AN INFORMATION TECHNOLOGY READINESS ASSESSMENT FRAMEWORK FOR THE SOUTH AFRICAN NATIONAL HEALTH INSURANCE

by

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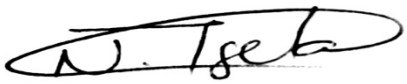
DECLARATION

I, Nomawethu Tungela, confirm that this thesis presents my original work, has been written by myself and has not been previously submitted for any other degree or qualification from Cape Peninsula University of Technology or any other university. I confirm that contributions from other authors within this thesis have been indicated and credited.



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ABSTRACT

Healthcare is one of the areas that play a big role in government service delivery. Providing efficient healthcare services to all communities of the country is hard to achieve. This is due to the gap that exists between two sectors (private and public) in South Africa. Public sector receives funding from the government to provide service delivery to the wider population which is mostly the low-income earners. Due to this, the South African government decided to implement the National Health Insurance (NHI) which aims to offer equal provision of healthcare services to all citizens of the country irrespective of their background. The aim of the study was to develop a framework which can be used to assess the readiness of the implementation of the South African NHI system, from an ICT perspective in South Africa. Based on the aim, the objectives of the study were: (i) to examine and understand the factors that can influence the implementation of the NHI system in the communities of South Africa; (ii) to examine how the NHI system can be implemented in the communities of the country and (iii) understand the current state of the implementation of the NHI system. In achieving these objectives, survey design was selected. Qualitative data was collected from the communities around the country and the medical aid organization. Data was collected in the form of semi-structured interviews and document analysis Socio technical theory (structuration theory) was used to guide the analysis of the study. Interpretive approach was followed. Four factors that could influence the implementation of the NHI were identified as: readiness assessment, training and development, integration of healthcare systems and governance. Findings were interpreted and the framework that can be used as a guide to implement the NHI in South Africa was developed.

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CHAPTER 1
INTRODUCTION

1.1 Introduction and Background

Most people in many countries including South Africa live in areas where there is limited access to quality healthcare services (Garcia-Subirats et al., 2014). The lack or limited access to healthcare services can be attributed to factors such as exorbitant costs, lack of available or not enough professional healthcare personnel and insufficient healthcare facilities. This leads to inequalities in the use of the healthcare services in many parts of the world (Mhlaba et al., 2016). With the increase of inequalities that are faced by the healthcare sector there is a demand for higher accessibility of quality service rendered to the citizens especially in the rural or peri-urban communities. According to Tian et al. (2017:477), peri-urban areas are areas "which have some initial features and functionality of cities but are not yet defined as cities, including the rural–urban interface, small town, township and village". To ensure that these demands are met the World Health Organization (WHO) has made a recommendation for countries to employ the universal health coverage (UHC) (Hsiao et al., 2016).

In support and alignment with the UHC, the South African government has introduced the National Health Insurance (NHI), which requires Information and Communication Technology (ICT) in its implementation. The NHI is intended to provide extended access and improved quality of healthcare services across the country. In essence, the NHI system is primarily aimed at bridging the gap between the lower income earners and the middle class by providing equal healthcare services to all citizens (Mhlaba et al., 2016).

The newness of the NHI requires the South African environment to be ready for its implementation. This is primarily to avoid failure like many other initiatives, which can be a serious catastrophe for the government and the citizens that look forward to its benefits. Over the years, many systems have failed because of factors such as lack of infrastructures (Adjorlolo & Ellinsen, 2013). Traditional affiliation and culture of an environment have also been instrumental factors to the success and failure of many systems (Hoque et al., 2014). From these viewpoints it is essentially important to assess the readiness of a diverse environment like South Africa before critical systems such as the NHI can be implemented, particularly in the rural areas of the country.

1.2 Problem Statement

As in many sectors, there were expectations in the healthcare sector since the shift in political dispensation in 1994 (O'Laughlin et al., 2013). However, there have been many challenges, which include affordability, making it difficult for many South African citizens to access healthcare services as they would have expected. Thus, the department of health introduced the NHI system. The primary intention of the NHI system is to ease access to healthcare services for many of the citizens, particularly, the lower income earners. However, the implementation of the NHI system is problematic in that it is influenced by Information Technology (IT) factors, which are both technical and non-technical. This problem is enacted by the fact that ICT artefacts are deployed and accessible unequally across the country. Until this problem is resolved the implementation of the NHI system in the country will continue to be challenged, which requires an ontological enquiry of the current state.

1.3 Aim, Research Objectives and Questions

From the problem statement as presented above, the research aim, objectives and questions were articulated as presented in the following subsections:

Aim

The aim of the study was to develop a framework that can be used to assess the readiness of the implementation of the National Health Insurance (NHI) system, from an ICT perspective, in South Africa.

Objectives

The objectives of the study were as follows:

(i) To examine and understand the factors that can influence the implementation of the NHI system in the communities of South Africa.
(ii) To examine how the NHI system can be implemented in the communities of the country.
(iii) To understand the current state of the implementation of the NHI system.

Research Question

The research questions are divided into main and sub-questions as follows:

The main research question was: How can a framework be developed to assess the readiness of the NHI system in the communities of South Africa?

Sub-questions

The sub-sections include the following:

(i) What is the current state of the implementation of the NHI system in the communities of the country?

(ii) What are the factors that can enable or constraint the readiness of the NHI system?

(iii) How can the NHI system be implemented in the communities of the country?

1.4 Literature Review

This section presents the review of literature focusing on Information and Communication Technology (ICT), healthcare, National Health Insurance (NHI), readiness assessment.

1.4.1 Information and Communication Technology

Information and Communication Technology (ICT) has been widely used in the health sector in many different countries. ICT makes it easier and possible for the patients and service providers including government to provide and receive healthcare services (Haluza & Jungwirth, 2015). According to Andreassen et al. (2015), there has been a solid development on how ICT is being used in the healthcare sector to improve on service delivery. Through ICT, patients' records are remotely monitored, and medical records are electronically stored (Cowie et al., 2016). Hence, according to Fitzpatrick and Ellingsen (2013), ICT in developing countries has been considered as the principal technology for advancement of quality patient care in healthcare. This is due to its ability to bring change in service delivery especially in the healthcare sector (Haluza & Jungwirth, 2018).

This change should be noted that it moved from the historical approach where the attention was more on the doctors' side to the focus now being more on the patients. However, according to Kellermann and Jones (2013) even though there has been an increase in the use of ICT in the healthcare sector, there is only a slight improvement in the quality and

efficiency in the caring for patients. Therefore, Luna et al. (2014) argue that there are challenges that developing countries are faced with such as poor economic growth and infrastructure.

The use of ICT has seen the birth of many services like e-health which according to Hoque et al. (2014:87) are “noticeable on the development of the healthcare sector in developing countries”. According to Solanas et al. (2014), healthcare practitioners can communicate by using their mobile devices such as smart phones to provide healthcare services. In addition, local governments in many countries have made major investment in the ICT infrastructure so that the citizens can receive excellent, efficient healthcare services (Adler-Milsteinet al., 2014). Moreover, the innovations that are brought by ICT can bring about change in a way that patients are being diagnosed and monitored (Hollis et al., 2015).

1.4.2 Healthcare

Healthcare is a process of prevention and treatment of diseases or any other physical or mental injuries in human beings (Chawla & Davis, 2013). Every government worldwide has a mandate to continuously improve the quality of their healthcare system (Penfold & Zhang, 2013). According to Faden et al. (2013) the need for the improvement of the healthcare system is very urgent. However, Chassin and Loeb (2013) argued that there is no health system that has managed to maintain the improvement throughout an organization. Thus, the healthcare sector is one of the most important areas in any country as it deals with social and economic interests (Ajami & Bagheri-Tadi, 2013).

According to Free et al. (2013), the primary purpose of healthcare is to motivate people to live a healthy lifestyle and be able to manage their own health status. However, people still must pay out of their pockets to receive services and medicines (Wang et al., 2014).

1.4.3 National Health Insurance

The Universal Health Coverage (UHC) is all about ensuring that all citizens have access to the quality health services they need with minimum contributions (de Andrade et al., 2015), which the South African NHI system tries to align with. According to Odeyemi (2014), it can also ensure the availability of sufficient resources that are effective. Evans et al. (2013) claimed that UHC is only achieved when all citizens of the country receive good health services without financial burden. Furthermore, Ooms et al. (2014) defined UHC as having equal access of healthcare services amongst all citizens to overcome the differences of the

health system. According to Hsiao et al. (2019:267) “Universal coverage is determined by how much government budget can be allocated to subsidies premiums for poor and low-income families and informal sector workers”. To fully achieve the goal of UHC, all citizens of the country should have universal access to the services that are provided by the healthcare.

The NHI system is the system that makes a provision so that all the citizens of the country can benefit from accessing equal healthcare services irrespective of their socio-economic status (Dixon et al., 2014). According to Lee et al. (2016) to be part of this system is mandatory to all the citizens and it is the contributory system because all citizens will make contributions for services rendered.

For the NHI system to be effective it needs to be financed, according to Cheng et al. (2014). The NHI system is financed through the tax, government subsidies and contributions from the citizens. Mills (2014) argue that many deaths that occur on pregnant women and babies are due to factors such as the waiting period to access the healthcare services and insufficient skilled healthcare practitioners. However, according to Odeyemi (2014) due to the high rate of medical aid schemes and out of pocket payments it makes it impossible for citizens to afford descent quality health care services. Hence, Brugiavini and Pace (2016) suggest that benefits of having access to health insurance include reduced out of pocket payments. Thus, achieving UHC has now been adopted as an objective in every country’ policy (Bredenkamp et al., 2015).

