineffectiveness in the model of IS strategic initiatives' roll out and scaling up. Roll out and scaling up of IS strategic initiatives in public hospitals in South Africa is a complex endeavour that requires appropriate mechanisms and procedures. These mechanisms and procedures capture not only the mode of deployment of IS strategic initiatives in public hospitals but also the provincial department of health approach to the deployment. At provincial level the approach could be centralised or decentralised. Each of these approaches has its advantages and disadvantages.

E. Effectiveness of the mechanism of IS strategic initiatives funding and resource mobilisation

The funding of IS strategic initiatives and the mobilisation of the necessary resources follow a peculiar mechanism. This mechanism depicts not only the fund allocation but also the procedures that must be followed. There exists a standard model of IS strategic initiatives. This model defines not only the guidelines and approval procedures but also the national and provincial requirements and directives. The standard IS strategic initiatives funding mechanism has its advantages and limitations. The effectiveness of the funding mechanism is a critical underlying parameter. Although there is a standard model of IS strategic initiatives'

procurement and funding that is followed, it is not unusual to have IS strategic initiatives funded through a different model. Exceptions to the standard IS strategic initiatives funding model can be dependent of the following: exploration of alternative models of funding, strategic priorities and the urgency to acquire specific IS for public hospitals' specialties.

F. Effectiveness of the mechanism of management of continuity of IS strategic initiatives

Continuity of IS strategic initiative entails ensuring that IS strategic initiatives for public hospitals are not discontinued due to changes in stakeholder groups/actors dynamics. This is key for the implementation of IS strategy in public hospitals in South Africa particularly because of the long term nature of IS for public hospitals projects and the nature of the plausible changes that can occur at different levels. The effectiveness of the mechanisms of management of continuity of IS strategic initiatives is therefore critical.

7.3.5.2 The IS strategic activities

There are IS strategic activities that occur at different hierarchical levels. Different stakeholder groups/actors partake in these activities at different levels. Most of all these IS strategic activities deal with leadership and ownership of activities at the different hierarchical levels. Although an IS strategic team can be theoretically identified, there are difficulties in defining the team members practically. The IS strategic activities include the following:

1. Provide strategic leadership at national level
2. Provide strategic leadership at provincial level
3. Provide relevant expert guidance and advice
4. Provide strategic leadership at provincial health department level
5. Provide support for IS strategy operationalization
6. Operationalize the IS strategy for public hospitals

We do not provide a detailed description of these activities as they are self-explanatory. These IS strategic activities are generally associated with stakeholder groups' hierarchical levels and the associated hierarchical activity levels. However, there are possibilities that a stakeholder group can champion an IS strategic activity or different IS strategic activities at a non-corresponding hierarchical activity level.

7.3.5.3 The IS strategy operationalization processes

The operationalization of the IS strategy is the ultimate activity in the IS strategy implementation activity system. It consists of various sub-activities that can be grouped in 6 core processes:

- A. Integration of national and provincial IS for health goals and initiatives
- B. Liaison with different stakeholder groups regarding their role and responsibilities
- C. Development of IS strategy implementation model
- D. Extraction and scoping of IS strategic initiatives
- E. Implementation and management of IS strategic initiatives
- F. Revision of IS strategy, strategic goals and initiatives

These processes are iterative and are prone to challenges due to poor integration of new national goals/vision, the lack of alignment between IS strategy and national health strategy and the long term nature of IS for public hospitals strategic initiatives. An IS strategy operationalization team can be generally identified at the provincial health department level.

A. Integration of national and provincial IS for health goals and initiatives: this process informs the definition of the scope of the IS strategy in public hospitals. New national and provincial IS strategic goals and initiatives have to be integrated sometimes in an exceptional way. The following initiatives for example have to be integrated: national and provincial strategic goals of interoperability at DHIS and NHIS, the exploration of public private partnership (PPP) use in the deployment of IS in public hospitals in South Africa, new national strategic initiatives such as the NHI,

and provincial strategic initiatives such as the Western Cape's ECM project at Khayelitsha hospital.

B. Liaison with different stakeholder groups regarding their role and responsibilities:

this process ensures that the different and/or relevant stakeholders are on board, their respective roles are assigned and their respective responsibilities are agreed upon. This process also aims at ensuring that the modalities of engagements are understood as specified in binding agreements. These binding agreements are generally documented, signed and enforceable. However there are implicit agreements that are not necessarily signed.

C. Adoption of IS strategy implementation model: the adoption of IS strategy implementation model is key and entails not only the specification of agreed upon rules and modalities regarding the roles and responsibilities, approval mechanisms but also the provincial department of health approach to the implementation of IS strategy in public hospitals in South Africa. There exist a traditional model of IS strategy implementation at public hospitals in South Africa. However this traditional model has limitations and implications in terms of attaining the sought after IS strategic goals. There are exceptions where a different IS strategy implementation model is adopted. This is the case when new concepts and approaches such as PPP and paperless healthcare service are tried at selected public hospitals in South Africa.

D. Extraction and scoping of IS strategic initiatives: the process of extracting IS strategy entails the identification and scoping of relevant IS strategic initiatives that are aligned with the national and provincial goals. This is a complex exercise that occurs at the provincial department of health level and that necessitates the involvement of intermediate stakeholders such as universities and research institutions. The IS strategy and the associated IS strategic initiatives are extracted with reference to various strategic documents.

E. Implementation and management of IS strategic initiatives: this process entails not only planning the roll out of IS strategic initiatives at public hospitals in South Africa but also to roll out these initiatives and to manage the roll out process. There are major challenges to this process. Some of these challenges are associated with the following factors: the long term nature of IS for public hospital projects, the funding mechanism, the complexity of the public healthcare environment and the changes in leadership and in stakeholder groups/actors dynamics.

F. Revision of IS strategy, strategic goals and initiatives: this process aims at keeping the IS strategy update as there are various changes that occur at different levels over time and that necessitates the revision of the strategy. Without this process, the IS strategy and strategic goals are likely to become obsolete and inappropriate. Obsolete and inadequate IS strategy and/or strategic goals lead waste of resources and challenges in embracing innovations. There are various challenges to the IS strategy revision. These challenges include but are not limited to the following: lack of direction from higher hierarchical levels, lack of expertise in SISP, and ignorance of strategic direction.

7.3.6 Zone VI: Zone of IS strategic achievements

IS strategic achievements can be grouped into the following three categories: (1) implementation and use of IS at public hospitals, (2) healthcare service improvement levels at public hospitals and (3) stakeholder groups' satisfaction.

7.3.6.1 Implementation and use of IS at public hospitals

A direct strategic achievement regarding the implementation of the IS strategy in public hospitals is the consequential implementation and use of relevant IS in public hospitals in South Africa. This is a primary reflection of the attainment of the IS strategy implementation objective despite the various associated challenges.

7.3.6.2 Healthcare service improvement levels at public hospitals

IS implementation-based improvement of healthcare service at public hospitals is a major IS strategic achievement in public hospitals in South Africa. This contributes to the alleviation of some the burden faced not by the public and the provision of better healthcare service to the vast majority of the South African population that relies on the public healthcare system.

7.3.6.3 Stakeholder groups' satisfaction

The different stakeholder groups/actors who are involved in the implementation of the IS strategy in public hospitals in South Africa, from national level to the facility and patient level, appreciate differently the IS strategic achievements. Their satisfaction levels differ in parallel with the demarcation in their respective expectations.

7.3.7 The Framework's two blocks of the flow of influence

7.3.7.1 The one-dimensional linear interaction flow block

The one-dimensional linear interaction flow of influence block depicts the hierarchical, time factors and progress factors. The vertical flow is across the stakeholder hierarchical groups and the activities' hierarchical levels. The horizontal flow is across the IS strategic activities and the IS strategy operationalization processes. The flow of influence is affected by changes in teams and the situational dynamics of stakeholder groups. Associated with this are difficulties in the relay and follow up of previous activities, decisions, and IS strategic initiatives.

7.3.7.2 The multi-dimensional interactive flow block

The multi-dimensional interactive flow of influence block depicts other complex factors that are not obvious and that act like an influential hidden-hand. The multi-

dimensional interactive flow of influence is critical and reflects the implications of factors such as corruption, malpractice and abuse of political power. Just as with the one-dimensional linear interaction flow of influence block, there exist two vertical and two horizontal multi-dimensional interactive flow blocks. The vertical flow is across the stakeholder hierarchical groups and the activity hierarchical levels. The horizontal flow is across the IS strategic activities and the IS strategy operationalization processes.

7.4 Chapter summary and conclusion

In this chapter we described the detailed practical SRI framework for IS strategy implementation in public hospitals in South Africa. We highlighted the elements of the framework and discussed its relevance. We suggested that there are stakeholder relations factors that influence the implementation of IS strategy in public hospitals in South Africa and pointed out the interrelations between these stakeholder relations factors. We firstly described the process through which the framework was developed and highlighted and then described the framework's six zones and blocks of flow of influence.

CHAPTER 8: DISCUSSION AND IMPLICATIONS

8.1 Introduction

This chapter discusses the findings and contribution of this study. We provide an elaboration of the methodological, theoretical and practical contributions of this study as well as the implications for practice. We particularly emphasise the relevance of the SRI framework for IS strategy implementation in public hospitals in South Africa and the framework's potential applicability. We argue that the framework's applicability can be expanded beyond the context of public hospitals in South Africa. We propose that the framework could be relevant to the implementation of IS strategy in public sector organisations and to the implementation of strategies and policies in organisations in similar environments.

The rest of this chapter is structured as follow: section 8.2 discusses the findings of this study with an emphasis of the framework's groups of elements. Section 8.3 describes the methodological, theoretical and practical contributions of the study. Section 8.4 presents the implications for theory and practice.

8.2 Discussion of findings

We discuss the findings of this study by focusing of the following six major aspects:

- (1) Stakeholders, stakeholder relations and situational stakeholder relations dynamics
- (2) SISP practice and IS strategy implementation
- (3) IS strategic decisions, alignment, IS strategy scoping
- (4) The level and motive of interaction, involvement and participation in IS strategic activities and IS strategy operationalization processes
- (5) Consideration of the contextual factors and adherence to explicit and implicit modalities
- (6) Approach to deployment of IS strategy, associated sub-models/mechanisms and IS strategic achievements

8.2.1 Stakeholders, stakeholder relations and situational stakeholder relations dynamics

The framework shows that there are different stakeholder groups at different activity levels. These stakeholders can be grouped in different groups according to Mitchell et al.'s (1997) stakeholder typology with power, urgency and legitimacy attributes. According to the specific case of public hospitals in South Africa power, urgency and legitimacy are not the only defining factors of the potential role and level of involvement of each stakeholder group. It has emerged that different stakeholder groups have different characteristics that are not captured by the stakeholder theory. For example, there exists a vertical and horizontal hierarchy of stakeholder groups and their respective level of actions in the hierarchy of IS strategy implementation activities and the division of responsibilities. Hence the SRI framework for IS strategy implementation in public hospitals in South Africa provides an alternative means to identify and classify stakeholders in the context of IS strategy implementation in the public sector in general and the context of IS strategy implementation in similar environments.

In the case of large-scale IS, Murer, Bonati, and Furrer (2011) emphasise the existence of various stakeholder groups and the possibility of having stakeholders scattered throughout the world. They note that the existence of various stakeholder and the changes in business and IS organisations are great challenges. The breadth of the stakeholder groups/actors is captured in the zone of stakeholder groups for IS strategy implementation of the SRI framework for IS strategy implementation in public hospitals in South Africa. This zone highlights the complexity and peculiarities of the healthcare environment but also the necessity of understanding the network of stakeholder groups/actors and their respective levels of involvement in IS strategic activities. Regarding the breadth of stakeholder groups, Parise (2008) advocates the need for a network perspective to address the issue of multiple stakeholder involvement. The SRI framework for IS strategy implementation in public hospitals in South Africa is therefore an adequate approach to address the challenges of multi-stakeholder groups/actors involvement.

In the specific case of the healthcare sector in the United States of America (USA), Tan (2011, p. XXIV) argues that the complexity of the healthcare environment, the intricacies of the interactions between different stakeholders and the challenges faced by the healthcare sector necessitates not only “integrated Health Information Technology (HIT) models and methods to guide future decisions” but also a “national health IT strategy and vision”. This brings to fore the relevance of concepts such as the following highlighted in this study and the developed SRI framework for IS strategy implementation in public hospitals in South Africa: IS strategic and IS strategy operationalization decisions, timeliness of engagement between stakeholders, the extent of involvement of stakeholder in IS strategic and IS strategy operationalization. The framework is a better elaboration of the intricacies of stakeholder factors and the implications of these intricacies on the implementation of IS strategy in the complexity of the healthcare environment.

8.2.2 SISP practice and IS strategy implementation

A comparison of the practice of SISP in public hospitals and the private organisations reveals that there are differences between these two organisational environments. The patterns of distinguishing characteristic regarding the practice of SISP in the public sector and the private sector organizational contexts have been highlighted by Dufner, Holley, and Reed (2002). In their investigation of the practice of SISP in the public sector they identified that organisations in the public sector environment faced the following challenges and SISP practice difficulties in comparison to organisation in the private sector: public sector wide IS strategy definition and formulation challenges, poor participation of stakeholders at higher structural hierarchical levels and the lack of involvement of different stakeholder groups/actors.

These same patterns of distinguishing characteristics have been observed in the case of IS strategy implementation in public hospitals in South Africa. The SRI framework for IS strategy implementation in public hospitals in South Africa provides a detailed elaboration of the complexities and the peculiarities of the public sector and their

implications on the SISP practice. The framework highlights the hierarchical levels of stakeholder groups/actors and the associated activity levels. The framework distinguishes IS strategic activities and IS strategy operationalization processes and highlights the roles and levels of involvement of the different stakeholder groups/actors in each IS strategic activity and IS operationalization process. In comparison to the existing literature, the framework provides a broader and more detailed elaboration of the intricacies of stakeholder relations and the implementation of the IS strategy. The framework can for example provides a means to explore the complexities of the strategy formation process described by Waema and Walsham (1990).

8.2.3 IS strategic decisions, alignment, IS strategy scoping

A key consideration in IS strategic decisions for the public hospitals in South Africa is the alignment between the national stakeholder goals, the provincial goals and the overall provincial department IS strategy for public hospitals in South Africa. This determines the compatibility between national strategy, provincial strategy and the overall strategy for public hospitals. Regarding the IS strategy and the business strategy, Murer et al. (2011) emphasise not only the alignment between IT strategy and business strategy but also the simultaneous development of both the business strategy and the IT strategy so as to ensure compatibility. They further present an argument on the criticality of the strategic IT decision making model, the IT funding mechanisms, the associated hierarchical structures and the implications of these factors on IT investment and IT implementation.

It has been noted that here exist interrelations between the IS strategy operationalization processes and the related IS strategic activities. This interaction has implications in achieving strategic alignment and the attainment of IS strategic goals. The implementation of a strategy is one of the two components of an organisation's strategy. The other component of an organisation's strategy is the formulation of the strategy. As argued by Wager et al. (2005) this has various implications one of them being to cater for alignment between IS strategy, IS

implementation activities and the organisation's vision. They also argue that the basic output of the strategic planning and alignment process should highlight goals and related initiatives.

There are different factors that are the root cause of alignment challenges and difficulties in the decision making process. Peppard and Breu (2003) for example capture the dynamics and challenges of strategic alignment in their proposed co-evolutionary theory. They particularly highlight the fact that different influential factors are not always taken into consideration, that "the strategy process is not ahistorical". In their proposed theory, they further advocate the necessity of making consideration of historical factors that affect the entire strategy formation and implementation process. The two blocks of the flow of influence of the SRI framework for IS strategy implementation in public hospitals in South Africa capture historical factors and other factors affecting strategic alignment; the two blocks of influence captures these factors and their influence on the other SISP activities across the entire IS strategy implementation activity system.

The necessity of a formal IT strategy process in the attainment of alignment objective is reiterated by Murer et al. (2011). They argue that a formal strategy is critical for the IT resources and function mobilisation and management and the proactivity in future organisational IS investment decisions. Hence the relevance of the concepts of IS strategic activities and IS strategy operationalization processes that emerged from this study. Associated with these activities and processes is the process of IS strategy revision and its relevance. The revision of the IS strategy is necessary throughout the IS strategy lifecycle. The criticality of the process of reviewing the hospital IS strategy is emphasised by Killingsworth, Newkirk, and Seeman (2006). They argue that this would spare hospitals the consequences of having obsolete strategies.

Maintaining obsolete strategies and old decisions can have negative implications on the organisation's technological performance and on the cost of doing business. Waema and Walsham (1990) argue that past IS strategy and related implemented IS

that were relevant at a given point in time can have unplanned implications on future decisions such as the choice of equipment suppliers whose equipments have become obsolete. Associated with this is the issue of the effectiveness of the decision making process. McDaniel and Pashmos (1996) questioned the relevance of the traditional hospital structural model and the traditional approaches to strategic decision-making in a healthcare environment as constant change creates the need for complex IS. As highlighted in the zone of IS strategic achievements of the SRI framework for IS strategy implementation in public hospitals in South Africa, the issue of maintaining obsolete strategies and the effectiveness of the decision making process have implications on the attainment of the IS strategic objectives.

8.2.4 The level and motive of interaction, involvement and participation in IS strategic activities and IS strategy operationalization processes

The involvement of different stakeholder is often highlighted as critical to achieve success in the different aspects of IS implementation. Sanderson (2007) for example argues that it is imperative to identify the different stakeholders across the different levels and to take into consideration their respective needs and requirements for better IS implementation results. Tan (2011) on the other hand notes that the involvement of stakeholders in the different IS implementation processes is critical for the acceptance and use of the system. However the levels of involvement, motives of involvement and levels of participation in activities related to the implementation of IS and IS strategy are not always elaborated. Hence the relevance of the notion of level of stakeholder groups/actors involvement and participation in IS strategic activities and IS strategy operationalization as depicted in the SRI framework for IS strategy implementation in public hospitals in South Africa.

In strategic decision making, McDaniel and Pashmos (1996) argue that the involvement of internal stakeholder groups/actors in strategic decision is one approach that increases "organisational consciousness". They question the impact of the level of participation of internal stakeholder groups/actors in strategic decisions on the attainment of IS strategic goals. In the process of strategy formation, Waema

and Walsham (1990, p. 405) highlight the implications of the “complex social and political interactions among people at different organizational levels” and the changing “perceptions and interests” of different stakeholder groups/actors in the process. Haux, Ammenwerth, Winter, and Brigl (2004) note that there are different stakeholder groups/actors who are involved in different processes and at different levels of SISP in a hospital environment. They argue that different stakeholder groups expect different things from the IS strategy.

Hence it is necessary to have an understanding of the levels of involvement and participation of the different stakeholder groups and to have an appropriate approach of addressing issues related to the inadequacy in the involvement of stakeholder groups in the IS strategic activities and IS strategy implementation processes. In the case of the National Health system in the UK, Bullas and Bryant (2007) argue that “common structures and processes” are needed for the engagement between stakeholder groups/actors so as to assist in the implementation of IS regardless of how complex the systems can be. The interactions’ barometers and the check points of the SRI framework for IS strategy implementation in public hospitals in South Africa are therefore relevant in exploring and attaining stakeholder groups/actors involvement balance.

The need for proper leadership and communication regarding the strategy process is advocated by Waema and Walsham (1990) who note that there must be appropriate leadership that is able not only to communicate the related strategic goals but also to champion the whole process so as to ensure the success of the strategic IS process and the consequential deployment of IS.

8.2.5 Consideration of the contextual factors and adherence to explicit and implicit modalities

Contextual factors and the various modalities have implications on the IS strategy implementation process but also on the overall SISP practice in public hospitals in South Africa. In the context of developing countries, Waema and Walsham (1990)

emphasise the implications of the contextual factors on the IS strategy formation process. They argue for a need to consider contextual factors such as where IT technologies are generally acquired from developed countries and where the contextual realities are not taken into account, where the process of IS strategy formation does not take into account the different contextual factors: business strategy, organisational cultures and structure, peoples' perceptions and expectations, technical infrastructures and the availability of technical skills. The influence of contextual factors in the SISP practice is further highlighted by Brown and Brown (2011). They reiterate the implications of the following groups of contextual factors on the implementation of the IS strategy: SISP practice, IS function, stakeholders and management, the organisation and the environment. Hence the relevance of the contextual factors in the engagements between different stakeholder groups/actors and the implementation of the IS strategy in public hospitals is important as depicted in the SRI framework for IS strategy implementation in public hospitals in South Africa. Furthermore the framework emphasises the importance of adherence to the contextual factors and the implications of non-adherence to the contextual factors

There exists an array of modalities that dictate the action of stakeholder groups/actors, the interactions between them and their respective actions in the implementation of IS strategy in public hospitals. These modalities are explicit and implicit in nature. The concept of modalities was discussed by Giddens (1984) three decades ago in the discourse on structuration theory. Giddens (1984) argued that "Actors draw upon the modalities of structuration in the reproduction of systems. Similarly, regarding the implementation of IS strategy in public hospitals, these modalities guide stakeholder groups/actors actions throughout the IS strategy implementation activity system. Hence the concept of adherence to the modalities is important as illustrated in the SRI framework for IS strategy implementation in public hospitals in South Africa. In addition the framework describes a diversity of modalities and classifies these modalities in two groups: explicit modalities and implicit modalities.

8.2.6 Approach to deployment of IS strategy, associated sub-models/mechanisms and IS strategic achievements

There exist different approaches that are associated with and that affect IS strategy implementation aspects such as the following: IS strategy implementation operationalization, IS strategic initiatives funding, management of contracts, IS project governance, etc. In this regard, Premkumar and King (1994) noted that there exists implementation mechanisms whose quality have implications on the practice of SISP. In this study we have identified mechanisms such as the following: approach to IS strategy implementation, mechanisms for the management of contracts, the funding mechanism, and the approach to continuity of projects.

It emerged that the deployment of IS strategy in public hospitals is governed by a centralised or decentralised approach at the provincial health department level. The degree of centralisation or decentralisation captured in each province's approach has implications for the progress made towards achieving IS strategy implementation objectives. In either province, a centralised or decentralised approach has had its share of positive and negative implications. It is argued by Wager et al. (2005) that there is no prescriptive rules for the appropriateness of a centralised or decentralised approach as each approach has its advantages and disadvantages. They further argue that the following factors dictate the choice between either approach by health organisations: staff and skills availability constraint, time constraints, resources availability constraints regarding the provision of the necessary level of IT service required. Hence the relevance of the concept of provincial IS strategy deployment approach as depicted in the SRI framework for IS strategy implementation in public hospitals in South Africa. Furthermore the framework highlights the implications of the IS deployment approach on the practice of SISP and the IS strategy implementation in public hospitals.

There exists a need for the management of the interactions between the different stakeholder groups/actors. In this regard, Murer et al. (2011) reiterate the need for

an appropriate governance model that can be assistive in the management of stakeholder interactions and the clarification of the roles and responsibilities of the different stakeholder groups. They further advocate the need for an appropriate model of governance that is not only constant and immune to organisational change and stakeholder group structural changes but that is also a guiding tool in the decision making process. A common approach to the management of stakeholder interaction is SLAs (Keller & Ludwig, 2003). SLAs define contractual obligations between stakeholder groups/actors and the roles and responsibilities of different stakeholder groups regarding the provision of a specific service, hence the importance of the effectiveness of the management of contracts. However there is a need to enforce adherence to the defined SLAs, hence the importance of the concept of the effectiveness of the model of management of contracts between stakeholder groups as shown in the SRI framework for IS strategy implementation in public hospitals in South Africa.

The funding mechanism of IS strategy implementation in public hospitals in South Africa is different from the private sector model of funding IS strategy. This model is characterised by funding decisions made at higher level and guided by national and provincial funds allocation models. These models can be a source of delays and difficulties in achieving IS strategy implementation in the public hospital context. Earl (1993) refers to this approach as an administrative approach to IS strategy development, which is less effective than, say, an organisational approach where the focus is on strategic teams and learning rather than budget allocation. In this regard the concept of the appropriateness of the model of funding of IS strategy implementation in public hospitals is important, and is depicted in the SRI framework for IS strategy implementation in public hospitals in South Africa.

The approach to continuity of projects is essential regarding the achievement of the strategic aims of IS strategy implementation of IS strategy in public hospitals. In this regard Segars and Grover (1999) highlighted the long term nature of IS strategy development and implementation, hence the importance of the continuity concept. The attainment of IS strategy implementation goals can be a challenge particularly

due to the long term nature of IS strategy implementation projects in public hospitals in South Africa. Murer et al. (2011) suggest the notion of managed evolution to address issues regarding the attainment of the long term IS strategic objectives from a technological and human resource perspective. The implications of the continuity of IS strategic initiatives in public hospitals on the attainment the long term IS strategic objectives are depicted in the SRI framework for IS strategy implementation in public hospitals in South Africa. The emphasis is on the appropriateness of the approach to the continuity of IS strategic initiatives.

The SRI framework for IS strategy implementation in public hospitals in South Africa is an answer to Sanderson's (2007) call for the development of tools to understand the stakeholder relations in healthcare environment: a complex environment where social and technical factors are intertwined.

8.3 Research contribution and implications

This study's contribution has been at the following three levels: contribution to method, contribution to theory and contribution to practice, each of which is described next.

8.3.1 Contribution to method

In this study, AT has been used in the formulation of the research questions and in the analysis of the data. The ActAD framework has particularly been relevant in the exploration of the SISP practice of in public hospitals in South Africa. Particularising the ActAD framework for the purpose of this study necessitated the development of a specific framework of analysis of the data. The particularised ActAD framework-based data analysis framework described in Chapter 3 has the potential of being applicable in the exploration of certain aspects of the SISP practice from an AT perspective particularly when need is to explore the roles of individual groups/actors in the SISP practice.

8.3.2 Contribution to theory

The development of theory in IS research is guided by a scholarly investigation and the research questions to be investigated as argued by Gregor (2006). She contends that associated with the goals of investigation are the types of research contribution to be made. She proposes the following four types of research and research contributions: analytic and descriptive, explanatory, predictive and prescriptive. The research question investigated in this study has been of an explanatory nature. Hence the contribution of this study has been explanatory in nature.

At a theoretical level, the theoretical SRI framework for IS strategy implementation in public hospitals in South Africa, a framework of the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa, provides a good explanation of how stakeholder relations influence the implementation of IS strategy in public hospitals in South Africa, an explanation that hasn't been provided by earlier theories or previous research. In comparison with stakeholder theory and the typology of stakeholders as described by Mitchell et al. (1997) and Savage et al. (1991), the framework highlights the existence of other stakeholder classification attributes which are not captured in the traditional stakeholder theory. Moreover whereas stakeholder analysis in the traditional model is limited to the identification of stakeholders, the detailed SRI framework for IS strategy implementation in public hospitals in South Africa provides a detailed level of exploration of the network of stakeholders, the different hierarchical levels of stakeholder groups/actors and the implications of their respective level of involvement in IS strategic decisions.

In comparison with the existing SISP models and the findings of SISP scholars such as Bell et al. (2010), Brown and Brown (2011) and Freedman (2003) which provide generic and high level illustration of SISP processes and influential factors, the SRI framework for IS strategy implementation in public hospitals in South Africa has built-in in-depth analytical capabilities that can allow the exploration of the

complexity and intricacies of the interactions between different stakeholder groups/actors and the SISP practice. The framework is particularly relevant as it is grounded in AT and provides a means to explore SISP practice as an activity system.

8.3.3 Contribution to practice

At a practical level the detailed SRI framework for the implementation of IS strategy in public hospitals in South Africa is relevant to an array of practitioners and scholars. The framework can be assistive in the assessment and mapping of stakeholders and stakeholder relations, and the assessment of the implications of these relations for effective IS strategy implementation in public hospitals. The framework can also provide the basis for the development of appropriate corrective measures in the implementation of strategies and policies in public institutions in South Africa. This can contribute to more successful strategies and policies implementation and the consequential implementation of appropriate IS in public hospitals in South Africa and other public institutions. This can lead to service delivery improvement at public hospitals or other public institutions in South Africa and improved service provision to the vast majority of the South African population.

8.3.4 Implications for practice

The detailed SRI framework for IS strategy implementation in public hospitals in South Africa has the potential of being used in as a guiding tool in the IS strategy implementation practice and in the evaluation of stakeholder relations and the IS strategy implementation in environment where there are various stakeholders involved at various levels. The framework is relevant for the following aspects:

- (1) Identification of actors, groups of actors who need to be involved at which levels of the implementation of the IS strategy
- (2) Determination of the level of engagement and level of involvement of different actors in the IS strategy implementation process
- (3) Definition of the roles of the different actors at the different stages or levels of the implementation of the IS strategy

- (4) Assessment of the strategy implementation practice with a focus on stakeholders and stakeholder relations factors.

The framework is relevant to various individuals in different spheres of practice: public hospital managers, national leadership, provincial leadership, government departments, governmental institutions, sponsors, the academia, international institutions and the public.

The potential applicability of the framework is at the following five levels:

- (1) IS strategy implementation in public hospitals in all the province of South Africa
- (2) IS strategy implementation in public sector institutions in South Africa
- (3) Management of stakeholders and stakeholder relations in the implementation of IS strategy
- (4) Strategy implementation in public sector institution in South Africa
- (5) Strategy and IS strategy implementation in public institutions in other countries

Each of these areas will be discussed in turn.

8.3.4.1 IS strategy implementation in public hospitals in all the province of South Africa

Developed with a focus on public hospitals in South Africa, the SRI framework for IS strategy implementation in public hospitals in South Africa is primarily applicable to public hospitals in South Africa. The framework is not only relevant for the Western Cape and the Kwazulu Natal provinces that were used as case studies in this research. The framework is also relevant for the other provinces. Although the framework is not prescriptive in nature, it provides decision makers and IS strategy implementers in public hospitals in South Africa with guidelines regarding IS strategy implementation, the associated stakeholder relations factors and the critical aspects to take into consideration in this regard. The framework also provides a means of assessing stakeholders and stakeholder relations factors and the implications of

these factors on the overall IS strategy implementation exercise in public hospitals in South Africa.

8.3.4.2 IS strategy implementation in public sector institutions in South Africa

In South Africa, public institutions have stakeholder and stakeholder relations characteristics that are similar to those of the public hospitals. The implementation of IS strategy and/or IS strategic initiatives will therefore be affected by the stakeholder relations factors presented in this study. Hence the SRI framework for IS strategy implementation in public hospitals in South Africa is relevant to the context of other public sector institutions in South Africa. The framework will provide similar exploratory capabilities in the context of IS strategy implementation in public institutions in South Africa.

8.3.4.3 Management of stakeholders and stakeholder relations in the implementation of IS strategy

The SRI framework for IS strategy implementation in public hospitals in South Africa is particularly relevant in the management of stakeholders and stakeholder relations in the implementation of IS strategy be it public hospitals or other public sector institutions, in South Africa or internationally. The framework highlights critical aspects of stakeholders and stakeholder relations factors. The framework provides means of exploring the relations between the different stakeholder groups/actors and the implications of these relations on the implementation of the IS strategy. Hence the framework can be used as a tool for the management of stakeholder relations in environments where there are various stakeholders involved in the implementation of the IS strategy.

8.3.4.4 Strategy and policy implementation in public sector institutions in South Africa

The relevance of this framework expands beyond the IS strategy implementation domain. It is particularly relevant to the strategy and policies implementation in public institutions in South Africa domain. Not only is South Africa known for having great strategies and policies. South Africa is also known to experience great challenges in the implementation of these strategies and policies (Stack & Hlela, 2002). Hence the SRI framework for IS strategy implementation in public hospitals in South Africa can be a roadmap guiding the implementation of the strategy but also to assess the implementation of strategies and policies in public sector institutions in South Africa particularly with a focus on stakeholders and stakeholder relations factors.