1.4.4 Readiness Assessment

There is an increasing failure in the implementation of new systems or policies in many organizations including the healthcare sector due to the lack of readiness assessments done before these systems or policies are implemented (Shea et al., 2014). For the implementation of any new system in the healthcare sector, there are factors such as infrastructure that must be considered, based on which Khoja et al. (2013) suggest that these factors need to be thoroughly known and assessed by the stakeholders. The NHI system may be unsuccessful if government does not take the necessary factors into consideration before the implementation.

According to Adjorlolo and Ellingsen (2013) the readiness assessment is another way that is used by organizations to minimize the risk of possible failures. Readiness assessments

according to the World Health Organization (2013) is the tool that is used to support service delivery in the healthcare sector by identifying the gaps and interventions that needs to be addressed. As stated by O'Neill et al. (2013) readiness assessment is concerned with how the healthcare facilities can deliver basic services at lower standards.

1.4.5 Theory Underpinning the Study

Based on the objectives of the study which concerns factors such as rules, resources, different agents (or agencies), and the relationship between these factors, the structuration theory was selected to underpin the study. Structuration theory, according to Puron-Cid (2013) is a theory that focuses on social systems with technical enablement. The theory was introduced by Anthony Giddensin 1984 and had since been used in many research fields, including Information Technology (IT) to underpin studies for many years (Giddens, 1984). According to Coad and Glyptis (2014), the structuration theory has two main tenets which are (i) structure and (ii) agency, which are the core parts of its duality of structure as shown in Figure 1 below.

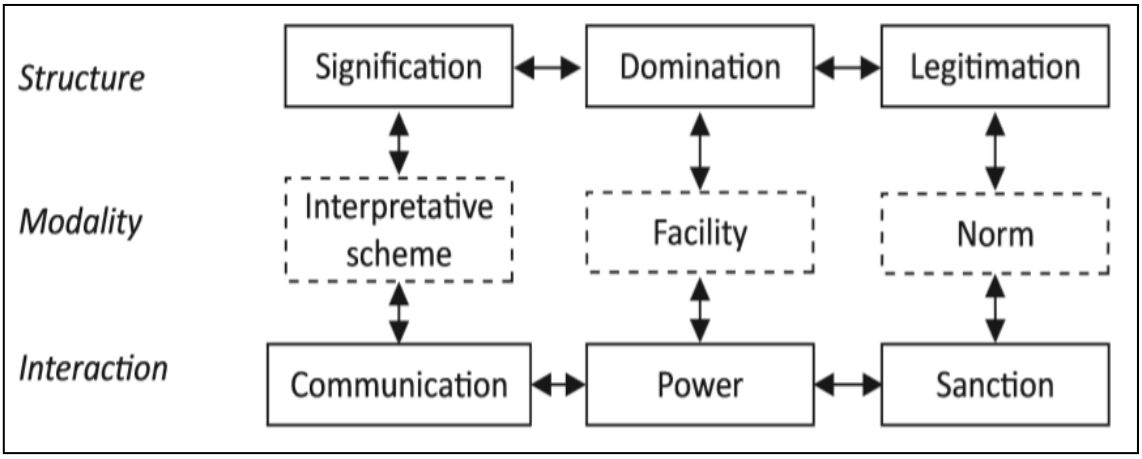


Figure 1 Duality of Structure (Giddens, 1984)

According to Chang (2014), the structure consists of signification, domination and legitimation. The modality according to Coad and Glyptis (2014) consist of the interpretative scheme, facility and norm, and according to Iyamu (2017) the interaction comprises of communication, power and sanction. The author furthermore claims that modality provides the connection between the structure and the interaction of the agencies. Interaction amongst agencies is communicated through the interpretive schemes which are common knowledge that agencies use to interpret events by giving them meaning that demands signification structure (Chang, 2014). The actions of agencies are made based on the ability to exercise power, using the facilities which are resources to obtain domination structure.

The conduct of agencies becomes sanctioned or approved and end-up produces norm which results in the legitimation structure (Englund & Gerdin, 2014).

The structuration theory according to Iyamu (2013) can be used as a lens to enable the researcher to view and interpret data collected. Moreover, Coad and Glyptis (2014) claim that the structuration theory has been identified as a theory that is most suitable to interpret the results of the research. According to Chang (2014) the structure of the theory is made up of two properties which are rules and resources, and the agency of the theory according to Englung and Gerdin (2014) is made up of human and non-human agents. According to Chang (2014) the interactions which people make in a social process are constructed from the structures (rules and resources) and because of this interaction, new rules and resources are formed. The author furthermore claims that this iterative formation of rules and resources by peoples' actions are commonly known as the duality of structure.

1.5 Research Methodology

Research methodology according to Long (2014) refers to the process that enables the researcher to select the philosophical assumptions, approaches, methods and techniques that are to be employed in a phenomenon being studied.

1.5.1 Research Philosophies

Ontology and epistemology are used to gain more insight of research philosophies. According to Ritchie et al. (2013) ontology refers to what exists and what there is to be known about it. However, epistemology is concerned with gaining in-depth knowledge about the root of knowledge (Roos & von Krogh, 2016).

What is known ontologically is that the South African government has approved to implement the NHI system in the country. What can be known, epistemologically, are the factors that can influence the implementation of the NHI system in the communities of the country.

1.5.2 Research Approach

The two types of research approaches are the inductive and deductive approaches. According to DeJong et al. (2004) the inductive approach is considered as the bottom-up approach as its aim is to discover new theory developed from data that means it moves

from specific to general. Furthermore, Cho and Lee (2014) states that the inductive approach is suitable for settings where there is not much information known about the phenomenon being studied. However, the deductive approach according to O'Reilly (2012) is considered a stop down since it moves from general to specific in a sense that it enables the researcher to move from existing theory to data.

The aim of the study was to develop a framework which can be used to assess the readiness of the implementation of the South African NHI system, from an ICT perspective in South Africa. Based on the aim of the study, the inductive approach will be followed. This is mainly because the outcome (result of the aim) of the study can be generalised across the country and could be used in other countries as well.

1.5.3 Research Methods

According to Venkatesh et al. (2013) there are three types of research methods that exist namely qualitative, quantitative and mixed methods. Each of these methods, qualitative or quantitative can be applied separately, or combined in a study depending on the objective of the study (Halcomb & Hickman, 2015). The qualitative method according to Marshall and Rossman (2014) is concerned to gain more knowledge and be able to interpret the phenomena being studied, through learning from the experiences and history of the participants. Furthermore, Husbands et al. (2017) state that the qualitative method can be used to develop artifacts such as models or framework from the findings of the study. Quantitative research focuses on quantity rather than quality, according to Bambale (2014) the researcher studies the phenomena in its numerical form. The mixed method according to Morse and Cheek (2014) refers to using both qualitative and quantitative methods in the same study which enables a researcher to gain a more extended understanding of the phenomenon being studied (Creswell, 2014).

Based on the aim of the study, which was to develop a framework for readiness assessment for the implementation of the South African NHI system, the qualitative method will be applied. This is primarily because the qualitative method seeks to thoroughly understand the different views and opinions of individuals and groups (Taylor et al., 2015).

1.5.4 Research Design

Research design is the plan, strategy and the structure that the researcher will follow when collecting and analysing data in a study (Sovacool et al., 2018). In addition, research design is the "glue that holds all of the elements in a research project together" (Akhtar, 2016:68). Research design shows what the result will be in terms of how the study will meet its objectives (Sileyew, 2019). Not enough planning of the research design can result in the whole study to fail (Bickman & Rog, 2009).

Survey research design has been employed in this study. Survey design is one of the commonly used research designs for qualitative research for a wide population (Kalton & Piesse, 2007). The survey design can be used where the research objectives seek to answer what, why and how questions (Pinsonneault & Kraemer, 1993). Moreover, Chisi and Gondwe (2017) describe the survey research design as the type of design that allows the researcher to elicit data from the experience that the participant has in a space of time. By following the survey design the researcher can generalise the findings to the wider population (Runeson & Höst, 2009).

Based on the research objectives which were (i) to examine and understand the factors that can influence the implementation of the NHI system in the communities of South Africa; (ii) to examine how the NHI system can be implemented in the communities of the country and (iii) understand the current state of the implementation of the NHI system, the survey design was applied, in which three stakeholders were identified and selected. This includes the South African Department of Health, medical aid and the community. All three stakeholders play significant roles in one way or the other in the country's healthcare initiatives.

The Department of Health (DoH) initiated the concept of the NHI in the country. Some of the roles and responsibilities of the DoH include the following:

(i) On behalf of the government, to formulate policies relating to health matters in the country.
(ii) On behalf of the South Africans, to monitor the activities of the health and medical practitioners.
(iii) To assess and monitor the condition of the healthcare facilities in the country.

1.5.5 Data Collection

Data collection is the process of collecting information from the participants using different techniques such as interviews, focus groups and surveys (Paradis et al., 2016). Interview is one of the techniques that is commonly used to collect data for qualitative research (Anyan, 2013) and mostly used in the healthcare setting (Kallio et al., 2016). There are different types of interviews such as semi-structured interviews, which according to Ramirez-Rubio et al. (2013) they use open-ended questions that are planned to gain a more in-depth understanding of the phenomenon without driving the participants to provide answers. Moreover, McIntosh and Morse (2015) describe semi-structured interviews as a useful technique where there is little knowledge known about the phenomenon.

In this study, the semi-structured interview technique was used to collect data. This is mainly because semi-structured interviews are flexible in a sense, in that they allow the researcher, based on the participants responses, to probe more questions to gain a better understanding of the phenomenon that is being studied (Stuckey, 2013).

The semi-structured interviews were conducted based on the points below:
i. There is no specific number of participants to be interviewed, that means the interviews are conducted until the point of saturation is reached.
ii. The interviews were administered based on the participant's language of choice such as English or Xhosa.
iii. The interviews were done on one-on-one settings.
iv. The interviews were recorded with the permission of the interviewees.

Thereafter the recorded interviews were transcribed. The transcripts, together with data from other sources, such as documentation were analysed.

1.5.6 Data Analysis

Data analysis is the process whereby a researcher thoroughly investigates the data collected to make sense out of it by identifying and explaining themes based on the participant's point of view (Creswell, 2014). The framework was developed from the findings that have been realised from data analysis using the structuration theory which has been used as a lens in this study. The theory was discussed in the literature review section. The analysis was based on the following objectives:

i. To examine and understand the factors that can influence the implementation of the NHI system in the communities of South Africa.

ii. To examine how the NHI system can be implemented in the communities of the country.
iii. To understand the current state of the implementation of the NHI system.

This was done through:

I. Understanding of the rules, resources (technology, medical infrastructures), and the roles of agents and agencies, which include community members, medical practitioners and the administrators (department of health personnel).
ii. Understanding the interactions and relationships that exist among the agencies.
iii. Understanding how those interactions and relationships happen and manifest.

1.6 Significance of the Study

The significance of the study is through the development of the framework which can be of great assistance to the South African government and governments from other countries if followed. The framework can provide guidance on how an ICT system can be implemented for service delivery.

1.7 Ethical Consideration

Throughout this study, the universities code of ethics has been followed as a guideline. This has been administered through the following steps:

i. Ethical clearance from the University Ethics Review Committee was obtained
ii. The data collected has been kept anonymous. This has been made known to the participants, verbally and in writing.
iii. Consent letters were sent to participants.
iv. Participants were advised that they can withdraw anytime from taking part in the research.

1.8 The Structure of the Thesis

The table below presents the chapters and what was covered in each chapter in this study.

Table 1. The Structure of the Thesis

Chapters	Description
Chapter 1	Discuss briefly what chapters 2 – 6 entails

Chapter 2	The chapter presents the review of literature that was conducted
Chapter 3	The chapter covers the research methodology adopted in the study
Chapter 4	The chapter presents the overview of the stakeholders
Chapter 5	Present data analysis, Findings and Discussion of Findings
Chapter 6	Discuss the conclusion including the evaluation of the study

1.9 Conclusion

The study has been thoroughly carried out following the research methodology as stated in the section above. This includes the use of structuration theory as a lens, which brings rigor to the study. The South African government, department of health and other governments from developing countries will benefit from this empirical study in three-fold, theoretically, methodologically and practically. Theoretically as the study will contribute to the existing theory through the addition to the body of knowledge, methodological based on the philosophies, approaches, methods and techniques that will be followed or employed on the study and practically on the basis that the researcher has developed the framework which will serve as a guide to help governments to better understand processes to be taken before implementation of the new system.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

Literature review is defined as a technique that is used to get an in-depth understanding of the phenomenon being studied and with the gap that it shows it assists a researcher to have an idea of where a study can be conducted (Webster & Watson, 2002). Furthermore, Iyamu et al. (2016:171) state that the literature review provides "a spread of historical perspectives, in terms of the consistency of the meaning that has been associated to the concepts, as well as the challenges and confusions that are caused overtime".

This chapter presents the review of literature relating to this study, in support of the aim of the study which was to develop a framework to assess the readiness for the implementation of NHI system, from the ICT perspective in South Africa. The chapter is divided into 4 sections: information and communication technology, healthcare services, South African National Health Insurance, and readiness assessment. Also presented in the chapter is a review on the theory and the structuration theory that underpins the study.

2.2 Information and Communication Technology

Information and communication technology (ICT) is the broad term that is used for any electronic devices such as smart phones or computers, and all services and applications that people use to interact with (Charoensukmongkol & Moqbel, 2014). ICT according to Pawar et al. (2012) refers to the technologies that allows people to store, create, display and exchange data using electronic devices. Furthermore, Agarwal et al. (2018) state that ICT is the vehicle that makes it possible for people to access information to be up to date with the latest technological advancements. In addition, Cowie et al. (2016) claim that ICT is regarded as a tool to support government healthcare systems and the services they provide to people. Therefore, ICT can be used as a tool to promote development in communities such as rural areas so that services delivered can be easily accessible to all citizens (Munyoka & Maharaj, 2017) especially in developing countries (Kivunike et al., 2014).

Many organizations such as governments nowadays rely on ICT to bring about change in their processes that are currently in place (Masamha et al., 2017). In some governments, ICT has been regarded as a solution to the problems that is faced by the healthcare sector as it provides efficient and quality services to the people (Andreassen et al., 2015), by providing services such as e-health and m-health (Solanas et al., 2014). Governments around the world according to Fitzpatrick and Ellingsen (2013) use ICT to minimize cost by

providing solutions that deal with the increase in life expectancy, which results in the increase in the need of healthcare services. In addition, with the adoption of ICT in the health sector, medical personnel can use modern practices to mitigate complex diseases that are facing people (AbuKhousa & Campbell, 2012).

Using ICT, Haluza and Jungwirth (2014) assert that the healthcare sector can provide the citizens of the country with health awareness to improve their living lifestyle. In addition, Osei-Frimpong et al. (2018) state that ICT has played a major role in the healthcare setting by providing people with valuable information through creating platforms such as online communities and websites of hospitals which serve people. Furthermore, ICT assists in providing accuracy by eliminating mistakes of manual dispensing of medication by health practitioners (Bardhan & Thouin, 2013), which can cause harm to people. Hussain and Subramoniam (2012) claim that using ICT in healthcare will assist healthcare facilities to contribute positively to the problems facing climate change in the world by providing services that are environmentally friendly such as minimizing the printing of bills.

There are different factors that influence success or failure in the implementation of ICT to enable and support processes and services such as healthcare (Masamha et al., 2017). Some of these factors can be noticed in the financial, cultural and sociological areas (Fitzpatrick & Ellingsen, 2013). Moreover, George et al. (2012) state that some of the challenges of ICT are the lack of confidentiality since patient information is saved online to assist them to keep track of their health-status.

2.3 Healthcare Services

Healthcare is defined as an act where diseases that affect people are prevented or treated for people to live a healthy life (Chawla & Davis, 2013). Healthcare services is the system that comprises of medical practitioners, medical facilities and medical workers whose aim is to provide medical care to the needy (Weber & Price, 2016). According to Ringo et al. (2018) the aim of having healthcare services in any country is to improve the health status of all the citizens of the country despite their age, gender, place and whether they are working or not.

Huge injection of funds into healthcare services and good governance is seen as a vehicle to better health outcomes (Sun et al., 2017). In the US in 2009, the government distributed $19 billion in funding to assist the healthcare sector with the implementation of electronic health records (EHRs) which assisted healthcare personnel to minimise errors associated with incorrect diagnosis and performing duplicate medical tests (Bardhan & Thouin, 2013).

In Africa

Easy accessibility of healthcare services results in a healthy community and minimal rate of infant mortality (Ringo et al., 2018). Some governments in African countries provide healthcare services using mobile clinics to benefit the rural communities as they are sometimes challenged to walk long distances to access services (Musoke et al., 2014).

System (IS/IT) Approaches

In many countries around the world many organizations in healthcare make use of IS/IT to ease the access and use of healthcare information amongst the providers and patients (Gupta et al., 2016). Some of the services the organizations use include mobile devices, cloud services and EHRs (Kotz et al., 2015). The use of IS/IT in healthcare "opens new possibilities for the patients by providing them with more information and decision support tools specially designed for them, and empowers them in managing their own health conditions, keeping their autonomy" (Lewy, 2015:2). Furthermore, Balandina et al. (2015) suggest that the usage of IS/IT in delivering healthcare services assist medical practitioners to be able to trace patient history as well as communicate information to promote a healthier living style.

Many countries around the world experience challenges when caring for their citizens (Sun et al., 2017). Some of the challenges of healthcare services according to Sakr and Elgammal (2016) include the increase in the cost of healthcare services which require change in the way things are currently done in healthcare so that the quality of service provided to the citizens is improved. Factors such as poor healthcare infrastructure and high population have also been identified as challenges that result in government being unable to provide acceptable healthcare service delivery to the people (Edward et al., 2015). In addition, authors such as Dong et al. (2012) have identified privacy as an issue in providing healthcare services to people. Furthermore, Handayani et al. (2015) claim that in Indonesia, healthcare services are challenged by the administration process which requires patients to wait long before they can be registered.

In Africa

In Uganda, "cost of services, limited knowledge on illness and wellbeing, and cultural prescriptions" hinder community members from accessing healthcare services (Musoke et al., 2014:1046). Munthali et al. (2019) claim that disabled people are often challenged when accessing healthcare services as sometimes they are unable to communicate with healthcare workers. The challenges of accessibility of healthcare services may result in community members being affected by diseases that should have been prevented (Ringo

et al., 2018). Furthermore, in many African countries' health workers migrate to countries that offer a higher salary for their service (Adeloye et al., 2017).