8.3.4.5 Strategy and IS strategy implementation in public institutions in other countries

Lastly the relevance of the SRI framework for IS strategy implementation in public hospitals in South Africa expands beyond the context of public institutions in South Africa. The framework is relevant not only to public hospitals but also public sector institutions in any country in general and developing countries in particular. Public institutions in developing countries in particular are prone to great challenges regarding stakeholders, the relations between these stakeholders and the implications of these relations on the implementation of policies being it IS related or not, in the healthcare sector or other sectors.

8.5 Chapter summary and conclusion

This chapter discussed the findings of the study, the contribution of the study and the practical implications of the study. We provided an elaboration of how the findings of this study are grounded in the existing literature and highlighted the novelty from the study findings. We particularly emphasised the practicality of the

SRI framework for IS strategy implementation in public hospitals in South Africa in assessing stakeholder relations factors and the implications of these factors on the implementation of IS strategy in public hospitals in South Africa. In the end we suggested that the research contribution of this study could be extended to IS strategy implementation, strategy implementation and policies implementation in organisations in the public sector or in similar environments.

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CHAPTER 9: CONCLUSION AND RECOMMENDATIONS

9.1 Introduction

This study has been conducted with a twofold objective: firstly to investigate the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa and, secondly to develop a framework depicting this influence. In this chapter we conclude the study and present how these objectives were attained.

Aiming at investigating the intricacies of stakeholder relations dynamics and the implementation of IS strategy in public hospitals in South Africa, we used the ActAD framework, an extension of AT, as theoretical lens to guide our investigation. We undertook an interpretive study of two cases and used semi-structured interviews, document analysis, meetings and physical artefacts observation to gather data. The data that was collected from these two complementary case studies allowed a deep exploration of the multidimensional and complex nature of stakeholder relations and the implications of these relations on the implementation of IS strategy in public hospitals in South Africa.

This chapter is structured as follow: section 9.2 presents an overview of the undertaken research, section 9.3 presents an elaboration of the revision of the research question and sub-questions, section 9.4 presents an assessment of the contribution of the study, section 9.5 discusses the limitations of the study, section 9.6 presents future research suggestions and section 9.7 concludes the chapter.

9.2 Research overview

This thesis has been structured in five parts. The first part provided the background of the study in Chapter 1. The second part focused on the literature review in Chapter 2. The third part focused on the methodology in Chapters 3 and 4. The fourth part presented the case studies' results and integrated findings in Chapters 5

and 6. The fifth part presented the detailed SRI framework, the findings discussion and the conclusion of the study in Chapters 7, 8 and 9.

Part 1 presented the background of the study and the context of the conducted research. It framed the research question, the research findings, the research contribution, and the structure of this thesis. We emphasised the need for more IS research in the following areas: healthcare environment, IS strategy implementation, the healthcare sector in developing countries and stakeholder interactions in the healthcare environment.

In the particular context of public hospitals in South Africa, we argued for the necessity of exploring stakeholder relations factors and the implementation of IS strategy in public hospitals in South Africa. We highlighted the relevance of exploring stakeholder interactions in the complex environment of public hospitals in South Africa given the government vision for improved healthcare service delivery, the potential role of IS and the related implementation of IS strategy for public hospitals.

Part 2 presented a broad review of the literature related to stakeholder relations and the implementation of IS strategy in public hospitals in South Africa. We firstly explored issues around IS implementation and highlighted the general concerns regarding IS implementation. We then provided a detailed elaboration of IS strategy implementation. In this elaboration we focused on IS strategy from a SISP perspective and within the healthcare environment context. We then explored the role of IS in the healthcare sector in general and the developing countries' context in particular. We also explored the role of ICT in the context of the public healthcare sector in South Africa and illustrated the complexity of the IS strategy in the context of public hospitals in South Africa.

We lastly provided a broad account of stakeholders and stakeholder theory in general and in the context of ICT and the healthcare sector. In the end we raised concerns regarding the lack of research on IS strategy implementation and the concept of stakeholder relations in the implementation of ICT in healthcare in

general and in the public healthcare sector in particular. In the end we argued for the necessity of conducting research on the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa.

Chapter 3 of the third part discussed AT use as the theoretical framework that guided this study. We firstly argued for the relevance of using a socio-technical approach and the choice of AT as the most appropriate socio-technical approach for this study. We then provided an historical background of the origins of AT. We focused on the structure on an activity and highlighted how AT has evolved from Vygotsky's basic triangle model, through Leont'ev model, Engeström's model throughout variations such as ActAD and other variations resulting from the work of scholars of DWR in Finland. We particularly outlined the ActAD framework, a variation of AT and how the ActAD framework was used in this study. In this variation a clear distinction between group activities and individual actors' activities is made and the greater systemic outcome of an activity system is emphasised.

Chapter 4 of the third part discussed the philosophical underpinning and the research methodology that guided this study. We presented the overview of the research process and highlighted the notions of research philosophies, approaches, strategies, choices and techniques. We discussed the relevance of using a case study approach and semi-structured interviews to collect data in the discussion of this study's research design. We then described the ethical implications and requirements related to the conduct of this study. In the end we presented the methodological challenges and lessons learnt.

Chapter 5 of Part 4 described the two case studies that were selected for the study and presented the results of the case studies. Firstly we described the Western Cape Province case study and the Kwazulu Natal province case study. For each case study we presented an overview of the province, a review of the public hospitals in the province and a summary of the data collection process in the province. Secondly, we presented the results of the ActAD framework-based analysis of each case study. For each case study the analysis focused on the following ten ActAD framework

concepts: who are the collective actors, what are the means of coordination and communication, who are the individual actors, what are the tools/means of work, what is the object, what is the outcome, what are the individual/group process and actions, what are the historical phases, what are the relations with other activities, and what contradictions exist.

Chapter 6 of Part 4 presented the findings of the study. We presented the findings of the thematic analysis of the two case studies and described the emerging concepts. These concepts captured different aspects of stakeholder relations and their influence on the implementation of IS strategy in public hospitals in South Africa. In the end we presented the integrated findings of both cases and the developed theoretical SRI framework for IS strategy implementation in public hospitals in South Africa.

Chapter 7 of Part 5 described the detailed SRI framework with an emphasis on the framework's development process and the framework's elements. We highlighted the process through which the framework was developed and how the relations between the different identified concepts were integrated into the framework. We then described the framework's six zones and its two blocks of the flow of influence.

Chapters 8 and 9 of part 5 discussed the findings and the contribution of the study. We discussed the findings in line with existing literature. We presented an overview of the study, highlighted the research contribution and evaluated the contribution of the study. Lastly we discussed the limitations of the study and suggested potential future research directions.

9.3 Revisiting the research question

The research question and sub research questions that were investigated in this study have been presented in section 1.4. We now revisit these questions and how they have been addressed throughout the study as summarised in Table 9.1.

Table 9.1: Revisiting the research question

| Research question | Elaboration of implications in the research |
|---|---|
| <p>Principal research question:</p> <p>How do stakeholder relations influence the implementation of IS strategy in South Africa's public hospitals?</p> | <p>This question was formulated to investigate the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa with the aim of developing a framework depicting this influence.</p> <p>The findings of this study in general and the developed SRI framework for IS strategy implementation in public hospitals in South Africa reveals that there are stakeholder relation factors such as the situational dynamics of stakeholder relations, the modalities of engagement and IS strategy implementation that influence the situational IS strategy implementation. This is revealed in Chapters 6 and 7. Chapter 7 in particular provides an illustration of the intricacies on the stakeholder relations and the implementation of IS strategy in public hospitals in South Africa.</p> |
| <p>Research sub-question 1:</p> <p>What current theoretical elements determine stakeholder relations and the influence of stakeholder relations on the implementation of IS strategy in South Africa's public hospitals?</p> | <p>This sub-question was formulated to explore existing theoretical concepts that describe the influence of stakeholder relations on the implementation of the IS strategy in public hospitals in South Africa. This question is answered throughout the literature review chapter. The review of the literature has revealed concepts related to the stakeholder concept, the stakeholder relations, the IS strategy SISP and health IS. The literature revealed a research gap in the implementation of the IS strategy in the context of public hospitals and stakeholder relations' influence.</p> |

| | |
|--|--|
| <p>Research sub-question 2:</p> <p>What is the stakeholder landscape with regard to the implementation of IS strategy in South Africa's public hospitals?</p> | <p>This question was formulated with the aim of exploring the breadth of the stakeholder groups/actors that are associated with the implementation of IS strategy in public hospitals in South Africa. The findings reveal that the network of stakeholder groups/actors spans across different hierarchical level groups from national level to the facility level. This is highlighted in the findings of the case studies and the zone of stakeholder groups for IS strategy implementation of the SRI framework for IS strategy implementation in public hospitals in South Africa.</p> |
| <p>Research sub-question 3:</p> <p>What are the stakeholder relations factors that influence the implementation of IS strategy in public hospitals in South Africa?</p> | <p>This question was formulated with the aim of identifying particular concepts depicting stakeholder relations factors influencing the implementation of IS strategy in public hospitals in South Africa. This aim is achieved throughout Chapters 5 and 6. The results and findings of the case study identified concepts that emerged from the ActAD framework-based and thematic analysis of the case study. These factors are grouped in the following four categories as described in Section 6.4</p> |
| <p>Research sub-question 4:</p> <p>What are the relations between these stakeholder relations factors and the IS strategy implementation in public hospitals in South Africa?</p> | <p>This question was formulated with the aim of identifying the relations that exist between the stakeholder relations factors and mapping their interconnectedness to the implementation of IS strategy in public hospitals in South Africa. This is done in chapter 7. In this chapter the process of developing the framework is described. In the end the relations between the different concepts that emerged from the study are integrated into the SRI framework for IS strategy implementation in public hospitals in South Africa. These relations are captured throughout the six zones of the framework and the framework's two blocks of flow of influence.</p> |

9.4 Research contribution assessment

Interpretive research has gained popularity among IS scholars (Walsham, 1995a). However interpretive research has been criticised regarding the approach itself and the evaluation of its contribution as argued by Klein & Myers (1999). Hence they suggested a set of principles to assist IS scholars in the conduct and evaluation of interpretive research particularly when a hermeneutic research is conducted. Barrett and Walsham (2004) on the other hand proposed a framework for the evaluation of the contribution of interpretive case studies. This framework proposes the following four areas of evaluation:

- (1) Structuring intertextual coherence,
- (2) Problematizing context for contribution,
- (3) Positioning as translating interests, and
- (4) Qualitative generalizations as content contributions

We adopt this framework to assess the contribution of this study, as summarised in Table 9.2.

Table 9.2: Key concepts for constructing contributions: Adapted from (Barrett & Walsham, 2004) and (Geoff Walsham, 1995b)

| STRATEGIC CONCEPTS | TACTICAL APPROACH | EXPLANATION |
|---|-------------------------|--|
| Structuring intertextual coherence | ❖ Synthesized coherence | “Researchers working in the different areas are not aware that their work points to common ideas” |
| | ❖ Progressive coherence | “Networks of researchers linked by shared theoretical perspectives and methods working on research programs that have advanced over time” |
| | ❖ Non-coherence | “Referenced works that are presented as belonging to a common research program but as linked by disagreement” |
| Problematizing context for contribution | ❖ Incompleteness | “The text claims that the existing literature is not finished and that the present article will further develop of specify it” |
| | ❖ Inadequacy | “The text claims that the existing literature does not sufficiently incorporate different perspectives (relevant and important) and views to better understand the phenomenon under investigation” |
| | ❖ Incommensurability | “An article goes further to suggest that not only does the existing literature overlook different and relevant perspectives but that the claims made are inaccurate.” |
| Positioning as translating interests | ❖ Framing | “Framing for particular audiences |
| | ❖ Staging | “Staging to highlight what audiences should find interesting to discuss, and admitting what they may find disputable” |
| | ❖ Captation | “Subtle control of objector’s moves with due consideration of allowed margin of negotiation of soft facts” |
| | ❖ Stacking | “The extension of evidence to inductively support theories” |
| Qualitative generalizations as content of contribution | ❖ Concept development | “Development of concepts” |
| | ❖ Theory generation | “Generation of theory” |
| | ❖ Specific implications | “Specific implications in particular domains of action” |
| | ❖ Rich insight | “Rich insight from case studies” |

9.4.1 Structuring intertextual coherence

We structured intertextual coherence through a combination of synthesized coherence and progressive coherence.

Synthesized coherence: in our explorations of the concepts of IS strategy implementation, stakeholder theory, stakeholder relations, ICT in healthcare environment and ICT in public hospital context, we presented the work of different scholars whose research interests and whose views are similar. This is reflected throughout Chapter 2. Synthesized coherence has also been addressed in the elaboration of AT in Chapter 3.

Progressive coherence: we have discussed the work of various scholars regarding IS implementation in the healthcare environment and highlighted these scholars' reiterations of the challenges of IS use in the healthcare environment, the necessity of IS use in the healthcare environment and the current trend in the use of IS in the healthcare environment. We also discussed the notion of SISP and its application in the healthcare environment and emphasised various scholars' views on the SISP practice in the healthcare environment. In this regard we discussed the constant challenge of commencing the implementation of the IS strategy that would have been developed through the SISP guidelines.

9.4.2 Problematizing context for contribution

We have problematized the context of contribution of this study by highlighting the incompleteness and the inadequacy in the literature.

Incompleteness: we presented the motivation of this study and highlighted the lack of research on the implementation of strategy and IS strategy in general and the implementation of IS strategy in the healthcare environment and in the context of public hospitals in South Africa in particular. We argued the need for further

research to address this research gap. This is evident in the discussion of the research gap in section 2.8.

Inadequacy: we discussed the lack of extensive research on different aspects of IS in the healthcare environment in contrast with the proliferation of various IS studies in the corporate environment. In this regard we argued the need for more studies on IS implementation, SISP, IS strategy implementation in the healthcare sector in general and in the public healthcare sector of South Africa in particular. In addition we undertook to explore the identified research gap from an AT perspective.

9.4.3 Positioning as translating interests

To translate interests we used the following positioning techniques described in Table 9.2: framing, staging, captation and stacking.

Framing: we have presented the contribution of this study in consideration of the targeted audiences: government officials, public hospitals' managers, ICT developers, academics, policy makers, investors and donors. In this regards we presented an understanding of the implications of stakeholder relations factors on the implementation of IS strategy and the consequential deployment of IS in public hospitals in South Africa using terminologies and concepts that are rooted in our target audience's interrelated domains fields/domains. We particularly used concepts that are rooted in AT in general and the ActAD framework in particular in the presentation of the findings of this study.

Staging: we have highlighted some common factors such as the hierarchical characteristics of both stakeholder group/actors and the associated levels of activities. We also presented the implications of these characteristics and other typical contextual factors on the implementation of the IS strategy in a public hospital in South Africa environment. This is relevant to government officials, and sponsors. We also highlighted non-obvious and complex factors such as the factors described in the underlying mechanisms of the SRI framework for IS strategy

implementation in public hospitals in South Africa. Although this could be relevant to the entire target audience, it would be of much interest to the more analytic and critical audience such as policy makers, IS scholars, and public hospital managers.

Captation: we have presented the SRI framework for IS strategy implementation in public hospitals in South Africa and discussed some of the limitations of this study. We particularly emphasised the non-prescriptive nature of the framework and urged scholars to undertake further research from different perspectives with the aim of addressing the highlighted limitations and further developing knowledge on the implications of stakeholder relations factors on the implementation of IS strategy in public hospitals in South Africa and beyond.

Stacking: we have discussed the relevance of the contribution of this study to its field but also highlighted its relevance and possible applicability to other areas. We particularly expanded the applicability of the SRI framework for IS strategy implementation in public hospitals in South Africa to the implementation of not only the IS strategy but also the strategy in general in other public organisations in South Africa and in similar organisation in developing countries and the entire world.

9.4.4 Qualitative generalizations

To articulate the generalizability of the findings of this study we adopted the following four types of generalizations: concept development, theory generalization, specific implications and rich insight.