2.4 The South African National Health Insurance

The South African National Health Insurance is a system that is made open to all the citizens of the country and in return they pay a contribution (Kanters et al., 2013). Health insurance has been seen as one of the basic needs for all people including those that are from a poor background (Binnendijk et al., 2013).

2.4.1 Implementation of the NHI

The implementation of the South African National Health Insurance (NHI) is intended to assist and minimize inequality between the rich and the poor, in accessing healthcare (Atun et al., 2015). Through the implementation of health insurance, the Indonesian government was able to bridge the gap between people who can afford quality healthcare services and those who cannot (Sparrow et al., 2013). As discussed by Palmer et al. (2015) after the Philippines government introduced health insurance to the low-income communities, positive results were noticed as fewer children were affected with infections. Like in the United States, with the implementation of health insurance many people with disadvantaged backgrounds who had no access to better healthcare facilities were able to enjoy the benefits of the health insurance (Kim et al., 2013).

2.4.2 Challenges in Implementing the NHI

The implementation of the NHI poses many challenges for the governments around the world. Since the implementation of its NHI the government of Nepal has been faced with challenges such as "unequal distribution of health care services, poor infrastructures, inadequate supply of essential drugs, poorly regulated private providers, inadequate budget allocation for health, and poor retention of human resources in rural areas" (Mishra et al., 2015:1). In Ghana, since the pass of its NHI Act in 2003, the new enrolment into the NHI in the past couple of years has seen a drop due to factors such as the negative attitude of healthcare workers and long waiting queues (Agyepong et al., 2016). In addition, the Taiwan government although it has shown great success for its NHI, it continues to face challenges in different areas such as enhancing the standard of services it provides to its citizens and comparing the budget of its health system (Cheng, 2015).

Moreover, climate change has been identified to challenge the implementation of the NHI, this is due to its severe weather events that can affect the healthcare infrastructure (Wright et al., 2019). Leadership is also viewed as another challenge that can hinder the implementation of the NHI (Gilson & Daire, 2011). Due to these challenges Yusif et al. (2017) assert that readiness assessment is crucial when implementing a new system as it helps to identify the risk factors that can influence the implementation of any system.

2.5 Readiness Assessment

The term readiness "is related to terms such as 'innovation' and 'adoption' of new technologies" (Djorlolo & Ellingsen, 2013:129). Assessment is referred to the collection of information on how things are done in an organization (Hidayanto et al., 2013). Abd Hamid and Mansor (2016) define readiness assessment as the action plan that organizations apply, to look for any risks before they can decide on whether they can invest in the new project.

Readiness assessment is done to see if the objectives to implement the new system will be achieved by assessing "readiness of services in terms of infrastructure and equipment, health workforce, training, medicines, and commodities" (Nishtar et al., 2013:2195). Moreover, Kgasi and Kalema (2014) assert that readiness assessment is done, to minimize the risk of project failure which can result in huge losses of time, effort and money that has been spent in a project. This readiness assessment is merely done to point out the fragility and robustness of an organization (Shiri et al., 2015). This is because of the high rate of failure in organizations such as the healthcare sector when the implementation of a system encompasses changes to the technological infrastructure (Barrett, 2018).

In the health care sector before the implementation of any new system, it is a necessity to conduct the organizational and health personnel readiness assessment. This is mainly because organizational readiness is to assess if the entire organizational resources within the organization such as facilities and infrastructure are ready to accept the new system (Juan et al., 2017). In organizations such as healthcare, readiness assessment is vital because it can result in the success of the implementation of a system, for example the implementation of new policies (Shea et al., 2014). When doing readiness assessment, Alshaher (2013) suggests that governments and stakeholders in the health sector should consider factors such as strategy, structure, system, style/culture, staff, skills and shared values before they can implement any system in an organization. Also, Kgasi and Kalema (2014) point out factors such as core, engagement, technological and societal readiness that if not identified and mitigated can negatively affect the implementation of a new system.

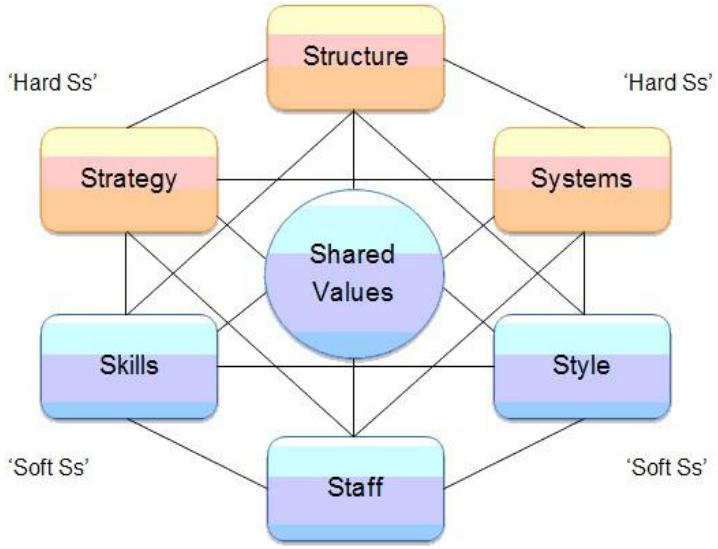


Figure2: McKinsey 7s Model (Jalagat, 2016)

Many scholars have identified strategy as one of the aspects that is important to be considered in organizations when they are in the process of implementing a new system. This is because strategy "specifies how to compete as an organization, including the choice of markets in which to compete, and the level and nature of the shared capabilities across the organization" (Reynolds & Yetton, 2015:103). Moreover, Iyamu and Adelakun (2008) claim that strategy helps in the enhancement and facilitation of organizational targets. For example, in the education sector the governments need to have a clear goal of what they want to achieve for the implementation of the new system to be successful (Wibowo & Laksitowening, 2015). In addition, Weiner (2009) asserts that having a strategy in place in the healthcare sector increases the chances of achieving a positive readiness. However, Xiao et al. (2014) claims that for the strategy to be achieved, an organization must have enough human resources with the necessary skills to be able to do the job.

Structure is referred to the relationship that exists within the internal elements of any organization (Ahmady et al., 2016). In addition, Hidayanto et al. (2013) define structure as the organizational hierarchy which defines whose doing what task within an organization. Like strategy, structure is also regarded as crucial to be considered in the inception before the implementation of new systems as it helps in the formation of the systems or processes to be followed (Wraikat et al., 2017). Weiner (2009) asserts that structure should be seen as the vehicle that organizations could use to implement new systems.

Systems are regarded as an important element of any organization, according to Chen and Liu (2010) the system is the heart of the organization. This is because the system

comprises of all the processes and operations that need to be followed for the vision of an organization to be achieved (Shiri et al., 2015). These processes of an organization must always be connected to the strategy of the organization (Doumi et al., 2011). However, failure to correctly implement an information system (IS) can result in enormous loss of funds that were injected into a project at the inception (Hanafizadeh et al., 2010).

Many scholars have strongly pointed out the importance of skills of individuals in organizations as it is regarded as one of the foundations since it can positively or negatively affect the implementation of a new project (Febriansyah & Ramdlany, 2016). Skill is defined as the experience that people within an organization must do their job effectively and efficiently (Jalagat, 2016). Hence, Iyamu and Adelakun (2008) assert that some skills that staff in an organization have determine the success of the implementation of the new system.

Staff is defined as the people working for an organization (Alshaher, 2013). Azimi (2013) claims that in an organization such as healthcare with human resources, management ensures that the staff is equipped with the necessary skills that is needed for the implementation of a new project to be successful. Abd Hamid and Mansor (2016) claim that even the people that exist outside of an organization need to be considered for readiness assessment as they may impact the implementation of the new project. The challenges of not having enough resources affect the implementation of a new project, Kgasi and Kalema (2014) claim that shortage of staff in the healthcare setting affects the services that people receive and, in some cases, result in medical errors.

Shared values according to Febriansyah and Ramdlany (2016:1300) are “guiding concepts, fundamental ideas around which a business is built- must be simple, usually stated at abstract level, have great meaning inside the organization even though outsiders may not see or understand them”. Moreover, Jalagat (2016) defines shared values as the primary values that originate from the top management and stakeholders of an organization that are clearly communicated on how the staff in an organization should conduct themselves. In addition, Chen and Liu (2010) state that shared values that are developed should be in line with organizational strategy.

Style is referred to the culture that is used by the abstract level of an organization and the implications it has on the team below them (Jalagat, 2016). Wibowo and Laksitowening (2015) describe culture as the tool that can be used to measure the actions and the attitude

of people in an organization. Weiner (2009) claims that organizational style or culture can enable or constrain the implementation of the new system in any organization.

2.5.1 Assessing NHI Readiness in South Africa

What is the importance of assessing the South African NHI?

The assessment of the South African NHI before implementation is critical. This is primarily because other countries with similar programmes encountered many challenges that were caused by lack of readiness assessment (Marten et al., 2014; Bredenkamp et al., 2015; de Andrade et al., 2015) Some of the challenges hindered the programme to the extent, they were either unsuccessful or terminated in some countries such as Cyprus (Polynikis & Lavranos, 2018). In other countries, there were over expenditure of budget due to implementation challenges (Cheng, 2015), which can be attributed to lack of readiness assessment. For example, in the USA from inception Obamacare was faced with challenges where citizens were unable to register on its web-based system which left many citizens of the country unable to renew their insurance policies (Rice et al., 2014).