Concept development: Starting with the ActAD framework as exploratory lens, then using thematic analysis, we developed concepts that were later integrated into the SRI framework for IS strategy implementation in public hospitals in South Africa using model building. The thematic analysis of the Western Cape Case study and the Kwazulu Natal province case study is illustrated in Appendices 14 and 15 and in Tables 6.1, 6.2 and 6.3. The development of the relations between the developed

concepts is described in Chapter 7. In this chapter we provide a detailed elaboration of the developed concepts.

Theory generation: following an appropriate research methodology, we undertook to develop the SRI framework for IS strategy implementation in public hospitals in South Africa, a framework depicting the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa and derived from an AT investigative perspective. As described in section 4.6 and as illustrated in Figure 4.6, we used the ActAD framework as a theoretical framework, followed data collection techniques and used data analysis techniques that were appropriate to the nature of the study. The semi-structured interviews and additional data collection tools, the ActAD-based analysis of the data, the thematic analysis of the two case studies and the model building principles contributed to the development of a better understanding of the influence of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa and the development of final contribution of this study: the SRI framework for IS strategy implementation in public hospitals in South Africa.

Specific implications: we have drawn specific implications of this study by highlighting the usefulness of the developed framework in providing an understanding of stakeholder of the factors and their implication on the implementation of IS strategy in public hospitals in South Africa. This contributes to the development of knowledge in domains such as the following described in the research gap section: IS strategy implementation, SISP, ICT in healthcare, stakeholder relations and ICT use in developing countries, and ICT implementation.

Rich insight: rich insight is described as follow by Walsham (1995):“insights from the reading of reports and results from case studies that are not easily categorised as concepts, theories, or specific implications”. In this regard, we have, in this study, provided a rich insight from the Western Cape province and the Kwazulu Natal province case studies on aspects such as: respondents’ views of the process of implementing IS strategy in public hospitals in South Africa, the extraction of IS

strategic initiatives and its criticality in exploration of the IS strategy implementation process in the South Africa public hospitals environment and the exceptions in the IS strategy implementation in the traditional South Africa public hospital environment. Moreover we highlighted some practical considerations regarding the conduct of case study research in the South African public hospital environment.

9.5 Limitations

We identified four main limitations during the course of this study: mixed understanding of the notion of IS strategy by respondents, limited IS strategy implementation decision making at public hospital management level, respondent low motivation for participation and incomplete IS implementation in public hospitals.

9.5.1 Mixed understanding of the notion of IS strategy by respondents

The respondents had mixed understanding of the notion of IS strategy. In some cases there were differing views of what the IS strategy is and the state of the IS strategy. This was sometimes the case within the same stakeholder group, or at the same stakeholder group hierarchical level. Despite the existence of an IS strategy, certain respondents dismissed the existence of the IS strategy for public hospitals in their province. In the event of mixed understanding of the notion of IS strategy, we explained the concept of IS strategy and the forms of the IS strategy to the respondents.

9.5.2 Limited IS strategy implementation decision making and incomplete IS implementation at public hospital level

Structurally, the public hospitals' managing teams do not have great decision making power regarding the implementation of the IS strategy at their respective institutions. IS strategy implementation decisions are generally made at provincial level with minimal consultation at the public hospital management level. Apart from this, there are various public hospitals that are still lagging behind in the

implementation of IS and where there IS implementation is minimal or non-initiated. As a result the input from respondents at public hospitals level was limited and tended to be the same in many cases.

9.5.3 Respondents' low motivation for participation

Certain respondents did not have a great motivation to participate. Associated with this were cases of respondents not providing detailed responses, respondents' postponement of appointments and respondents' cancellation of appointments. In certain cases, the respondents' attitudes discouraged further interview question administration.

9.5.4 Testing the framework

The SRI framework for IS strategy implementation in public hospitals in South Africa still needs to be tested and applied in various organisational settings. Although this falls outside the scope and aim of this study, it could be interesting to apply the framework in the exploration of the implementation of IS strategy in public hospitals in other provinces of South Africa or in similar settings. This could be a future research endeavour. This limitation and the previously described ones can be addressed in future research.

9.6 Future research

9.6.1 Testing and enhancement of the framework

Using the SRI framework for IS strategy implementation in public hospitals in South Africa to assess the implications of stakeholder relations on the implementation of IS strategy in public hospitals in South Africa and in similar organisational settings in the public sector in South Africa and in other countries will possibly contribute to the identification of areas of enhancement in the framework. This can allow the assessment of the applicability of the framework to other public sector settings apart from hospitals and in other developing countries.

9.6.2 Limiting the study to public hospitals with fully implemented IS

Limiting the study to public hospitals with fully implemented IS would be necessary to investigate possible variations that could be associated with the peculiarity of each public hospital and the implications of these peculiarities on the implementation of IS strategy in public hospitals in South Africa.

9.6.3 Investigating selected stakeholder groups' factors

This study has focused on the different stakeholder groups/actors. Conducting an investigation of the implications of a specific stakeholder groups on the implementation of IS strategy in public hospitals in South Africa could possibly provide a different perspective on stakeholder typological concepts and their influence on the implementation of IS strategy in public hospitals in South Africa.

9.6.4 Conducting an ethnographic research

An ethnographic study (Myers, 2009; Sarantakos, 2005) has the potential of providing in-depth exploration and could allow the development of further insight on aspects such as: the implication of various factors and parameters affecting stakeholder relations and the implementation of IS strategy and stakeholder groups' cultural factors affecting stakeholder relations and the implementation of IS strategy in public hospitals in South Africa.

9.7 Conclusion

In this chapter we presented the concluding arguments regarding the achievement of the twofold objective of this study. We reviewed the motivation of the study and highlighted the relevance of exploring stakeholder relations influence on the implementation of IS strategy in the South African public hospital environment by presenting arguments for this in the existing literature that was reviewed in this study. We revisited the research question by highlighting the answers to the main research question and the sub research questions in a systematic research question-

finding mapping fashion. We provided an elaboration of the three levels of contribution of this study namely the theoretical level contribution, the practical level contribution and the methodological level contribution. In the end, we discussed some of the limitations of this study and suggested areas for possible future research.

The findings of this study are bound by the academic purpose and requirements of this study. However these findings cannot be said to be final. The IS strategy implementation, stakeholder relations and public hospitals in South Africa research domain is complex. Various other scholarly observations shall eventually emerge from differing perspectives in this broad research domain.

“It is the theory which decides what we can observe”

(Albert Einstein quoted by Heisenberg, 1971, p. 77)

“Every discovery opens a new field for investigation of facts, shows us the imperfection of our theories. It has justly been said, that the greater the circle of light, the greater the boundary of darkness by which it is surrounded”.

(Sir Humphry Davy)

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APPENDICES

Appendix 1: Classification of health information systems

| Information systems | Descriptions | characteristics |
|---|---|---|
| Patient centered information systems | They are the electronic version of patients' information. Different terms are used to refer to these systems including electronic patient record (EPR), electronic medical record (EMR) and computer based patient record (CPR) | Manage comprehensive patient care information such as medical records, appointment scheduling, theatre management and ward reporting Have entry and retrieval functions for medical records and clinical procedures |
| Administrative information systems | Record the main business processes and routine transactions of organisations such as patient admission, discharge and transfer, bill processing, reporting and other management purposes | May constitute accounting subsystems, financial subsystems, inventory subsystems, equipment subsystems and general management subsystems tailored to the clinical environment |
| Clinical information systems (CIS) | Represent separate systems in specialized service of clinical departments. Examples of CIS include patient monitoring systems and anaesthesia documentation systems | Perform specific tasks including collection of specific data for patient care, research, management, planning and maintenance of national data repositories Specific tasks operate in departments such as internal medicine, cardiology, neurology, obstetrics, surgery and psychiatry CIS are used for administrative support, patient data collection, decision support, picture archiving, |

| | | |
|--|--|---|
| | | image analysis, monitoring, reporting, assessment and research |
| Radiology information systems | Support the acquisition and analysis of radiological images as well as administrative functions of radiology department. Example: picture archiving and communication systems (PACS) | May be stand alone or integrated in hospital information systems |
| Laboratory information systems | Perform data validation, administration, electronic transmission and computer storage | In high demand when large number of tests generated large data. Samples are analysed fully automatically, and the results are computer generated Support clinician to analyse trends to assess treatment effects |
| Pharmacy information systems | Maintain medication information | Include functions such as keeping patients' medication records, checking prescriptions, and providing drugs prescriptions and administrations to physician and nurses |
| Telemedicine | Telemedicine provides and supports healthcare services and education across distances via electronic communications and IT | Facilitates exchange between primary care physician and specialists as well as patients from disperse locations "allows physicians to practice medicine at assistance" |
| Clinical decision support systems | Designed specifically to aid clinical decision making | Common functions: alerting, reminding, critiquing, interpreting, predicting, diagnosing, assisting and suggesting Support healthcare activities at the operational, tactical and strategic levels |
| Hospital information | Consists of integrated hospital information processing systems. | Encompass patient management, administration, facilities management |

| | | |
|----------------|---|--|
| systems | Examples: computerised physician order entry (CPOE) (which are also referred to as computerized provider order entry), patient care information systems, nursing (bedside) documentation systems, nursing IS, general practitioner IS | and medical applications Contain database systems, data communication facilities and terminal or workstations |
|----------------|---|--|

University of Cape Town

Appendix 2: Classification and characteristics of public hospitals in South Africa (Adapted from DoH, 2011: 4-6)

| Public hospital type | Characteristics |
|---|---|
| <p>District Hospitals</p> <ul style="list-style-type: none"> ◆ Small: 50 – 150 beds ◆ Medium size 150 – 300 Beds ◆ Large 300 – 600 Beds | <p>A district hospital must</p> <ul style="list-style-type: none"> ◆ serve a defined population within a health district and support primary healthcare ◆ provide a district hospital package of care on a 24 hours basis ◆ have general practitioners and clinical nurse practitioners primary health services ◆ provide services that include in-patient, ambulatory health services as well as emergency health services ◆ where practical, provide training for healthcare service providers <p>◆ A district hospital receives outreach and support from general specialists based at regional hospitals</p> <p>A district hospital may only provide the following specialist services:</p> <ul style="list-style-type: none"> ◆ paediatric health services ◆ obstetrics and gynaecology ◆ internal medicine ◆ general surgery ◆ family physician |
| <p>Regional hospitals</p> <p>A regional hospital has between 200 and 800 beds</p> | <p>A regional hospital must on a 24 hour based, provide</p> <ul style="list-style-type: none"> ◆ health services in the fields of internal medicine, paediatrics, obstetrics and gynaecology, and general surgery ◆ Trauma and emergency services ◆ Short term ventilation in a critical care unit ◆ Services to a defined regional drainage population, limited to provincial boundaries and receives referrals from several district hospitals ◆ Where practical, provide training for healthcare service providers <p>◆ A regional hospital receives outreach and support from tertiary hospitals</p> <p>A regional hospital must on a 24 hour based provide health services in at least one of the following specialties:</p> <ul style="list-style-type: none"> ◆ orthopaedic surgery ◆ psychiatry ◆ anaesthetics ◆ diagnostic radiology |

| | |
|---|---|
| <p>Tertiary hospitals</p> <p>A tertiary hospital has between 400 and 800 beds</p> | <p>A tertiary hospital</p> <ul style="list-style-type: none"> ◆ Provides specialist level services provided by regional hospitals ◆ Provides subspecialties of the above specialties ◆ Provides intensive care services under the supervision of a specialist or specialist intensivist ◆ May provide training for healthcare services provides ◆ Receives referral from regional hospitals not limited to provincial boundaries |
| <p>Central hospitals</p> <p>A central hospital must have a maximum of 1200 beds</p> | <p>A central hospital</p> <ul style="list-style-type: none"> ◆ Must provide tertiary hospital services and central referral services and may provide national referral services ◆ Must provide training of healthcare providers ◆ Must conduct research ◆ Receives patients referred to it from more than one province ◆ Must be attached to a medical school as the main teaching platform |
| | <ul style="list-style-type: none"> ◆ Central referral services are provided in highly specialised units, require unique, highly skilled and scarce personnel and at a small number of sites nationwide |
| | <p>National referral services:</p> <ul style="list-style-type: none"> ◆ Refers to super-specialised national referral units ◆ Represents extremely specialised and expensive services (e.g. heart and lung transplant, bone marrow transplant, liver transplant, cochlear implants) |
| <p>Specialised hospitals</p> <p>A specialised hospital has a maximum of 600 beds</p> | <p>A specialised hospital</p> <p>Provides specialised health services like psychiatric services, tuberculosis services, infectious diseases and rehabilitation services</p> |

Appendix 3: Letter of approval from UCT Ethics in research committee

UNIVERSITY OF CAPE TOWN



**Faculty of Commerce
Ethics in Research Committee**

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UCT/COM/039/2012

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Dear Researcher

Project title: The impact of stakeholders' relations on the implementation of Information Systems strategy in public hospitals in South Africa: An activity theory perspective

This letter serves to confirm that the project entitled, "**The impact of stakeholders' relations on the implementation of Information Systems strategy in public hospitals in South Africa: An activity theory perspective**", as described in your final submitted protocol dated 26 March 2012, has been approved. You may proceed with the research.

Please note that if you make any substantial change in your research procedure that could affect the experiences of the participants, you must submit a revised protocol to the Committee for approval.

Best wishes for great success with your research.

Regards,

P De Jager

P De Jager
Commerce Faculty Ethics in Research Committee

"OUR MISSION is to be outstanding teaching and research university,
educating for life and addressing the challenges facing our society"

Appendix 4 : Interview questionnaire guide for public hospitals' managers



BOROTO HWABAMUNGU
 Candidate researcher CSIR Meraka Institute
 PhD Student: University of Cape Town
 information systems department



INTERVIEW QUESTIONNAIRE

Code: PHO/PHML-12

Dear Participant,

Research topic:

The impact of stakeholders' relations on the implementation of information system strategies in public hospitals of south africa: an activity theory perspective

Study Background:

The healthcare sector in developing countries such as South Africa faces various challenges. Some of these challenges can be addressed by the use of innovative Information and communication technologies (ICTs). ICTs present service improvement opportunity for public hospitals in South Africa, a sector that faces many health service delivery challenges. There are various individuals (stakeholders) who are involved in the provision of healthcare services in public hospitals in South Africa and who are key when the implementation of ICTs in public hospitals is envisaged. An important consideration when ICT implementation is envisaged is the information system planning process. The outcome of this process is an information system strategy. However, frequently there are challenges in implementing the information systems strategy and the consequential deployment of ICTs. Hence in this study we will investigate the influence of stakeholders' relations on the implementation of Information Systems strategy in public hospitals in South Africa. At the end of this study, a theoretical framework depicting the influence of stakeholders' relations on the implementation of IS strategy in public hospitals in South Africa will be developed.

Informed consent and confidentiality

I, BOROTO HWABAMUNGU,

Studying towards the PhD in Information systems at the University of Cape Town, hereby undertake to ensure privacy and confidentiality throughout this study. No participants' personal details will be collected or used. All information collected will be used for the sole purpose of this study. Participation in this study is voluntary. By undertaking to participate in this study, the participants agrees that participation is voluntary and that there will be no gain whatsoever from participating in the study.

I am reachable at the following contacts:

Email 1: bhwabamungu@csir.co.za

Mobile: 082 554 5968

Email 2: boroto.hwaba@gmail.com

Office: 012 841 3217

Thank you for your participation.



BOROTO HWABAMUNGU
 Candidate researcher CSIR Meraka Institute
 PhD Student: University of Cape Town
 Information systems department



General information

- A. Public hospital type:
- B. What is your position/job description?
- C. For how long have you been employed at this public hospital?
- D. What is your qualification?
- E. What is your education background?