What are the implications of not conducting assessments in the deployment of the NHI?

The challenges can be divided into two main, technical and non-technical factors. The technical factors, include security (Esposito et al., 2018) and data storage (Zhang et al., 2015). Some of these challenges are contextual, meaning that they must be customised for individual environments. Thus, the same measure cannot be used for two countries, because they often differ in infrastructural, cultural and governmental settings (Jongudomsuk & Srisasalux, 2012; Spaan et al., 2012; Tangcharoensathien et al., 2015), hence, readiness assessment is required.

Security is referred to an act of prohibiting unlicensed users to gain access into an organization's network (Abouelmehdi et al., 2018). Security is also a necessity when medical practitioners share patient data to other service providers (Mouttham et al., 2012). In Korea, health data have been encrypted so that it can be protected from unauthorised users. In Taiwan all the citizens of the country have been given a unique personal identification, this is to ensure privacy when they access their health information online (Cheng, 2015). Moreover, Kim et al. (2017) assert that data security is needed even when the data is stored. Waiting times are also problematic.

Hynes et al. (2017) claims that for the successful implementation of the NHI it is mandatory for any government to have a centralised database where patient records can be stored.

According to Cheng (2015) central storage of records assist the health system between different healthcare personnel in different healthcare facilities to respond in real-time. This is since healthcare personnel can retrieve reports on the system through patient history (O'Neill et al., 2013).

Non-technical factors include availability of skilled healthcare personnel and healthcare infrastructure (O'Neill et al., 2013). This assists the healthcare sector to be able to compare if the existing health resources will be able to stand the requirements to provide the NHI (Smith et al., 2018). In India it was found that due to unskilled healthcare personnel the level of incorrect treatment issued was high (Bredenkamp et al., 2015). Authors continue to claim that the only solution to mitigate the challenges is to continuously check and evaluate new avenues of that specific challenge. Moreover, Edward et al. (2015) suggest that to successfully manage the existing challenges, there needs to be continuous planning and management within the healthcare sector.

Cheng (2015) claim that it is vital to invest in an IT infrastructure to better the health of the citizens of the country. The health sector on its own is unable to better the health of the citizens of the country, instead other sectors such as education or housing within the government of the country needs to get involved (de Andrade et al., 2015). According to Fusheini and Eyles (2016) lack of infrastructure can influence the effectiveness and efficiency of healthcare services delivered to the citizens. Mishra et al. (2015) assert that encouragement of healthcare personnel and the use of modern technology in healthcare facilities can better the health service delivery.

Coverage

The aim of the NHI is to provide high standard of healthcare services that will be available to all the citizens of the country irrespective of their geographic area (Fusheini & Eyles, 2016). Rispel (2016) argues that there is still a large gap that exists between the urban and the rural areas of the country in terms of accessing and making use of the healthcare services available. Reich et al. (2016:813) claim that “Expansion of coverage to poor and vulnerable populations often needs strong governmental commitment to give voice to marginalised groups and overcome interest-group politics”. This is since in any country that has a united political structure within its government, changes are easily accepted (Shiffman, 2019).

The Role of ICT

The implementation of the NHI in any government including South Africa, requires the use of ICT as it assists in the improvement of the quality and effectiveness of health service delivery (Herselman et al., 2016). This is mainly because daily, the healthcare sector deals with large volumes of data such as sensitive patient information e-Health is defined as the service where the healthcare sector uses Information and Communication Technology (ICT) to deliver services such as treating patients and monitoring diseases (Li et al., 2015). In addition, Wright et al. (2019) suggest that the use of electronic data systems as opposed to the traditional paper-based system can improve the efficiency of medical practitioners.

Challenges

Human

Healthcare personnel are the ones that have an obligation for the implementation of the NHI in South Africa (Mndzebele & Matzi, 2016). Latiff-Khamissa and Naidoo (2015) argue that for the NHI to be successfully implemented in South Africa, the key role players such as medical practitioners in service delivery within the healthcare sector needs to be involved. However, Molokomme et al. (2018) argue that many people around the country including healthcare personnel are not enlightened about the concept of the NHI and that is due to insufficient communication shared so far. On the other hand, Setswe et al. (2015) suggest that the government and the Department of Health need to take serious measures to have consultation with communities to spread the word about the NHI system. Pokharel and Silwal (2018) claim that requirements such as sufficient human resources need to be achieved simultaneously with the implementation of the NHI.

Technical (ICT)

Many governments around the world including South Africa continuously look at the ways they can use ICT to better their healthcare services (Raghupathi & Raghupathi, 2014). However, according to Pankomera et al. (2014) healthcare in South Africa is faced with challenges such as poor infrastructure and lack of funds. Another challenge according to Mgozi and Weeks (2015) is the lack of privacy and security which poses a threat to sensitive healthcare data.

2.6 Structuration Theory

Structuration theory is a social theory that has been introduced by Anthony Giddens, which focuses on how social relationships that happens over a period and space are structured (Giddens, 1984). Leydesdorff (2010:2139) asserts that structuration theory focuses on "reflexivity as constitutive of human action". According to Cajaiba-Santana (2014) reflexivity

refers to the way agents continuously check their actions within the social setting and based on the feedback they receive, they re-shape their action to be in line with the future.

The main concepts of structuration theory are agents and structures (Rütten & Gelius. 2011). Agents are categorized into technical or non-technical (Englund & Gerdin, 2014). Non-technical agents in a social context are well informed and with the knowledge that they have, they consequently act (Greenhalgh & Stones, 2010). Iyamu and Roode (2012:2) claim that “human actions simultaneously condition and are conditioned by organisational properties in social contexts”.

Social structures are made up of rules and resources (Puron-Cid, 2013; Chang, 2014). To describe social structures (rules and resources), Mackay and Tambeau (2013:676) claim that “rules refer to an actor's view of how things should be done and/or how they have always been done”, whereas “resources refer to who has control over people (authoritative resources) and materials (allocative resources)”. Meneklis and Douligeris (2010) argue that the social structures do not exist forever instead new structures are either created or those structures that already exist get upgraded as an outcome of an action. These social structures are linked to agencies and cannot be separated; hence they are named as duality of structure (Oppong, 2014).

Duality of structure is referred to the continuous relationship that happens amongst agencies and structures (Mezzanotte Sr et al., 2010). According to Hardaker and Singh (2012) in the duality of structure, Giddens focuses on social structure and interaction of people. The three major elements of the duality of structure are (i) structure; (ii) modality; and (iii) interaction. Modalities are the essential elements of the theory mainly because they support peoples’ actions and secondly, they provide a link that connects structures (Iyamu, 2017) and interactions (Meneklis & Douligeris, 2010). The duality of structure is presented below in Figure 2.

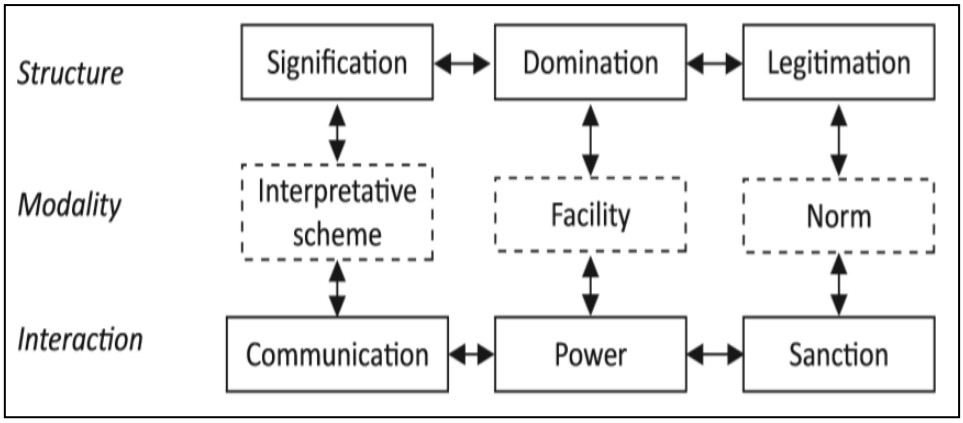


Figure 3: Duality of Structure (Giddens, 1984)

The structure as shown in the top row consists of signification structure; domination structure and legitimation structure (Englund & Gerdin, 2014). When a communication is made, human agencies can make sense of what has been communicated, using interpretive schemes, using their actions, and/or those of other agencies (Hardaker & Singh, 2012). These agencies therefore can determine whether what has been communicated is significant or not (Larsson, 2012). In a social setting, domination structure is achieved when agencies exercise their power to enable or constrain the resources that are available within their organizations (Parvez, 2006). The legitimation structure is therefore achieved as agencies in a social setting live by certain rules and values which after some times are regarded as normal and as a result are being approved (Willcocks & Mingers, 2004).

2.7 Structuration Theory and Information Systems Studies

The Structuration Theory (ST) over many years has been used by many scholars in different research fields such as IS (Jones et al., 2004). However, over the years much research conducted have managed to include an IT aspect into ST (Indeje & Zheng, 2010). In addition, Veenstra et al. (2014) claim that scholars use ST within an IS field to gain in-depth knowledge of how to develop, implement and make use of information technology in an organization.

IS is a system that comprises of (i) individuals or group of people; and (ii) computer software and hardware (Urbach & Ahlemann, 2010). Hosseini et al. (2018:253) in their study claim that IS is the system that “collect, organise, store, and communicate information to its stakeholders”. Moreover, Lee (2015) asserts that IS comprise of three subsystems which are (i) data system; (ii) organization system; and (iii) technology system that are interrelated.

IS is a very important area of any organization (Aydiner, 2017). However, D'Arcy et al. (2009) warn that when it is not used properly it can pose danger to the organization. Hence, some authors have decided to use the ST as a lens in many areas such as IS studies (Silva, 2007). IS in organizations are used to detect the relationship based on trust that people develop with IS (Söllner et al., 2016). With the use of IS organizations can affect the change that happens in organizations in a positive way (Seidel et al., 2013). In an IS research, the researcher's focus is based on areas such as beliefs, motivation and attitude of participants (Urbach & Ahlemann, 2010).

The ST is applied to examine the connection that exists between the businesses and IS (Jones & Karsten, 2008). Authors such as Chang (2014) has applied ST to study the factors that can affect the IS implementation process (ISIP) within an organization. Schwieger et al. (2006) in their study has adopted ST to examine the interaction that exists between structures and agencies in the health sector during the implementation of a new system. In addition, Bernardi (2017) has employed the ST to understand the influence of IS within governments in the healthcare environment.

The ST in the IS discipline is the social theory used for explaining why and how things happen the way they do (Lee, 2015). In addition, Jones and Karsten (2008:129) state that Giddens structuration theory focuses on the "social phenomena at a high level of abstraction rather than their particular instantiation in a specific context". Wanyama and Zheng (2010) assert that the ST is not much concerned about the technological resources. Hence, Rosenbaum and Schachaf (2010) claim that there has been an increase of published articles applying the improved version of the ST to explain the relationship between people and technical systems within organizations. Another critique is that ST does not provide enough argument regarding the connection that exists between structure and agency, the author refers to it as Giddens simply "throws a blanket" over it (Larsson, 2012:257).

The main tenets of the ST (agents & structures) are related to the objectives of this research. Hence, the researcher has applied ST as a lens based on the objectives of this study, which are (i) to examine and understand the factors that can influence the implementation of the NHI system in the communities of South Africa; (ii) to examine how the NHI system can be implemented in the communities of the country; (iii) to understand the current state of the implementation of the NHI system. Hence, none of the critiques identified by some authors affect the objectives of this study. This is since in ST's social

structure is reproduced by ongoing human action, while, at the same time, structure enables and constrains human action (Veenstra et al., 2014).

2.8 Conclusion

In this chapter, the researcher has conducted the literature review based on the following keywords: information and communication technology, healthcare service delivery, implementation of health insurance, readiness assessment, structuration theory and IS studies. The literature review was conducted to identify the gaps that exist in the literature regarding the implementation of the NHI system and to prove the validity of the researcher to carry out the study. The next chapter is research methodology. The chapter will give an in-depth understanding of the research methodology that was applied in this study.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Introduction

Based on the aim and objectives as presented in chapter one, the research methodology was selected and applied in the study. This chapter presents the research methodology. According to Taylor et al. (2015), research methodology refers to the techniques and methods that the researcher applied to the study. The remainder of this chapter discusses the methods, approaches and techniques that were applied in the study.

The chapter is divided into seven main sections which include:(i) philosophical assumption, which guides the focus and direction of the study; (ii) research approach; (iii) research methods; (iv) research design; (v) data collection; (vi) data analysis; and (vii) ethical consideration.

3.2 Philosophical Assumptions

The term philosophy refers to the opinions and beliefs that the researcher used to guide the research (Cho & Lee, 2014). Philosophical assumption is referred to the “core epistemological assumptions of the methodology” (Onwuegbuzie et al., 2013). According to Håkansson (2013) philosophical assumption is where the research begins, this is because the whole research is carried out, based on the assumptions that the researcher has about the phenomenon being studied. This means that itis vital for the researcher to be sure of the assumptions influencing the study (Tuli, 2010). There are two main types of commonly used philosophical assumptions in the information systems (IS) research namely, (i) ontology and (ii) epistemology (Khosrowshahi & Arayici, 2012).

Ontology is referred to nature of reality, meaning what exists around the world (Storeyet al., 2015). In addition, Mustafa (2011) claims that ontology refers to the nature of existence and how people in the world tend to see it. One of the objectives of this study is to examine and understand the factors that could influence the implementation of the NHI system in the communities of South Africa. Ontologically NHI does exist, and it has been implemented in the communities of South Africa. The question is how it has been implemented in the communities of the country, which is epistemology.

As stated by Ritchie et al. (2013) epistemology has to do with what people understand their perception about the world to be. Meaning that “epistemology informs the methodology about the nature of knowledge or where knowledge is to be sought? (Tuli, 2010:105).

Epistemology is the assumption that is used in the study to justify the knowledge that exists (Dick, 2013). The two types of epistemology are positivist and interpretivist epistemology. When following the interpretivist, the researcher can understand the importance of the behaviours and the interaction that exist between the participants in a social context (Chowdhury, 2014).

The three objectives of this study are (i) to examine and understand the factors that could influence the implementation of the NHI system in the communities of South Africa; (ii) to examine how the NHI system can be implemented in communities of the country; (iii) to understand the current state of the implementation of the NHI system. Based on these objectives, the interpretivist approach was followed since it helps the researcher to describe and make sense of experiences of people (Marshall, 2016).

3.3 Research Approach

Research approach is employed for the researcher to accomplish the objectives of the research. Hǻkansson (2013) claims that research approach is employed in a study to assist the researcher to reach the conclusion and the ability to determine what is deemed correct or incorrect. The two well-known research approaches are deductive and inductive (Cho & Lee, 2014).

When referring to the deductive approach Woo et al. (2017) state that it is a type of approach which focuses on testing theories or sometimes validating hypotheses. According to Altugan (2015) the deductive approach is said to be mostly linked to quantitative research methods. In addition, O'Reilly (2015) asserts that the deductive approach is also termed as general to specific approach, given the fact that the researcher will acquire a general understanding and move to concentrate specifically on the phenomenon being studied. Moreover, Dubois and Gadde (2002) claim that the deductive approach focuses on developing statements or opinions from existing theories. In a case where the deductive approach is used, the outcome of the study is always generalized (Cho & Lee, 2014).

The inductive approach is commonly known as the bottom-up approach (Pomeroy et al., 2013). This means that the researcher can develop a theory from the data that has been collected (Hǻkansson, 2013; Eisenhardt et al., 2016). The inductive approach is more suitable to be used with qualitative methods. As stated by Tuli (2010:100) they are "oriented toward discovery and process, have high validity, are less concerned with generalizability, and are more concerned with the deeper understanding of the research problem in its

unique context". This is because qualitative methods are followed when there is little knowledge about the phenomena being studied (Brannen, 2017).

The aim of this study was to develop a framework which can be used to assess the readiness of the implementation of the South African NHI system, from the ICT perspective in South Africa. The inductive approach was followed on this study since it allows the researcher to dig deep to gain a better understanding of the phenomenon being studied (Cho & Lee, 2014). Furthermore, Yoon (2012) claims that the inductive approach assist in providing new knowledge to the questions.

3.4 Research Method

In a social setting, the two main types of research methods are qualitative and quantitative. Researchers have the option to use any or both methods at any given time. Whenever both methods are used in a study, it is known as mixed methods (Creswell, 2013).

Mixed method is the best method to be used where one method cannot completely provide answers to the objectives of the study (Venkatesh et al., 2013). According to Brannen and Moss (2012) the mixed method is used to identify the differences and the abilities that each method can offer. This is because one method is solely used to cover the gap of another method. All in all, both qualitative and quantitative methods when used together complement each other (Flick, 2014).

The quantitative method is more concerned with numbers and of its objective nature, meaning there can only be one truth even when different researchers have conducted the same study (Bambale, 2014). According to Zou et al. (2014) when employing a quantitative method, a researcher can describe the phenomenon being studied by just linking the theory to the phenomena. Moreover, Krauss (2005) asserts that the quantitative method is used to assist the researcher to test theories.

On the other hand, qualitative methods are known to take heed of participants regarding the phenomenon being studied, allowing them to make sense of their own existence (Tuli, 2010). Tayloret al. (2015) claim that qualitative methods focus on exact annotations that participants describe when sharing their experiences. Based on these facts, Shaanika and Iyamu (2018) state that qualitative methods are of a subjective nature, meaning that it has multiple realities. Moreover, the qualitative method allows the researcher the opportunity to

get thorough understanding the phenomenon being studied (Dworkin, 2012; Håkansson, 2013).

For the researcher to fulfil the objectives of this study, the qualitative method was used. This is since the qualitative method allows the researcher the ability to gain an in-depth understanding of why things happen the way they do. With the use of qualitative techniques, the researcher can exhaustively explore the phenomenon being studied. Qualitative methods allow the researcher to be part of the study (Tuli, 2010). Moreover, Sutton and Austin (2015) claim that qualitative methods grant opportunities for the participants to explain their experiences in their own understanding.