Section 1: Preliminary interview questions

1.1 Do you have any computer system to assist in the activities of the hospitals?

If yes,

- 1.1.1 Which computer system do you have and what is (are) the system (s) used for?
- 1.1.2 Who uses the system?
- 1.1.3 Since when has the system been in use (implemented)?
- 1.1.4 When was the system implemented?
- 1.1.5 Who designed the system?
- 1.1.6 Who participated in the implementation of the system?
- 1.1.7 Was the system developed locally or was the system developed by a different organisation?
- 1.1.8 How was the system implemented?
- 1.1.9 What activities/processes were followed?
- 1.1.10 Was the implementation based on a certain strategy or plan?

If yes,

- 1.1.10.a (1) What was the strategy?
- 1.1.10.a (2) Who developed the strategy?
- 1.1.10.a (3) How was the strategy developed?

If no,

- 1.1.11.a (1) Why?
- 1.1.11.a (2) How did you proceed with the implementation of IS?
- 1.1.11.a (3) What guidelines did you follow?

If no,

1.1.11 Are you considering implementing any ICT in the near future?

If yes,

- 1.1.11.a (1) Do you have any IS strategy that you are following?
- 1.1.11.a (2) Are you planning to follow an IS strategy or to develop an IS strategy?
- 1.1.11.a (3) What activities/processes are you planning to follow?
- 1.1.11.a (4) Who is involved in all the process?
- 1.1.11.a (5) What relations exist between the actors who are currently involved?
- 1.1.11.a (6) Who are the other actors that will be involved in the process?
- 1.1.11.a (7) What are the relations between the different actors?



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 PhD Student: University of Cape Town
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If not,

- 1.1.11.b (1) Why?
- 1.1.11.b (2) Are you aware of the potential role of ICT/IS to improve service delivery
- 1.1.11.b (3) Are you aware of IS strategy, its role and relevance
- 1.1.11.b (4) Are you aware of the necessity of planning the implementation of ICT
- 1.1.11.b (5) Are you aware of the process of strategic IS planning (SISP?)

If the answer is YES to question 1.1 then proceed to the next section.

Section 2: Secondary Interview questions

Section 2.1: Implementation of IS strategy: an activity system

- 2.1.1 What role did you play during the ICT (or IS strategy) implementation process?
- 2.1.2 What activities were engaged into in the implementation of IS strategy in this hospital?
- 2.1.3 Who are the individuals who participated in these activities?
- 2.1.4 From which sector(s) were the participants?
- 2.1.5 What are the objectives of each activity that is engaged into?
- 2.1.6 Who are the individuals who were responsible for the transformation of the IS strategy into an implemented IS strategy and/or implemented elements of IS strategy (eg: components of computerised hospital information system)?
- 2.1.7 What are the tools/mediating factors/means that the designated stakeholder group used to transform the IS strategy into an implemented IS strategy?
- 2.1.8 What are the rules that guide the designation of the group of actors responsible for the implementation of IS strategy?
- 2.1.9 Who are the potential actors who are affected by/affect the IS strategy in public hospitals in South Africa?
- 2.1.10 What are the rules and regulations that guide all these different actors (at national level) with regard to the IS strategy and its implementation in public hospitals in South Africa?
- 2.1.11 Are there any activities (regarding the implementation of IS strategy) that are not engaged into but that could be relevant?
- 2.1.12 What would be the objectives of these activities?
- 2.1.13 How has the process evolved over time? (The past two-10 years)
- 2.1.14 How is the process planned to evolve over the next 5-10years)
- 2.1.15 Were there any unexpected/unplanned turn of events that occurred and that affected the IS strategy implementation process?
- 2.1.16 If yes, how was the IS strategy implementation process affected?
- 2.1.17 What challenges were encountered in the process of implementing the IS strategy?
- 2.1.18 Did you experience any difficulties that were due to the interrelation between the different actors?

Section 2.2: The designation of stakeholders group responsible for implementation of IS strategy: an activity system

- 2.2.1 How was the team that implemented the strategy formed?
- 2.2.2 Who were the members of the team that implemented the IS strategy?



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 Candidate researcher CSIR Meraka Institute
 PhD Student: University of Cape Town
 Information systems department



- 2.2.3 What activities are engaged into in the designation of stakeholders responsible for the implementation of IS strategy?
- 2.2.4 Which individuals partake in these activities?
- 2.2.5 What is the objective of each activity?
- 2.2.6 Who are the actors responsible for the formation of a functional IS strategy implementation team?
- 2.2.7 What are the rules that guide the designation of the IS implementation team?
- 2.2.8 What are the tools/mediating factors/means that are used by these actors to transform a non existing team into a fully functional IS strategy implementation team?
- 2.2.9 Which potential individuals affect/are affected by the formation of the designated IS strategy implementation team (individuals involved in the formation of an IS implementation team; the team that, in turn, is responsible to transform a non existing team into a fully functional IS strategy implementation team)?
- 2.2.10 What are the rules/regulations regarding a non functional implementation team and its transformation into a fully functional implementation team?
- 2.2.11 Are there any activities (regarding the designation of stakeholder group) that are not engaged into but that could be relevant?
- 2.2.12 If yes which activities?
- 2.2.13 If yes, what would be the objective of each activity?
- 2.2.14 How has the process of forming a fully functional IS implementation team evolved over time? (The past two-10 years)
- 2.2.15 How is the process of forming a fully functional IS implementation team anticipated to evolve over the next 5-10years)
- 2.2.16 Were there any unexpected/unplanned turn of events that occurred and that affected the formation of a functional IS strategy implementation team?
- 2.2.17 If yes, how has the process of forming a fully functional IS implementation team been affected?
- 2.2.18 What challenges were encountered in the process of building/developing a fully functional implementation team?

Section 2.3: Stakeholders' relations and influence

- 2.3.1 How do you interact with other team members or relevant individuals?
- 2.3.2 What means do you use to interact with other team members or relevant individuals?
- 2.3.3 What is the interaction between stakeholders based on? (commitment to IS strategy implementation, power, professional growth, personal interest, politics, competence, or other)
- 2.3.4 What types of relationship exist between stakeholders?
- 2.3.5 How have these relations influenced the implementation process?
- 2.3.6 Who are the stakeholders who should partake in the implementation of the IS strategy?
- 2.3.7 Do you think the type of interaction and relations between you and other team members or relevant individuals affects/affected the strategy implementation?
- 2.3.8 If yes, how would you describe the type of interaction between all team members all individuals affected by/who affect the implementation of IS strategy?
- 2.3.9 If no, what is your impression about the interactions between other team members or relevant individuals
- 2.3.10 How would you describe the individuals and the interactions that you have with them?



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 Information systems department



2.3.11 Have the interactions between any individuals affected in one way or the other the implementation of the strategy? Describe

Section 2.4: Implementation of IS Strategy observation

- 2.4.1 What does the IS strategy entail in your hospital?
- 2.4.2 What IS strategy elements have been implemented?
- 2.4.3 What process was followed in the implementation of the IS strategy?
- 2.4.4 How do stakeholders' relations influence elements of the IS strategy implementation activity system?
- 2.4.5 How have the relations between the different actors affected the IS strategy?
- 2.4.6 How have the relations between the different actors affected the functioning of the group of actors responsible for the implementation of the IS strategy?
- 2.4.7 How have the relations between the different actors affected the tools/mediating factors used in the implementation of the IS strategy?
- 2.4.8 How have the relations between the different actors affected the rules that guided the designation of the IS implementation team?
- 2.4.9 How have the relations between the different actors affected the potential actors who are affected by/affect the IS strategy in public hospitals in South Africa?
- 2.4.10 How have the relations between the different actors affected rules and regulations that guide all these different actors (at national level) with regard to the IS strategy and its implementation in public hospitals in South Africa?
- 2.4.11 What are the stakeholder-related issues or factors that affected the implementation of the strategy in anyway?
 - If yes,
 - 2.4.11.a (1) How was the IS strategy implementation influenced by stakeholders' factors?
 - 2.4.11.a (2) What stakeholders' relations elements influenced the implementation the IS strategy?
 - 2.4.11.a (3) How have the relations between stakeholders affected the implementation of IS strategy?
 - If no,
 - 2.4.11.b (1) What other factors affected the implementation of IS strategy?

Appendix 5 : Interview questionnaire guide for public hospitals' ICT managers

| | | |
|---|---|---|
|  | <p>BOROTO HWABAMUNGU Candidate researcher CSIR Meraka Institute PhD Student: University of Cape Town Information systems department</p> |  |
| INTERVIEW QUESTIONNAIRE | | Code: PHO/ICTM-21 |
| Dear Participant, | | |
| Research topic: | | |
| The impact of stakeholders' relations on the implementation of information system strategies in public hospitals of south africa: an activity theory perspective | | |
| Study Background: | | |
| <p>The healthcare sector in developing countries such as South Africa faces various challenges. Some of these challenges can be addressed by the use of innovative Information and communication technologies (ICTs). ICTs present service improvement opportunity for public hospitals in South Africa, a sector that faces many health service delivery challenges. There are various individuals (stakeholders) who are involved in the provision of healthcare services in public hospitals in South Africa and who are key when the implementation of ICTs in public hospitals is envisaged. An important consideration when ICT implementation is envisaged is the information system planning process. The outcome of this process is an information system strategy. However, frequently there are challenges in implementing the information systems strategy and the consequential deployment of ICTs. Hence in this study we will investigate the influence of stakeholders' relations on the implementation of Information Systems strategy in public hospitals in South Africa. At the end of this study, a theoretical framework depicting the influence of stakeholders' relations on the implementation of IS strategy in public hospitals in South Africa will be developed.</p> | | |
| Informed consent and confidentiality | | |
| I, BOROTO HWABAMUNGU, | | |
| <p>Studying towards the PhD in Information systems at the University of Cape Town, hereby undertake to ensure privacy and confidentiality throughout this study. No participants' personal details will be collected or used. All information collected will be used for the sole purpose of this study. Participation in this study is voluntary. By undertaking to participate in this study, the participants agrees that participation is voluntary and that there will be no gain whatsoever from participating in the study.</p> | | |
| I am reachable at the following contacts: | | |
| Email 1: bhwabamungu@csir.co.za | Mobile: 082 554 5968 | |
| Email 2: boroto.hwaba@gmail.com | Office: 012 841 3217 | |
| Thank you for your participation. | | |
| 1 | | |



BOROTO HWABAMUNGU
 Candidate researcher CSIR Meraka Institute
 PhD Student: University of Cape Town
 Information systems department



General information

- A. Public hospital type:
- B. What is your position/job description?
- C. For how long have you been employed at this public hospital?
- D. What is your qualification?
- E. What is your education background?

Section 1: Preliminary interview questions

1.1 Do you have any computer system to assist in the activities of the hospitals?

If yes,

- 1.1.1 Which computer system do you have and what is (are) the system (s) used for?
- 1.1.2 Who uses the system?
- 1.1.3 Since when has the system been in use (implemented)?
- 1.1.4 When was the system implemented?
- 1.1.5 Who designed the system?
- 1.1.6 Who participated in the implementation of the system?
- 1.1.7 Was the system developed locally or was the system developed by a different organisation?
- 1.1.8 How was the system implemented?
- 1.1.9 What activities/processes were followed?
- 1.1.10 Was the implementation based on a certain strategy or plan?

If yes,

- 1.1.10.a (1) What was the strategy?
- 1.1.10.a (2) Who developed the strategy?
- 1.1.10.a (3) How was the strategy developed?

If no,

- 1.1.11.a (1) Why?
- 1.1.11.a (2) How did you proceed with the implementation of IS?
- 1.1.11.a (3) What guidelines did you follow?

If no,

1.1.11 Are you considering implementing any ICT in the near future?

If yes,

- 1.1.11.a (1) Do you have any IS strategy that you are following?
- 1.1.11.a (2) Are you planning to follow an IS strategy or to develop an IS strategy?
- 1.1.11.a (3) What activities/processes are you planning to follow?
- 1.1.11.a (4) Who is involved in all the process?
- 1.1.11.a (5) What relations exist between the actors who are currently involved?
- 1.1.11.a (6) Who are the other actors that will be involved in the process?
- 1.1.11.a (7) What are the relations between the different actors?



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 Candidate researcher CSIR Meraka Institute
 PhD Student: University of Cape Town
 Information systems department



If not,

- 1.1.11.b (1) Why?
- 1.1.11.b (2) Are you aware of the potential role of ICT/IS to improve service delivery
- 1.1.11.b (3) Are you aware of IS strategy, its role and relevance
- 1.1.11.b (4) Are you aware of the necessity of planning the implementation of ICT
- 1.1.11.b (5) Are you aware of the process of strategic IS planning (SISP?)

If the answer is YES to question 1.1 then proceed to the next section.

Section 2: Secondary interview questions

Section 2. 1: Implementation of IS strategy: an activity system

- 2.1.1 What role did you play during the ICT (or IS strategy) implementation process
- 2.1.2 What activities were engaged into in the implementation of IS strategy in this hospital?
- 2.1.3 Who are the individuals who participated in these activities?
- 2.1.4 From which sector(s) were the participants?
- 2.1.5 What are the objectives of each activity that is engaged into?
- 2.1.6 Who are the individuals who were responsible for the transformation of the IS strategy into an implemented IS strategy and/or implemented elements of IS strategy (eg: components of computerised hospital information system)?
- 2.1.7 What are the tools/mediating factors/means that the designated stakeholder group use to transform the IS strategy into an implemented IS strategy?
- 2.1.8 What are the rules that guide the designation of the group of actors responsible for the implementation of IS strategy?
- 2.1.9 Who are the potential actors who are affected by/affect the IS strategy in public hospitals in South Africa?
- 2.1.10 What are the rules and regulations that guide all these different actors (at national level) with regard to the IS strategy and its implementation in public hospitals in South Africa?
- 2.1.11 Are there any activities (regarding the implementation of IS strategy) that are not engaged into but that could be relevant?
- 2.1.12 What would be the objectives of these activities?
- 2.1.13 How has the process evolved over time? (The past two-10 years)
- 2.1.14 How is the process planned to evolve over the next 5-10years)
- 2.1.15 Were there any unexpected/unplanned turn of events that occurred and that affected the IS strategy implementation process?
- 2.1.16 If yes, how was the IS strategy implementation process affected?
- 2.1.17 What challenges were encountered in the process of implementing the IS strategy?
- 2.1.18 Did you experience any difficulties that were due to the interrelation between the different actors?

Section 2.2: The designation of stakeholders group responsible for implementation of IS strategy: an activity system

- 2.2.1 How was the team that implemented the strategy formed?
- 2.2.2 Who were the members of the team that implemented the IS strategy?



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Candidate researcher CSIR Meraka Institute

PhD Student: University of Cape Town

Information systems department



- 2.2.3 What activities are engaged into in the designation of stakeholders responsible for the implementation of IS strategy?
- 2.2.4 Which individuals partake in these activities?
- 2.2.5 What is the objective of each activity?
- 2.2.6 Who are the actors responsible for the formation of a functional IS strategy implementation team?
- 2.2.7 What are the rules that guide the designation of the IS implementation team?
- 2.2.8 What are the tools/mediating factors/means that are used by these actors to transform a non existing team into a fully functional IS strategy implementation team?
- 2.2.9 Which potential individuals affect/are affected by the formation of the designated IS strategy implementation team (individuals involved in the formation of an IS implementation team; the team that, in turn, is responsible to transform a non existing team into a fully functional IS strategy implementation team)?
- 2.2.10 What are the rules/regulations regarding a non functional implementation team and its transformation into a fully functional implementation team?
- 2.2.11 Are there any activities (regarding the designation of stakeholder group) that are not engaged into but that could be relevant?
- 2.2.12 If yes which activities?
- 2.2.13 If yes, what would be the objective of each activity?
- 2.2.14 How has the process of forming a fully functional IS implementation team evolved over time? (The past two-10 years)
- 2.2.15 How is the process of forming a fully functional IS implementation team anticipated to evolve over the next 5-10years)
- 2.2.16 Were there any unexpected/unplanned turn of events that occurred and that affected the formation of a functional IS strategy implementation team?
- 2.2.17 If yes, how has the process of forming a fully functional IS implementation team been affected?
- 2.2.18 What challenges were encountered in the process of building/developing a fully functional implementation team?