3.5 Research Design

Research design is the core of any research (Crook et al., 2010). Research design "is a way of organising a research project or a programme from its inception in order to maximise the likelihood of generating evidence that provides a convincing answer to the research questions" (Gorard, 2013:8). As stated by Håkansson (2013); Creswell and Poth (2017) research design involve the order in which the researcher follows, from developing research questions to the conclusion of the study. Therefore, Fusch et al. (2017) suggest that researchers should carefully consider the research design that will provide the best answers to the research questions of the study. There are different types of research designs such as survey, ethnography and case study that researchers doing qualitative research, can apply.

Survey design allows the researcher to study a phenomenon across the broad spectrum (Baxter & Jack, 2008). With survey design the researcher can record how the participants perceive and feel the phenomenon being studied (Baskarada, 2014). According to Runeson and Höst (2009) survey design allows the researcher to be able to generalize the results of the study. In addition, Percy et al. (2015:80) assert that survey design in a study is used "to investigate subjective experiences of objective things". Jansen (2010) states that survey design is concerned with investigating the diversity of a phenomenon within a population.

In an ethnography research design, the researcher focuses more on how the participants conduct themselves in a social setting (Creswell & Poth, 2017). Håkansson (2013) claims that the aim of ethnography design is for the researcher to investigate and draw descriptive outcomes on how people behave socially and culturally in their natural being. According to

Wahyuni (2012) in any study research design is guided by the research aim and questions. This is mainly because research design serves as a connection between the philosophical assumptions and the methodology (Mörtl & Gelo, 2015). Ethnography and case study might sometimes be confused “but the intent in ethnography is to determine how the culture works, rather than to understand an issue or problem using the case” (Creswell & Poth, 2017:73).

On the other hand, case study design according to Wahyuni (2012) assists the researcher to obtain an extensive knowledge of the phenomenon being studied in its true form. Case study design allows the researcher the privilege to examine the specific case in its own setting (Håkansson, 2013). In addition, Hancock and Algozzine (2016) assert that case study is unique from any other research design, in a sense that it has elements of thorough analyses and is descriptive when dealing with the case. In a case study design, a case is referred to a person, a focus group or an incident (Ridder, 2017). There are three types of case study designs namely(i) explanatory; (ii) exploratory; and (iii) descriptive. However, not all these types of case study designs are suitable to allow the researcher to get a deeper understanding of the phenomena being studied. Hence, Yazan (2015) claims that only the explanatory case study design is appropriate when the researcher seeks to answer the “how” and “why” questions. This is mainly because in the case study design, the participants can explain their experiences and views to the researcher (Sheridan et al., 2014). Wohlin and Aurum (2015) assert that case study design links very well with qualitative methods.

Based on the objectives of the study which are to (i) examine and understand the factors that could influence the implementation of the NHI system in the communities of South Africa; (ii) examine how the NHI system can be implemented in the communities of the country; (iii) understand the current state of the implementation of the NHI system, the survey design was applied, in which three stakeholders were identified and selected. This includes the South African Department of Health, medical aid, and the community. All three stakeholders play significant roles in one way or the other in the country’s healthcare initiatives.

The Department of Health (DoH) initiated the concept of the NHI in the country. Some of the roles and responsibilities of the DoH include the following:

i. on behalf of the government, the DoH is responsible in formulating policies relating to health matters in the country.

ii. on behalf of the South Africans, the DoH monitors the activities of the health and medical practitioners.
iii. DoH is responsible to assess and monitor the condition of the healthcare facilities in the country.

The roles and responsibilities of the medical aid scheme are as follows:

i. on behalf of its members, the medical aid scheme is responsible to monitor the funds and pay for its members' health needs.
ii. the medical aid scheme is responsible for formulating rules relating to benefits for its members.
iii. on behalf of its members, the medical scheme must guarantee and ensure reasonable access and availability of designated service providers.

3.6 Data Collection

Data collection is referred to the dissimilar types of techniques that the researcher applies in the study to gather data from the participants (Paradis et al., 2016). These types of techniques include questionnaires, interviews, and documentation (Aini et al., 2018). Out of these many different types of techniques, the interview technique has been found to be very commonly used (Anyan, 2013), especially in the IS field. Interview techniques comprise of three different types which are: structured, semi-structured and unstructured (Tavakol & Sandars, 2014).

Based on the aim of the study, there are three types of techniques, (1) the semi-structured interview;(2) group participatory discussion; and (3) document analysis was used in the collection of data. Tables 1, 2, 3, and 4 below present detail about the participants in accordance with the types of data collection techniques. This was to ensure a holistic coverage towards gathering rich data. The scope of the stakeholder's range is broad, and as a result it would have been very difficult to gather enough rich data if one technique was applied.

3.6.1 Semi-structured Interview

The semi-structured interviews were conducted in two different ways: (1) one-on-one with participants; and (2) through radio program. A semi-structured interview is a technique through which set interview guidelines are developed and used to gather data (Ramirez-

Rubio et al., 2013). In addition, Shaanika and Iyamu (2018) claim that semi-structured interviews are flexible, meaning that they allow the researcher to change the order of the questions depending on the participant's responses. The use of interview guidelines in semi-structured interviews simply guards the researcher not to go off f topic (King & Horrocks, 2010). According to Marshall et al. (2015) semi-structured interviews allow the researcher to probe to gain more clarity on the study.

One-on-one interviews with participants

The one-on-one interviews were conducted from the medical aid organization and the community in Cape Town, South Africa. The participants that were selected to take part in the study were contacted by phone and email. The researcher then asked the participants' permission to participate in the study. With the participants' approval the researcher arranged for a one-on-one interview at a location of their choice. This was done to make the participants feel comfortable during the interview. The medium of communication that was used with the participants was English. At the start of the interview the researcher gave a background of the study. To uphold research ethics, the researcher asked permission from the participants to record the interview. The interviews were recorded using the researcher's smart phone. The researcher followed the interview guidelines that were developed based on the objectives of the study. The recorded data was transcribed and edited.

For the medical aid organisation, technical and non-technical participants were inteviewed. The IT manager is referred to as technical personnel. This is the person responsible for developing and providing support for the system. Anyone within the organization who uses the system to provide healthcare services to the citizens of the country is referred to as non-technical personnel. The interviews with technical and non-technical personnel were conducted on the organization's premises. For the principal officer, the interview was conducted in his office. The principal officer offered a boardroom, where the rest of the interviews with the other participants were conducted. On the first day only one interview was conducted with the principal officer. Table1 below shows the demographics for the participants in the medical aid organization.

Medical aid organization

Table 2: Data collection 1: Medical aid scheme

Participant	Category	Unit	Code
Principal officer	Non-Technical	Business	BT_01
IT manager	Technical	IT	BT_02
Finance manager	Non-Technical	Business	BT_03

On the other hand, the interviews with the community members were conducted in English and isiXhosa. The researcher advised the participants that they can communicate in isiXhosa and that was done so that the participants can express themselves in a free manner. Some of the interviews were conducted in the workplace canteen and some were conducted in the restaurant in the mall. Table2 below presents the community members that were interviewed.

Community members

Table 3: Data collection 2: Interviews

Gender	Code
Female	KT01
Female	KT02
Male	KT03
Female	KT04

Participants were identified across the two groups (stakeholders).

Setting a set of criteria to select participants is very critical in any study (Turner, 2010). By doing that the researcher ensures that the participants taking part in the study have some background information with regards to the phenomenon being studied. In this study the researcher has used criteria to carefully select participants. For the first group, which is the medical aid organization, the criteria used include: (1) the participant must have a good understanding of the concept of NHI because it is a new concept in the country, and very many people are struggling with understanding the pros and cons; (2) the participants participant must be involved with the concept in one way or the or other; and (3) the

participant must volunteer to participate in the study. This was to uphold research ethics, also, because of the sensitivity that is associated with health-related matters. The second represent the community, and the criteria used include: (1) the participant must be residing in the area for the past two years; (2) the participant must have experienced the use of some of the services in the area, such as the healthcare facilities.

3.6.2Focus Group Discussion

Focus group discussion is a commonly used type of data collection technique (Saunders et al., 2018). According to Moser and Korstjens (2018) focus group discussion is a technique that is used where “a small group of people discuss a given topic, usually guided by a moderator using a questioning-route”. Fusch and Ness (2015) assert that focus groups are a flexible type of interview and the communication between the participants and the facilitator is unstructured.

Through radio program

The researcher has followed the radio program as it focuses on the topics related to health matters in South Africa. The researcher has collected two podcasts that were done in two different days from the radio station’s website. In both podcasts the host presenter starts the program by giving a brief background of the NHI. Also, the host presenter introduces the respondent which is the participant sitting with him on the show or joining the program over the phone. The respondent is the participant that provide responses to the questions posed through the phone calls and the host presenter. From the response that the respondent gave, the host presenter asks more questions so he could clearly understand the concept of the NHI. In total there were eight calls that came through both programs. These calls were coming from all spectrums of the society including community members, government employees and medical personnel. The people that called through the program wanted to know how the implementation of the NHI will benefit them. Table3 below presents the demographics of the calls that came through on both radio programs.

Radio program calls

Table 3: Data collection 3: Demographics

Day one		
Participant	**Gender**	**Code**
Host Presenter (facilitator)	Male	HP01
Government employee	Male	RP01
Medical personnel	Male	RP02
Medical personnel	Male	RP03
Community	Male	RP04
Community	Male	RP05
Medical personnel	Female	RP06
Community	Male	RP07
Community	Male	RP08
Community	Male	RP09
Medical personnel	Male	RP10
Community	Female	RP11
Sub total		**12**
Day two		
Host Presenter (facilitator)	Male	HP02
Government employee	Male	RP12
Community	Male	RP13
Community	Male	RP14
Community	Male	RP15
Sub total		**5**
Total		**17**

As shown in Table 3, the program was conducted twice, 13 June 2018 and 13 August 2019. In day one a total of twelve participants took part on the group discussion. The participants were given codes, this has been done to simplify referencing during the data analysis. The researcher used codes such as HP01 to represent the host presenter of the program. When referencing, the format that will be used is as follows: code, page number, line number. For example: HP_01, 06, 9-10.