Section 2.3: Stakeholders' relations and influence

- 2.3.1 How do you interact with other team members or relevant individuals?
- 2.3.2 What means do you use to interact with other team members or relevant individuals?
- 2.3.3 What is the interaction between stakeholders based on? (commitment to IS strategy implementation, power, professional growth, personal interest, politics, competence, or other)
- 2.3.4 What types of relationship exist between stakeholders and
- 2.3.5 How have these relations influenced the implementation process?
- 2.3.6 Who are the stakeholders who should partake in the implementation of the IS strategy?
- 2.3.7 Do you think the type of interaction and relations between you and other team members or relevant individuals affects/affected the strategy implementation?
- 2.3.8 If yes, how would you describe the type of interaction between all team members all individuals affected by/who affect the implementation of IS strategy?
- 2.3.9 If no, what is your impression about the interactions between other team members or relevant individuals
- 2.3.10 How would you describe the individuals and the interactions that you have with them?



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 Candidate researcher CSIR Meraka Institute
 PhD Student: University of Cape Town
 Information systems department



2.3.11 Have the interactions between any individuals affected in one way or the other the implementation of the strategy? Describe

Section 2.4: Implementation of IS Strategy observation

- 2.4.1 What does the IS strategy entail in your hospital?
 - 2.4.2 What IS strategy elements have been implemented?
 - 2.4.3 What process was followed in the implementation of the IS strategy?
 - 2.4.4 How do stakeholders' relations influence elements of the IS strategy implementation activity system?
 - 2.4.5 How have the relations between the different actors affected the IS strategy?
 - 2.4.6 How have the relations between the different actors affected the functioning of the group of actors responsible for the implementation of the IS strategy?
 - 2.4.7 How have the relations between the different actors affected the tools/mediating factors used in the implementation of the IS strategy?
 - 2.4.8 How have the relations between the different actors affected the rules that guided the designation of the IS implementation team?
 - 2.4.9 How have the relations between the different actors affected the potential actors who are affected by/affect the IS strategy in public hospitals in South Africa?
 - 2.4.10 How have the relations between the different actors affected rules and regulations that guide all these different actors (at national level) with regard to the IS strategy and its implementation in public hospitals in South Africa?
 - 2.4.11 What are the stakeholder-related issues or factors that affected the implementation of the strategy in anyway?
- If yes,
- 2.4.11.a (1) How was the IS strategy implementation influenced by stakeholders' factors?
 - 2.4.11.a (2) What stakeholders' relations elements influenced the implementation the IS strategy?
 - 2.4.11.a (3) How have the relations between stakeholders affected the implementation of IS strategy?
- If no,
- 2.4.11.b (1) What other factors affected the implementation of IS strategy?

Appendix 6: Interview questionnaire guide for other individuals

| | | |
|---|---|---|
|  | <p>BOROTO HWABAMUNGU Candidate researcher CSIR Meraka Institute PhD Student: University of Cape Town Information systems department</p> |  |
| INTERVIEW QUESTIONNAIRE | | CODE: OIO/IRIS-36 |
| Dear Participant, | | |
| Research topic: | | |
| The impact of stakeholders' relations on the implementation of information system strategies in public hospitals of south africa: an activity theory perspective | | |
| Study Background: | | |
| <p>The healthcare sector in developing countries such as South Africa faces various challenges. Some of these challenges can be addressed by the use of innovative Information and communication technologies (ICTs). ICTs present service improvement opportunity for public hospitals in South Africa, a sector that faces many health service delivery challenges. There are various individuals (stakeholders) who are involved in the provision of healthcare services in public hospitals in South Africa and who are key when the implementation of ICTs in public hospitals is envisaged. An important consideration when ICT implementation is envisaged is the information system planning process. The outcome of this process is an information system strategy. However, frequently there are challenges in implementing the information systems strategy and the consequential deployment of ICTs. Hence in this study we will investigate the influence of stakeholders' relations on the implementation of Information Systems strategy in public hospitals in South Africa. At the end of this study, a theoretical framework depicting the influence of stakeholders' relations on the implementation of IS strategy in public hospitals in South Africa will be developed.</p> | | |
| Informed consent and confidentiality | | |
| I, BOROTO HWABAMUNGU, | | |
| <p>Studying towards the PhD in Information systems at the University of Cape Town, hereby undertake to ensure privacy and confidentiality throughout this study. No participants' personal details will be collected or used. All information collected will be used for the sole purpose of this study. Participation in this study is voluntary. By undertaking to participate in this study, the participants agrees that participation is voluntary and that there will be no gain whatsoever from participating in the study.</p> | | |
| I am reachable at the following contacts: | | |
| Email 1: bhwabamungu@csir.co.za | Mobile: 082 554 5968 | |
| Email 2: boroto.hwaba@gmail.com | Office: 012 841 3217 | |
| Thank you for your participation. | | |
| 1 | | |



BOROTO HWABAMUNGU
 Candidate researcher CSIR Meraka Institute
 PhD Student: University of Cape Town
 Information systems department



Section 1: General information

- A. Organisation/company type:
- B. Role played in implementation:
- C. What is your position/job description?
- D. For how long have you been employed at this organisation?
- E. What is your qualification?
- F. What is your education background?

SECTION 2: IS strategy implementation

Section 2. 1: Implementation of IS strategy: an activity system

- 2.1.1 What role did you play during the ICT (or IS strategy) implementation process
- 2.1.2 What activities were engaged into in the implementation of IS strategy in this hospital?
- 2.1.3 Who are the individuals who participated in these activities?
- 2.1.4 From which sector(s) were the participants?
- 2.1.5 What are the objectives of each activity that is engaged into?
- 2.1.6 Who are the individuals who were responsible for the transformation of the IS strategy into an implemented IS strategy and/or implemented elements of IS strategy (eg: components of computerised hospital information system)?
- 2.1.7 What are the tools/mediating factors/means that the designated stakeholder group use to transform the IS strategy into an implemented IS strategy?
- 2.1.8 What are the rules that guide the designation of the group of actors responsible for the implementation of IS strategy?
- 2.1.9 Who are the potential actors who are affected by/affect the IS strategy in public hospitals in South Africa?
- 2.1.10 What are the rules and regulations that guide all these different actors (at national level) with regard to the IS strategy and its implementation in public hospitals in South Africa?
- 2.1.11 Are there any activities (regarding the implementation of IS strategy) that are not engaged into but that could be relevant?
- 2.1.12 What would be the objectives of these activities?
- 2.1.13 How has the process evolved over time? (The past two-10 years)
- 2.1.14 How is the process planned to evolve over the next 5-10years)
- 2.1.15 Were there any unexpected/unplanned turn of events that occurred and that affected the IS strategy implementation process?
- 2.1.16 If yes, how was the IS strategy implementation process affected?
- 2.1.17 What challenges were encountered in the process of implementing the IS strategy?
- 2.1.18 Did you experience any difficulties that were due to the interrelation between the different actors?



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 PhD Student: University of Cape Town
 Information systems department



Section 2.2: The designation of stakeholders group responsible for implementation of IS strategy: an activity system

- 2.2.1 How was the team that implemented the strategy formed?
- 2.2.2 Who were the members of the team that implemented the IS strategy?
- 2.2.3 What activities are engaged into in the designation of stakeholders responsible for the implementation of IS strategy?
- 2.2.4 Which individuals partake in these activities?
- 2.2.5 What is the objective of each activity?
- 2.2.6 Who are the actors responsible for the formation of a functional IS strategy implementation team?
- 2.2.7 What are the rules that guide the designation of the IS implementation team?
- 2.2.8 What are the tools/mediating factors/means that are used by these actors to transform a non existing team into a fully functional IS strategy implementation team?
- 2.2.9 Which potential individuals affect/are affected by the formation of the designated IS strategy implementation team (individuals involved in the formation of an IS implementation team; the team that, in turn, is responsible to transform a non existing team into a fully functional IS strategy implementation team)?
- 2.2.10 What are the rules/regulations regarding a non functional implementation team and its transformation into a fully functional implementation team?
- 2.2.11 Are there any activities (regarding the designation of stakeholder group) that are not engaged into but that could be relevant?
- 2.2.12 If yes which activities?
- 2.2.13 If yes, what would be the objective of each activity?
- 2.2.14 How has the process of forming a fully functional IS implementation team evolved over time? (The past two-10 years)
- 2.2.15 How is the process of forming a fully functional IS implementation team anticipated to evolve over the next 5-10years)
- 2.2.16 Were there any unexpected/unplanned turn of events that occurred and that affected the formation of a functional IS strategy implementation team?
- 2.2.17 If yes, how has the process of forming a fully functional IS implementation team been affected?
- 2.2.18 What challenges were encountered in the process of building/developing a fully functional implementation team?

Section 2.3: Stakeholders' relations and influence

- 2.3.1 How do you interact with other team members or relevant individuals?
- 2.3.2 What means do you use to interact with other team members or relevant individuals?
- 2.3.3 What is the interaction between stakeholders based on? (commitment to IS strategy implementation, power, professional growth, personal interest, politics, competence, or other)
- 2.3.4 What types of relationship exist between stakeholders and
- 2.3.5 How have these relations influenced the implementation process?
- 2.3.6 Who are the stakeholders who should partake in the implementation of the IS strategy?
- 2.3.7 Do you think the type of interaction and relations between you and other team members or relevant individuals affects/affected the strategy implementation?



BOROTO HWABAMUNGU
 Candidate researcher CSIR Meraka Institute
 PhD Student: University of Cape Town
 Information systems department



- 2.3.8 If yes, how would you describe the type of interaction between all team members all individuals affected by/who affect the implementation of IS strategy?
- 2.3.9 If no, what is your impression about the interactions between other team members or relevant individuals
- 2.3.10 How would you describe the individuals and the interactions that you have with them?
- 2.3.11 Have the interactions between any individuals affected in one way or the other the implementation of the strategy? Describe

Section 2.4: Implementation of IS Strategy observation

- 2.4.1 What does the IS strategy entail in your hospital?
- 2.4.2 What IS strategy elements have been implemented?
- 2.4.3 What process was followed in the implementation of the IS strategy?
- 2.4.4 How do stakeholders' relations influence elements of the IS strategy implementation activity system?
- 2.4.5 How have the relations between the different actors affected the IS strategy?
- 2.4.6 How have the relations between the different actors affected the functioning of the group of actors responsible for the implementation of the IS strategy?
- 2.4.7 How have the relations between the different actors affected the tools/mediating factors used in the implementation of the IS strategy?
- 2.4.8 How have the relations between the different actors affected the rules that guided the designation of the IS implementation team?
- 2.4.9 How have the relations between the different actors affected the potential actors who are affected by/affect the IS strategy in public hospitals in South Africa?
- 2.4.10 How have the relations between the different actors affected rules and regulations that guide all these different actors (at national level) with regard to the IS strategy and its implementation in public hospitals in South Africa?
- 2.4.11 What are the stakeholder-related issues or factors that affected the implementation of the strategy in anyway?
 - If yes,
 - 2.4.11.a (1) How was the IS strategy implementation influenced by stakeholders' factors?
 - 2.4.11.a (2) What stakeholders' relations elements influenced the implementation the IS strategy?
 - 2.4.11.a (3) How have the relations between stakeholders affected the implementation of IS strategy?
 - If no,
 - 2.4.11.b (1) What other factors affected the implementation of IS strategy?

Appendix 7 : Informed consent letter

BOROTO HWABAMUNGU
 Candidate researcher CSIR Meraka Institute
 PhD Student: University of Cape Town
 Information systems department

**INFORMED CONSENT**

Dear participant,

I, BOROTO HWABAMUNGU, studying towards the PhD in Information systems at the University of Cape Town, hereby request your voluntary participation in this study.

Research topic: The impact of stakeholders' relations on the implementation of information system strategies in public hospitals of south africa: an activity theory perspective.

Study Background: There are various individuals (stakeholders) who are involved in the deployment of Information and communication technologies (ICT) and in the implementation of Information Systems (IS) strategy in public hospitals in South Africa. In this study we will investigate the influence of the relations between these stakeholders on the implementation of IS strategy in public hospitals in South Africa. At the end of this study, a theoretical framework depicting how stakeholders' relations influence the implementation of IS strategy in public hospitals in South Africa will be developed.

There are no known risks or dangers to you associated with this study. The researcher will not attempt to identify you with the responses to your questionnaire, or to name you as a participant in the study, nor will the researcher facilitates anyone else's doing so.

I am reachable at the following contacts:

Email 1: bhwabamungu@csir.co.za

Mobile: 082 554 5968

Email 2: boroto.hwaba@gmail.com

Office: 012 841 3217

Participant's consent: I acknowledge that I am participating in this study of my own free will. I understand that I may refuse to participate or stop participating at any time without penalty. If I wish, I will be given a copy of this consent form.

Participant signature

Researcher's name and signature

Place and date: _____

BOROTO HWABAMUNGU

Appendix 8: CSIR Meraka Institute recommendation letter**CSIR Meraka Institute**

PO Box 395 Pretoria 0001 South Africa
Tel: +27 12 841 3181
Fax: +27 12 349 4570
Email: qwilliams@csir.co.za

TO WHOM IT MAY CONCERN

Dear Madam/Sir,

Recommendation letter: conduct of interviews at public hospitals in South Africa

This letter serves to confirm that BOROTO HWABAMUNGU is a PhD student at CSIR Meraka institute pursuing his PhD studies at the University of Cape Town within the department of Information systems. He has been working at the CSIR since October 2006 as a candidate researcher. BOROTO HWABAMUNGU is presently investigating the impact of stakeholders' relations on the implementation of Information Systems strategy in public hospitals in South Africa. He will be conducting interviews from May 2012 to October 2012 at selected public hospitals in South Africa.

Your assistance in the conduct of this study at your hospital is much appreciated.

Regards,

Quentin Williams
Manager: Emerging Research and Human Capital Development
CSIR Meraka Institute

Appendix 9: Letter of request for permission to conduct interviews at public hospitals in South Africa

BOROTO HWABAMUNGU

PhD Student: University of Cape Town
Candidate researcher: CSIR Meraka Institute
Council for Scientific and Industrial Research
PO BOX 395
Pretoria 001
South Africa

May 24, 2012

Request for permission to conduct of interviews in public hospitals in **(Province name/district name/public hospital name)**

Dear Madam/Sir,

I, BOROTO HWABAMUNGU, wish to request permission to conduct interviews at **(public hospitals in province name/public hospitals in district name/hospital name)** for the purpose of my PhD research:

Study title: "The impact of stakeholders' relations on the implementation of Information Systems (IS) strategy in public hospitals in South Africa: an activity theory perspective."

I am a registered PhD student at the University of Cape Town within the department of Information systems since February 2010 and I have been working at the CSIR Meraka institute as a candidate researcher since October 2006. I am presently investigating the impact of stakeholders' relations on the implementation of Information Systems (IS) strategy in public hospitals in South Africa. The interviews will be conducted with public hospitals' managers, ICT managers and other relevant stakeholders who might have played a role in the implementation of ICT at selected public hospitals.

I am planning to conduct interviews between June 2012 and December 2012 at selected public hospitals and relevant organisations in South Africa. This research has been approved by the UCT Ethics in Research committee.

Find here attached the research abstract, the Ethics approval letter, and the study protocol. Should you require any further information, please do not hesitate to contact me.

Your assistance in the conduct of this study is much appreciated.

Regards,

BOROTO HWABAMUNGU

Appendix 10: Letter 1 of approval (Kwazulu Natal province)

health

Department:
Health

PROVINCE OF KWAZULU-NATAL

Postal Address: Private Bag X54316 Durban 4000
 P.O. Box 83 Jan Smuts Highway, Mayville, Durban 4001
 Tel. 031 2405308; Fax: 031 2405500
 Email: nan.hoosain@kznhealth.gov.za
www.kznhealth.gov.za

Enquiries: Ms Jabu Hlazo
 Tel: 031 240 5303
 Date: 29 May 2012

Boroto Hwabamungu: boroto.hwaba@gmail.com

REQUEST TO CONDUCT RESEARCH:

The impact of Stakeholders' relations on the Implementation of Information Systems strategy in public hospitals in South Africa: An activity theory perspective

Support is hereby granted to conduct research on the above topic.

Please note the following:

1. Please ensure that you adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regard to this research.
2. This research will only commence once this office has received confirmation from the Provincial Health Research Committee in the KZN Department of Health.
3. Please ensure that this office is informed before you commence your research.
4. The District Office will not provide any resources for this research.
5. You will be expected to provide feedback on your findings to the District Office.

PP Acting District Manager
 eThekweni
 Telephone: 031 2405303
 Fax : 031 2405500
 Email: jabulisiwe.hlazo@kznhealth.gov.za

uMnyango Wezempilo . Departement van Gesondheid

Fighting Disease, Fighting Poverty, Giving Hope

Appendix 11: Letter 2 of approval (Kwazulu Natal province)**health**Department
Health
PROVINCE OF KWAZULU-NATAL**DISTRICT MANAGERS OFFICE
ILEMBE HEALTH DISTRICT**Postal Address: P. O. Box 10620
Physical Address: 36/40 Chief Albert Luthuli Street
Ok Mall Building, 1st Floor
Tel.: 032- 4373500 Fax: 032 5511592
Email: sibongile.dube@kznhealth.gov.za
www.kznhealth.gov.za

Reference: DM20112/05/2554

Enq: Ms. S Dube

Date: 31 May 2012

TO: Principal Investigator
CSIR Meraka Institute
PhD Student: University of Cape Town
Information Systems Department
Council for Scientific and Industrial Research (CSIR)
P. O. Box 395
Pretoria 0001
South Africa

Attention: Boroto Hwabamungu

RE: THE IMPACT OF STAKEHOLDERS' RELATIONS ON THE IMPLEMENTATION OF INFORMATION SYSTEMS STRATEGY IN PUBLIC HOSPITALS IN SOUTH AFRICA: AN ACTIVITY THEORY PERSPECTIVE

I have pleasure in informing you that permission has been granted to you by the District Office to conduct your research "The Impact of Stakeholders' Relations on the Implementation of Information Systems Strategy in Public Hospitals in South Africa: An Activity Theory Perspective.


Please note the following:

1. Please ensure that you adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regards to this research.
2. This research will commence once this Office has received confirmation from the Provincial Health Research Committee in the KZN Department of Health.
3. Please ensure this Office is informed before you commence your research.
4. The District Office / Facilities will not provide any resources for this research.
5. You will be expected to provide feedback on your findings to the District Office and the hospitals selected for the research.

Thank you.

Ms S Dube
District Manager
Ilembe Health District

Appendix 12: Letter 3 of approval (Kwazulu Natal province)

| | |
|--|---|
|  PROVINCE OF KWAZULU-NATAL | Private Bag 91020, Durban 6001 Tel: 035 5721327, Fax: 035 5721251 Cell: 072 584 3472 Email: hervey.williams@kznhealth.gov.za |
|--|---|

Reference :
Enquiries : Dr CH Vaughan Williams
Telephone : 035-5721327 Ext 114

28 May 2012

Dear Boroto Hwabamungu,

I have pleasure in informing you that permission has been granted to you by the District Office to conduct research on in this district, entitled:

'The impact of stakeholders' relations on the implementation of Information Systems strategy in public hospitals in South Africa: an activity theory perspective'

Please note the following:

1. Please ensure that you adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regards to this research.
2. This research will only commence once this office has received confirmation from the Provincial Health Research Committee in the KZN Department of Health.
3. Please ensure this office is informed before you commence your research.
4. The District Office will not provide any resources for this research.
5. You will be expected to provide feedback on your findings to the District Office.

Sincerely,

C H Vaughan Williams
Family Physician, Umkhanyakude Health District Office

uMnyango Wezempilo · Departement van Gesondheid
Fighting Disease, Fighting Poverty, Giving Hope

Appendix 13: Letter 4 of approval (Kwazulu Natal province)**health**Department:
Health
PROVINCE OF KWAZULU-NATAL**UTHUKELA HEALTH DISTRICT**32 Lyell Street,
Ladysmith
P/Bag X9958, Ladysmith, 3370
Tel: 036 6312202
Fax: 036 6310530
E-mail: thandeka.zulu@kznhealth.gov.za
www.kznhealth.gov.za

09 July 2012

B Hwabamungu

**RE: REQUEST FOR PERMISSION TO CONDUCT INTERVIEW AT PUBLIC HOSPITALS
WITHIN THE UTHUKELA.**

Please be informed that I have acknowledged your letter of support for research on Public hospitals in Uthukela District.

Please note the following:

1. Your email dated on 24 May 2012 refers.
2. Uthukela District must ensure adherence to all the policies, produces, protocols and guidelines of the Department of Health with regards to this research.
3. Your research will only commence once this office has received confirmation of the approval by HOD from the provincial Health Research Committee in the KZN Department of Health.
4. However the Management takes note of the intended research.
5. Later response is regretted.

Yours faithfully

MRS M T ZULU
DISTRICT MANAGER
UTHUKELA HEALTH DISTRICT

uMnyango Wezempilo . Departement van Gesondheid

Fighting Disease, Fighting Poverty, Giving Hope

Appendix 14: Findings from thematic analysis of the Western Cape Province case study

| Preliminary concepts resulting from activity theory analysis (WCP PIC) | Grouping of concepts in themes | Western Cape Province Initially Developed themes (WCP IDT) |
|---|--|--|
| <p>WCP PIC 1: Network of stakeholder groups/actors WCP PIC 2: Political/hierarchical structures WCP PIC 3: Stakeholder groups competences WCP PIC 4: Stakeholder groups responsibilities in activity levels WCP PIC 5: Levels of activities related to IS strategy implementation</p> <p>WCP PIC 6: Established structures through which stakeholder engagement and interaction occurs WCP PIC 7: Rules and means of communication and coordination regarding engagements between stakeholder groups and the implementation of IS strategy WCP PIC 8: Stakeholder interactions, level of interactions and motive of interactions WCP PIC 9: National guidelines, vision and goals, defined guiding contacts, policies and acts WCP PIC 10: Means of interactions/communication WCP PIC 11: Means of coordination WCP PIC 12: The procedure through which stakeholder groups engagement is managed and the outcome of engagement integrated into IS strategy implementation decisions WCP PIC 13: Provincial approach to IS strategy implementation , the role of CEI in the implementation of IS strategic initiatives and the role of DITCOM in the approval of IS strategic initiatives WCP PIC 14: The established procedures to deal with the management of IS strategic initiatives. WCP PIC 15: The complexity of the provincial department of health and the implications on IS strategy implementation particularly regarding fund availability and mobilisation WCP PIC 16: The peculiarities of each public hospitals, the requirements for different types of IS and the implication in the IS strategy becoming complex</p> | <p>WCP PIC 1 >>>>> WCP IDT 1 WCP PIC 2 >>>>> WCP IDT 5 WCP PIC 3 >>>>> WCP IDT 1 WCP PIC 4 >>>>> WCP IDT 2 WCP PIC 5 >>>>> WCP IDT 2</p> <p>WCP PIC 6 >>>>> WCP IDT 15</p> <p>WCP PIC 7 >>>>> WCP IDT 9, 11</p> <p>WCP PIC 8 >>>>> WCP IDT 9 WCP PIC 9 >>>>> WCP IDT 9, 11</p> <p>WCP PIC 10 >>>>> WCP IDT 11 WCP PIC 11 >>>>> WCP IDT 11 WCP PIC 12 >>>>> WCP IDT 11</p> <p>WCP PIC 13 >>>>> WCP IDT 3, 4</p> <p>WCP PIC 14 >>>>> WCP IDT 12</p> <p>WCP PIC 15 >>>>> WCP IDT 15</p> <p>WCP PIC 16 >>>>> WCP IDT 15</p> | <p>WCP IDT 1: Stakeholder groups and their respective roles WCP IDT 2: Stakeholder groups related hierarchical activity levels WCP IDT 3: Stakeholder groups respective level of in-put in IS strategy implementation activities WCP IDT 4: The structure of the implementation team and the province approach WCP IDT 5: The hierarchical structures characterising stakeholder groups and the interactions between stakeholder groups WCP IDT 6: Scoping of the IS strategy and development of IS strategic initiatives WCP IDT 7: IS strategy flexibility to accommodate new guidelines or requirements WCP IDT 8: Integration of national strategic vision into provincial IS strategy WCP IDT 9: Engagement between different stakeholder groups WCP IDT 10: Procedures and means for the operationalization of IS strategy WCP IDT 11: Stakeholder engagements mechanisms WCP IDT 12: Existence of contracts for the management of stakeholder groups</p> |

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| <p>WCP PIC 17: Existence of Strategic documents guiding the development of IS strategy and IS strategic initiatives Implicitly focus on patient and service delivery in an IS explicit focused IS strategy</p> <p>WCP PIC 18: Incorporating outcome of workshops in strategic documents and IS strategy</p> <p>WCP PIC 19: The maturity levels of public hospitals and the associated readiness for IS</p> <p>WCP PIC 20: The role of national level stakeholder actors in providing strategic leadership and guidelines</p> <p>WCP PIC 21: The integration of new national strategic initiatives particularly the NHI into the provincial strategic priority</p> <p>WCP PIC 22: International guidelines and trends in healthcare/hospital IS</p> <p>WCP PIC 23: Challenges in prioritising due to the complexity of services and the peculiarities of each public hospital</p> <p>WCP PIC 24: The standard funding mechanism</p> <p>WCP PIC 25: The necessity of frequent/regular engagements with stakeholder groups in improving efficiencies in communication, and attainment of sought IS strategic targets</p> <p>WCP PIC 26: Measures (and effectiveness of these measures) to enforce adherence to stakeholder groups respective required/defined performance targets</p> <p>WCP PIC 27: Provincial principles guiding the provincial approach and the actions and mode of operation of staff members</p> <p>WCP PIC 28: The structure of the IS strategy implementation team and the specific body, the CEI, that foresee all ICT related aspects</p> <p>WCP PIC 29: The roles and responsibilities of other stakeholder groups in other activities related to the implementation of the IS strategy</p> <p>WCP PIC 30: The expertise, competencies and skills of the different stakeholder groups</p> <p>WCP PIC 31: The role of the Hospital management stakeholder groups in the operationalization of the IS strategy</p> <p>WCP PIC 32: The role of state structures SITA in providing the defined support services to the department of health</p> <p>WCP PIC 33: The different clients/service providers and suppliers of IT technologies of/to the department of health and the specific support services that they provide</p> | <p>WCP PIC 17 >>>>> WCP IDT 6, 8</p> <p>WCP PIC 18 >>>>> WCP IDT 6, 7, 17</p> <p>WCP PIC 19 >>>>> WCP IDT 15</p> <p>WCP PIC 20 >>>>> WCP IDT 2, 3</p> <p>WCP PIC 21 >>>>> WCP IDT 6, 17</p> <p>WCP PIC 22 >>>>> WCP IDT 15</p> <p>WCP PIC 23 >>>>> WCP IDT 6, 15</p> <p>WCP PIC 24 >>>>> WCP IDT 14</p> <p>WCP PIC 25 >>>>> WCP IDT 9</p> <p>WCP PIC 26 >>>>> WCP IDT 12</p> <p>WCP PIC 27 >>>>> WCP IDT 4</p> <p>WCP PIC 28 >>>>> WCP IDT 3, 4</p> <p>WCP PIC 29 >>>>> WCP IDT 3</p> <p>WCP PIC 30 >>>>> WCP IDT 1</p> <p>WCP PIC 31 >>>>> WCP IDT 3</p> <p>WCP PIC 32 >>>>> WCP IDT 3</p> <p>WCP PIC 33 >>>>> WCP IDT 2</p> | <p>respective obligation</p> <p>WCP IDT 13: The timeliness of deliverable from stakeholder groups and implications for the IS strategy implementation.</p> <p>WCP IDT 14: Existence of IS initiative funding mechanism</p> <p>WCP IDT 15: Contextual factors affecting the engagements between stakeholder groups as well as the implementation of IS strategy in public hospitals in the Western Cape</p> <p>WCP IDT 16: Invisible but focal stakeholder and the classification of stakeholder groups such as the patients</p> <p>WCP IDT 17: Strategic activities and IS strategy operationalization processes</p> <p>WCP IDT 18: IS strategic decisions and strategy operationalization decisions</p> <p>WCP IDT 19: Adherence to guidelines, requirements and other IS strategy implementation prescriptive recommendations</p> <p>WCP IDT 20: Deployment of IS in public hospitals in the Western Cape Province</p> <p>WCP IDT 21: : IS strategic decision resulting from the learning from good strategic initiative from provincial stakeholders or other stakeholder groups</p> <p>WCP IDT 22: IS strategic goals achievement.</p> <p>WCP IDT 23: The challenge of focusing on technology and not on people issues in the deployment process</p> |
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| <p>WCP PIC 34: The different services that are provided by service providers and the SLA (definition and management) that govern the interaction between the department of health and the respective stakeholder groups as well as the responsibilities of each party</p> | WCP PIC 34 >>>>> WCP IDT 2, 12 | |
| <p>WCP PIC 35: The implications of stakeholder groups own internal policy/strategy on the flow and timeliness of deliverables of activities that are dependent on the completeness of the specific stakeholder groups responsibilities: delays due to stakeholder groups own policies</p> | WCP PIC 35 >>>>> WCP IDT 13 | |
| <p>WCP PIC 36: Stakeholder groups 'competencies, skills and expertise</p> | WCP PIC 36 >>>>> WCP IDT 1 | |
| <p>WCP PIC 37: Project management tools, IS implementation methodologies and other instruments (including the use of communication techniques, etc.)</p> | WCP PIC 37 >>>>> WCP IDT 10 | |
| <p>WCP PIC 38: State of the strategy, maturity of the strategy and the revision of the strategy to incorporate new service delivery objectives and targets</p> | WCP PIC 38 >>>>> WCP IDT 6, 7 | |
| <p>WCP PIC 39: The process of developing the IS strategy based on different strategic documents including the national e-health strategy and the exploration of how IT can enable the attainment of the strategic goals</p> | WCP PIC 39 >>>>> WCP IDT 6, 17 | |
| <p>WCP PIC 40: : IS strategy formulation and definition of IS strategic initiatives for public hospitals in the Western Cape province Assessment of IS strategy implementation requirements at hospital level</p> | WCP PIC 40 >>>>> WCP IDT 6, 17 | |
| <p>WCP PIC 41: : The relevance of strategic initiatives at province level and their potential to the attainment of national vision</p> | WCP PIC 41 >>>>> WCP IDT 25 | |
| <p>WCP PIC 42: The set of existing strategic documents that are used in the formulation of IS strategy and the development of IS strategic initiatives</p> | WCP PIC 42 >>>>> WCP IDT 6, 8 | |
| <p>WCP PIC 43: The set of produced documents that capture the developed IS strategic goals</p> | WCP PIC 43 >>>>> WCP IDT 6, 7 | |
| <p>WCP PIC 44: The extent of implementation of IS strategic initiatives and the related information systems deployment in public hospitals in the Western Cape province</p> | WCP PIC 44 >>>>> WCP IDT 20 | |
| <p>WCP PIC 45: Developed technological and technical requirements for the deployment</p> | WCP PIC 45 >>>>> WCP IDT 3, 17 | |

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| <p>of IS in public hospitals in the Western Cape</p> <p>WCP PIC 46: The developed documents that capture SLA and other contractual obligations and stakeholder groups respective obligations regarding the implementation of the IS strategy</p> <p>WCP PIC 47: The responsibility to derive IT projects for public hospitals in support of the IS strategy and the set strategic objectives</p> <p>WCP PIC 48: The challenge of translating patient centred strategic targets into IS/ICT needs/requirements for public hospitals in the Western Cape</p> <p>WCP PIC 49: Prescribing/making technological recommendation and/or information systems requirements related to the IS strategy</p> <p>WCP PIC 50: The deployment or roll out of the recommended technology/IS at public hospitals in the Western Cape province</p> <p>WCP PIC 51: The procedures and mechanism of IS/ICT technology deployment decisions (including approval procedure, IS systems roll out and user training)</p> <p>WCP PIC 52: the process of IS strategy revision and identification of new IS strategic initiatives based on emergence of new technological innovation/trend and the IS strategic goals at provincial or national level</p> <p>WCP PIC 53: Continuous IS strategy revision , update and improvement to deal with eventual future developments and to ensure ROI on ICT for public hospital investments</p> <p>WCP PIC 54: IS for public hospitals implementation decision making process and level of input from hospital management/stakeholder group level</p> <p>WCP PIC 55: Decision making structure and stakeholder groups' responsible for deciding which systems are to be deployed and how these will be funded</p> <p>WCP PIC 56: The responsibility of national treasury in decision regarding which finance systems or module that need to be implemented</p> <p>WCP PIC 57: The long term nature of IS strategic initiatives, the challenges associated with it in an environment where change is unavoidable and the necessity to revise the IS strategy accordingly</p> <p>WCP PIC 58: The implications of the long term nature of IS strategic initiative on the extent of related IS scaled implementation/roll out</p> <p>WCP PIC 59: The peculiarities and complexity of the public sector environment in contrast with the private sector and the implications on the timely adoption of</p> | <p>WCP PIC 46 >>>>> WCP IDT 12</p> <p>WCP PIC 47 >>>>> WCP IDT 6</p> <p>WCP PIC 48 >>>>> WCP IDT 6</p> <p>WCP PIC 49 >>>>> WCP IDT 17</p> <p>WCP PIC 50 >>>>> WCP IDT 3, 20</p> <p>WCP PIC 51 >>>>> WCP IDT 10, 19</p> <p>WCP PIC 52 >>>>> WCP IDT 6, 7, 17</p> <p>WCP PIC 53 >>>>> WCP IDT 6, 7</p> <p>WCP PIC 54 >>>>> WCP IDT 3, 18</p> <p>WCP PIC 55 >>>>> WCP IDT 3, 18</p> <p>WCP PIC 56 >>>>> WCP IDT 18</p> <p>WCP PIC 57 >>>>> WCP IDT 15</p> <p>WCP PIC 58 >>>>> WCP IDT 10, 15</p> <p>WCP PIC 59 >>>>> WCP IDT 15</p> | |
|---|--|--|

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|---|---|--|
| <p>appropriate innovative technologies or new development in the healthcare sector.</p> <p>WCP PIC 60: The health service to patient being the core driver of the sought IS strategic goals</p> <p>WCP PIC 61: The role of established in-house bodies/structures such as the CEI and the centralised approach of the province in IS strategy implementation activities and processed</p> <p>WCP PIC 62: The various activities related to the implementation of IS strategy in public hospitals in the Western Cape province</p> <p>WCP PIC 63: The emergence of new strategic directives such as the NHI from national which were not part of the initial provincial IS strategic objectives and the necessity to accommodate them</p> <p>WCP PIC 64: The success of provincial own strategic initiatives and the eventual national interest in replicating the success of the provincial experience nationally</p> <p>WCP PIC 65: Challenges related to non-adherence to prescribed guidelines and the consequences of non-adherence</p> <p>WCP PIC 66: Putting much emphasis on technology (IT) and not on people issues/aspects</p> <p>WCP PIC 67: Delayed or non-approval of strategic documents and strategic sessions outcomes and the associated delays in IS strategy implementation related activities</p> | <p>WCP PIC 60 >>>>> WCP IDT 16</p> <p>WCP PIC 61 >>>>> WCP IDT 3, 4</p> <p>WCP PIC 62 >>>>> WCP IDT 4, 17</p> <p>WCP PIC 63 >>>>> WCP IDT 6, 7, 8</p> <p>WCP PIC 64 >>>>> WCP IDT 21</p> <p>WCP PIC 65 >>>>> WCP IDT 19</p> <p>WCP PIC 66 >>>>> WCP IDT 22, 23</p> <p>WCP PIC 67 >>>>> WCP IDT 13</p> | |
|---|---|--|

Appendix 15 : Findings from thematic analysis of the Kwazulu Natal Province case study

| Preliminary identified concepts resulting from activity theory analysis (KZN PIC) | Grouping of concepts in themes | Kwazulu Natal Initially Developed themes (KZN IDT) |
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| <p>KZN PIC 1: potential stakeholder groups relevant for the implementation of IS strategy</p> <p>KZN PIC 2: Stakeholder groups that are involved in the implementation of the IS strategy</p> <p>KZN PIC 3: The role of provincial department in the implementation of the IS strategy and the role of hospital level in the implementation of IS strategy</p> <p>KZN PIC 4: The activities (and level at which they occur) related to the implementation of the IS strategy in public hospitals</p> <p>KZN PIC 5: The relationships that exist between the stakeholder groups.</p> <p>KZN PIC 6: The reporting structure and the communication mechanisms between stakeholder groups</p> <p>KZN PIC 7: The rules regarding the interaction between the different stakeholder groups and their respective roles regarding the implementation of the IS strategy</p> <p>KZN PIC 8: The role of the different stakeholders involved</p> <p>KZN PIC 9: Liaison with (identification and involvement of) relevant stakeholder groups and definition of roles and responsibilities</p> <p>KZN PIC 10: Contracts for the management of the responsibilities of stakeholder groups</p> <p>KZN PIC 11: Difficulty in managing activities that involve a large number of stakeholder groups' actors</p> <p>KZN PIC 12: The documents that guide stakeholder groups actions when implementing the IS strategy</p> <p>KZN PIC 13: Stakeholder groups skills and expertise in their respective roles and in regards to their responsibilities in the implementation of IS strategy</p> <p>KZN PIC 14: The various tools for project management, IS project implementation</p> <p>KZN PIC 15: The existence of the strategy and the form in which the IS strategy exists</p> | <p>KZN PIC 1 >>>>> KZN IDT 1</p> <p>KZN PIC 2 >>>>> KZN IDT 1</p> <p>KZN PIC 3 >>>>> KZN IDT 11</p> <p>KZN PIC 4 >>>>> KZN IDT 2</p> <p>KZN PIC 5 >>>>> KZN IDT 3</p> <p>KZN PIC 6 >>>>> KZN IDT 6</p> <p>KZN PIC 7 >>>>> KZN IDT 5</p> <p>KZN PIC 8 >>>>> KZN IDT 4</p> <p>KZN PIC 9 >>>>> KZN IDT 3</p> <p>KZN PIC 10 >>>>> KZN IDT 6</p> <p>KZN PIC 11 >>>>> KZN IDT 9</p> <p>KZN PIC 12 >>>>> KZN IDT 6</p> <p>KZN PIC 13 >>>>> KZN IDT 4</p> <p>KZN PIC 14 >>>>> KZN IDT 6</p> | <p>KZN IDT 1: Stakeholder landscape</p> <p>KZN IDT 2: Activities related to Is strategy implementation and deliverables of activities</p> <p>KZN IDT 3: Engagement between stakeholder groups</p> <p>KZN IDT 4: The actions and responsibilities of different stakeholder groups</p> <p>KZN IDT 5: Modalities regarding the engagement between stakeholder groups</p> <p>KZN IDT 6: Modalities regarding stakeholder groups' roles in IS strategy implementation activities and processes</p> <p>KZN IDT 7: Contextual realities regarding ICT for health projects and the healthcare environment</p> <p>KZN IDT 8: The long term nature of IS/ICT for health projects</p> <p>KZN IDT 9: The nature of the public healthcare sector</p> <p>KZN IDT 10: Decision making in the implementation of IS strategy</p> <p>KZN IDT 11: The provincial approach and the model of procurement</p> <p>KZN IDT 12: Exceptions to defined /standard approach or model of procurement of IS for certain public hospitals</p> |

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| <p>KZN PIC 16: Scoping of Is strategy and decomposition of IS strategy and identification of IS strategic initiatives and Strategy revision process</p> <p>KZN PIC 17: Implications of lack of timely revision of IS strategy</p> <p>KZN PIC 18: The time gap between strategy development, approval, implementation of IS strategy, related information systems Implementation and changes in technological and infrastructural requirements</p> <p>KZN PIC 19: The provincial department of health role in scoping of the IS strategy based on national strategic goals, the provincial approach and making recommendations</p> <p>KZN PIC 20: The extraction of IS strategic initiatives for public hospitals in Kwazulu Natal province</p> <p>KZN PIC 21: The deployment of IS at public hospitals</p> <p>KZN PIC 22: The model of procurement and deployment of IS in public hospitals</p> <p>KZN PIC 23: The information systems that are implemented in public hospitals in South Africa</p> <p>KZN PIC 24: Service delivery improvement at public hospitals</p> <p>KZN PIC 25: Better service to patients, attainment of national objectives and satisfaction of stakeholder groups</p> <p>KZN PIC 26: The process of extracting of IS strategic initiatives from related strategic documents by stakeholders at provincial level</p> <p>KZN PIC 27: The process of gathering IS and technical requirements related to the IS strategic initiatives targets</p> <p>KZN PIC 28: The process of deploying identified, approved and procurable IS at public hospital</p> <p>KZN PIC 29: The extent to which stakeholder groups are/should be involved in different activities related to the implementation of the IS strategy</p> <p>KZN PIC 30: The standard approach to the deployment of identified IS strategic initiatives at public hospitals</p> <p>KZN PIC 31: The exceptions to the standard deployment approach</p> <p>KZN PIC 32: The type of exceptions to the standard deployment approach and the processes followed in the case of these exceptions</p> | <p>KZN PIC 15 >>>>> KZN IDT 13 KZN PIC 16 >>>>> KZN IDT 13</p> <p>KZN PIC 17 >>>>> KZN IDT 13 KZN PIC 18 >>>>> KZN IDT 14</p> <p>KZN PIC 19 >>>>> KZN IDT 4</p> <p>ZN PIC 20 >>>>> KZN IDT 13</p> <p>KZN PIC 21 >>>>> KZN IDT 20 KZN PIC 22 >>>>> KZN IDT 17</p> <p>KZN PIC 23 >>>>> KZN IDT 20</p> <p>KZN PIC 24 >>>>> KZN IDT 20 KZN PIC 25 >>>>> KZN IDT 20</p> <p>KZN PIC 26 >>>>> KZN IDT 13</p> <p>KZN PIC 27 >>>>> KZN IDT 21</p> <p>KZN PIC 28 >>>>> KZN IDT 9</p> <p>KZN PIC 29 >>>>> KZN IDT 19</p> <p>KZN PIC 30 >>>>> KZN IDT 22</p> <p>KZN PIC 31 >>>>> KZN IDT 22 KZN PIC 32 >>>>> KZN IDT 10, 23</p> | <p>KZN IDT 13: Nature of IS strategy. Scope of IS strategy and development of strategic initiatives</p> <p>KZN IDT 14: Timeliness of deliverables from IS strategy implementation related activities and the completeness of related activities</p> <p>KZN IDT 15: The actual state of IS strategy implementation and the ideal state of IS strategy implementation</p> <p>KZN IDT 16: Procedures for the IS strategy implementation and the procurement of IS strategic initiatives</p> <p>KZN IDT 17: Effectiveness of model of procurement, funding and deployment</p> <p>KZN IDT 18: Effectiveness of the model of management of contracts</p> <p>KZN IDT 19: Stakeholder groups level of input and involvement in IS strategy implementation related activities</p> <p>KZN IDT 20: Extent of attainment of IS for public hospital strategic goals and objectives</p> <p>KZN IDT 21: Activities and processes for the implementation of the IS strategy</p> <p>KZN IDT 22: Model/approach to the implementation of IS strategic initiatives</p> <p>KZN IDT 23: Decisions for the implementation of IS strategy</p> <p>KZN IDT 24: Contextual factors influencing engagements between stakeholder groups and the implementation of the IS strategy in public hospitals in KZN</p> |
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| <p>KZN PIC 33: The peculiarities of the healthcare environment and the realities around ICT in the healthcare environment in general and that of South Africa in particular</p> <p>KZN PIC 34: The implications of not revising the IS strategy in parallel with the changes and advances in the healthcare and ICT for health environments</p> <p>KZN PIC 35: The contextual realities of the public sector in general and the healthcare sector in particular</p> <p>KZN PIC 36: The challenges of contract management associated within the public sector environment where people/actors are constantly changing while the contract is long term in nature and new actors are not aware of these contracts</p> <p>KZN PIC 37: The choice and application of IS strategic initiative funding and procurement model</p> <p>KZN PIC 38: The precursor of exceptions to standard approach of IS strategic initiative funding and roll out</p> <p>KZN PIC 39: The process of identifying exceptional IS strategic initiatives and their role out mechanisms</p> <p>KZN PIC 40: The need for ensuring projects continuous management at government level despite the unavoidable changes in a public sector environment</p> <p>KZN PIC 41: The process of managing contracts between government entities and the service providers</p> <p>KZN PIC 42: The effectiveness of the model of management of contracts between the different stakeholder groups</p> <p>KZN PIC 43: The need for an independent organ to ensure impartiality and consistency in the management of contracts between government and private stakeholders</p> <p>KZN PIC 44: The techniques and mechanism to ensure stakeholder groups' adherence to respective contractual obligations</p> <p>KZN PIC 45: The model of funding IS strategic initiative not always being followed as stipulated : this result in IS strategic initiatives not being scaled to all public hospitals</p> <p>KZN PIC 46: The standard model of rolling out IS strategic initiative not always applied for all public hospitals</p> <p>KZN PIC 47: Challenges in scaling up piloted IS strategic initiatives</p> <p>KZN PIC 48: The implications of delayed deliverable by major stakeholder groups in the</p> | <p>KZN PIC 33 >>>>> KZN IDT 7, 24</p> <p>ZN PIC 34 >>>>> KZN IDT 7, 25</p> <p>KZN PIC 35 >>>>> KZN IDT 7, 24</p> <p>KZN PIC 36 >>>>> KZN IDT 18</p> <p>KZN PIC 37 >>>>> KZN IDT 10, 17, 26</p> <p>KZN PIC 38 >>>>> KZN IDT 10, 17, 26</p> <p>KZN PIC 39 >>>>> KZN IDT 21</p> <p>KZN PIC 40 >>>>> KZN IDT 27</p> <p>KZN PIC 41 >>>>> KZN IDT 18, 28</p> <p>KZN PIC 42 >>>>> KZN IDT 18</p> <p>KZN PIC 43 >>>>> KZN IDT18, 28</p> <p>KZN PIC 44 >>>>> KZN IDT 18</p> <p>KZN PIC 45 >>>>> KZN IDT 17</p> <p>KZN PIC 46 >>>>> KZN IDT 16</p> <p>KZN PIC 47 >>>>> KZN IDT 16</p> | <p>KZN IDT 25: Implications of non-adherence to the contextual factors</p> <p>KZN IDT 26: Motivation for the choice of funding/deployment of IS strategic initiatives</p> <p>KZN IDT 27: Approach for the continuity of project/management of continuity of IS strategic projects/initiatives</p> <p>KZN IDT 28: Adherence to contractual obligations and defined modalities of engagements and IS strategy implementation</p> |
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| <p>hierarchy of activities on the entire IS strategy implementation process</p> <p>KZN PIC 49: The need for a strategy for stakeholder relations engagement and the management of contract</p> <p>KZN PIC 50: Stakeholder groups' levels in put, involvement in IS strategy implementation related activities and the implications for the extend of IS strategy implementation</p> <p>KZN PIC 51: influence of strategic activities at different level of the hierarchical structure on the IS strategic initiative operationalization processes/activities</p> | <p>KZN PIC 48 >>>>> KZN IDT 14</p> <p>KZN PIC 49 >>>>> KZN IDT 27</p> <p>KZN PIC 50 >>>>> KZN IDT 4, 19</p> <p>KZN PIC 51>>>>> KZN IDT 21</p> | |
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