3.6.3Documentation Technique

Document analysis allows the researcher to use existing sources when collecting data (Taylor, 2017) and it can be used as the secondary source (Johnston, 2017). O'Leary (2017) claims that a document can be attended to as though conducting an interview, as at the end information will be gained. Moreover, Wildemuth (2009) asserts that documents "could be a more accurate representation of the phenomenon of interest than data collected" using other techniques such as interviews.

Some of the documents collected are the White Paper, Government Gazette and report. These documents are relevant to the study as they entail the plans the government of South Africa must refer to when implementing the NHI. The documents provide the breakdown of how the country will move from the current state towards achieving the universal health coverage. Table4 below presents the documents that were collected and used in the study.

Documents

Table 4: Data collection 4: Policy Documents

Title of the Document	Description	Code
National Health Insurance Draft Bill	The document is aimed to provide information on how government will propose the funding of the NHI and how to set out its powers, functions and governance structures so that the health needs of people of the country can be met.	NHI2018
National Health Insurance for South Africa (2017)	This is an updated policy document, a policy that has been approved by the Cabinet. This document lays foundations on how the South African government can chieve the universal coverage through the implementation of the NHI.	NHI2017

National Health Insurance for South Africa (2015)	This is a policy document that provides foundations on how the South African government can achieve universal coverage through the implementation of the NHI.	NHI2015
Status of NHI Pilot Districts	This document contains a detailed twelve-month assessment report between 2014 & 2015 of the pilot NHI activities.	NHIREP

3.7 Data Analysis

Before the researcher started with the data analysis, the data was transcribed. The raw data was then cleaned, this was done by (i) correcting spelling mistakes and grammar, (ii) removing words like “you know” that have been said twice in one sentence and lastly adding words to finish a sentence. The researcher while doing the cleaning of the data, made sure that the data still carried the same meaning of the participants. The researcher created a new word document where cleaned data collected from the organization and community members were combined to form a single document. The document was labelled, line and page numbers were also inserted. This has been done to assist the researcher when referencing data analysis.

As discussed in chapter one and two, the structuration theory (ST) was selected to underpin the study. The data will be analysed using the structuration theory as the lens that will guide the analysis. ST is a social theory which focuses on the relationship that takes place between the structure and agent (Giddens, 1984). As discussed by Iyamu (2013) there has been a growth in the use of the ST through the IS studies. This has been attributed by the fact that in an IS field, researchers are able to employ the ST to examine the implementation of information technology in organizations (Veenstra et al., 2014), such as healthcare. For example, Chang (2014) has employed the ST to examine factors that can influence the implementation of processes in an IS field.

Within the ST, the focus of this study will be on the concept of the Duality of Structure. In the duality of structure, the structure enables and constrains the actions of the people (Wanyama & Zheng, 2010). In addition, Iyamu and Mphahlele (2014) assert that structure and agent cannot live in isolation, instead they are dependent on each other.

The duality of structure will be followed in this study in order:

i. to understand the relationship that is in existence between the agents, technical and non-technical in the implementation of the NHI.
ii. that the theory helps to examine how power was applied in enforcing the NHI within the country.
iii. that it was used to assess the legitimacy of the NHI, from both technology and process perspectives.

3.8 Ethical Considerations

The university (CPUT) code of ethics was carefully followed to ensure that the researcher abides with the ethical standards of the university while conducting the research. In following the university's code of ethics, the researcher has done the following:

I. The researcher obtained ethical clearance from the University Ethics Review Committee, the form was completed and submitted to the committee.
II. The introductory letter from the supervisor was sent to the organization.
III. The researcher requested permission from the organization to collect data.
IV. The data collected was to be kept anonymous. This will be made known to the participants, verbally and in writing.
V. The researcher provided community members (participants) with the consent letters before the start of the interview.
VI. All the participants are kept anonymous, instead pseudo names have been used.
VII. The researcher explained the ethical considerations to the participants, so that they were aware of their rights.

3.9 Conclusion

In this chapter, the research methodology consisting of sections which include the research philosophies, research approach, research methods, research design, data collection, data analysis and ethical considerations were presented. The following chapter which is chapter four (4) will present the general overview of the organization that the researcher selected as a case in the bases of the objective of this study.

CHAPTER 4

STAKEHOLDER OVERVIEW

4.1 Introduction

As discussed in chapters one and three, the survey approach was employed in this study. Based on the objectives of the study, which were to: (i) examine and understand the factors that could influence the implementation of the NHI system in the communities of South Africa; (ii) examine how the NHI system can be implemented in the communities of the country; and (iii) understand the current state of the implementation of the NHI system, three primary stakeholders were selected. These include the South African Department of Health (DoH), a medical aid scheme, and the community. This chapter presents an overview of the three stakeholders.

The remainder of this chapter is divided into four sections: the first section presents the overview of the DoH, followed by the medical aid scheme. The third section covers the overview of a community, and the last section presents the conclusion of the chapter.

4.2 Field Work

Stakeholder: DoH

This is based on the objectives of the study as stated in the introduction. The survey research design has been followed in this study. Also, the documentation technique was selected and used for this stakeholder as the choice for data collection. Four policy documents were collected from the DoH website. The types of documents collected include policies and reports. The documents were coded for ease of use during the data analysis. Code names used are as follows: NHI2015 to NHI2018; and NHIREP.

4.3 Organisation: DoH

The South African government consist of the national government, the provisional government and the municipalities. The head office of the national DoH is situated in Pretoria, however, it has provincial offices in 9 provinces and in all the district municipalities. The main aim of the DoH is to improve the health status through the prevention of illness,

disease and the promotion of healthy lifestyles, and to consistently improve the health care delivery system by focusing on access, equity, efficiency, quality and sustainability.

To achieve its aim, some of the services which the DoH provides to the citizens of the country is to revitalize the existing public healthcare facilities; provide treatment to human immunodeficiency virus (HIV), acquired immunodeficiency syndrome (AIDS) and tuberculosis (TB) patients; to roll out the National Health Insurance(NHI); to provide community outreach services; to provide the National Policy for Nursing Education and Training; to provide the/an Integrated School Health Programme (ISHP); to provide Central Chronic Medicines Dispensing and Distribution (CCMDD); to provide the MomConnect programme; and to provide the Health Patient Registration System (HPRS).

Revitalize the Existing Public Healthcare Facilities

Healthcare facilities remain the first point of access when the citizens of the country require healthcare services. DoH ensures that the existing healthcare facilities must be maintained, constructed and revitalised.

HIV, AIDS and TB

One of the mandates of DoH is to bring down the numbers of people with HIV and those who have TB. DoH has come up with different campaigns that focuses on sustainably expanding the treatments and prevention of HIV, AIDS and TB to the citizens of the country through their NHI.

National Health Insurance

DoH is responsible for the implementation of the NHI. By the implementation of the NHI, DoH envisions a health system that works for everyone, produces positive health outcomes and is accessible to all. The health system is expected to raise the life expectancy of South Africans to at least 70 years.

Some of the services provided by the NHI include:

- treatment for schoolchildren with physical barriers to learning, such as eyesight, hearing, speech and oral health.

- eight visits to a doctor for free ante-natal care to each of the 1,2 million women who fall pregnant annually. Family planning, breast and cervical cancer screening and where appropriate, treatment will be provided.
- better services for mental health users, such as screening.
- assistive devices for the elderly like spectacles, hearing aids and wheelchairs.

Community Outreach

Community outreach interventions include community health workers (CHWs) as a first point of contact between primary healthcare (PHC) facilities and surrounding communities. The CHWs proactively initiate visits to households to perform a variety of basic healthcare services within their scope of practice.

National Policy on Nursing Education and Training

The National Policy on Nursing Education and Training aims to ensure uniformity and standardization in the provision of nursing education by eliminating unregistered institutions and improve clinical training for all programmes leading to professional registration.

Integrated School Health Programme (ISHP)

The ISHP contributes to the health and well-being of learners through screening for health barriers to learning.

Central Chronic Medicines Dispensing and Distribution (CCMDD)

The CCMDD programme assists with dispensing prescribed medicines at accessible pick-up points to patients with chronic conditions.

MomConnectProgramme

The MomConnect programme improves access to early antenatal services and to empower pregnant women with the relevant health knowledge. Pregnant women register via their mobile phones to receive weekly messages appropriate to their stage of pregnancy.

Health Patient Registration System (HPRS)

The HPRS provides a Patient Registry and Master Patient Index using the South African identification number and other forms of legal identification.

Some of the health entities serving under the DoH include the Council of Medical Schemes; Health Professions Council of South Africa; National Health Laboratory Service; and South African Research Council.

- Council of Medical Schemes - is a regulatory authority responsible for overseeing the medical schemes industry in South Africa. Its functions include protecting the interests of beneficiaries, controlling and coordinating the functioning of medical schemes, collecting and disseminating information about private healthcare and advising the Minister of Health on any matter concerning medical schemes.

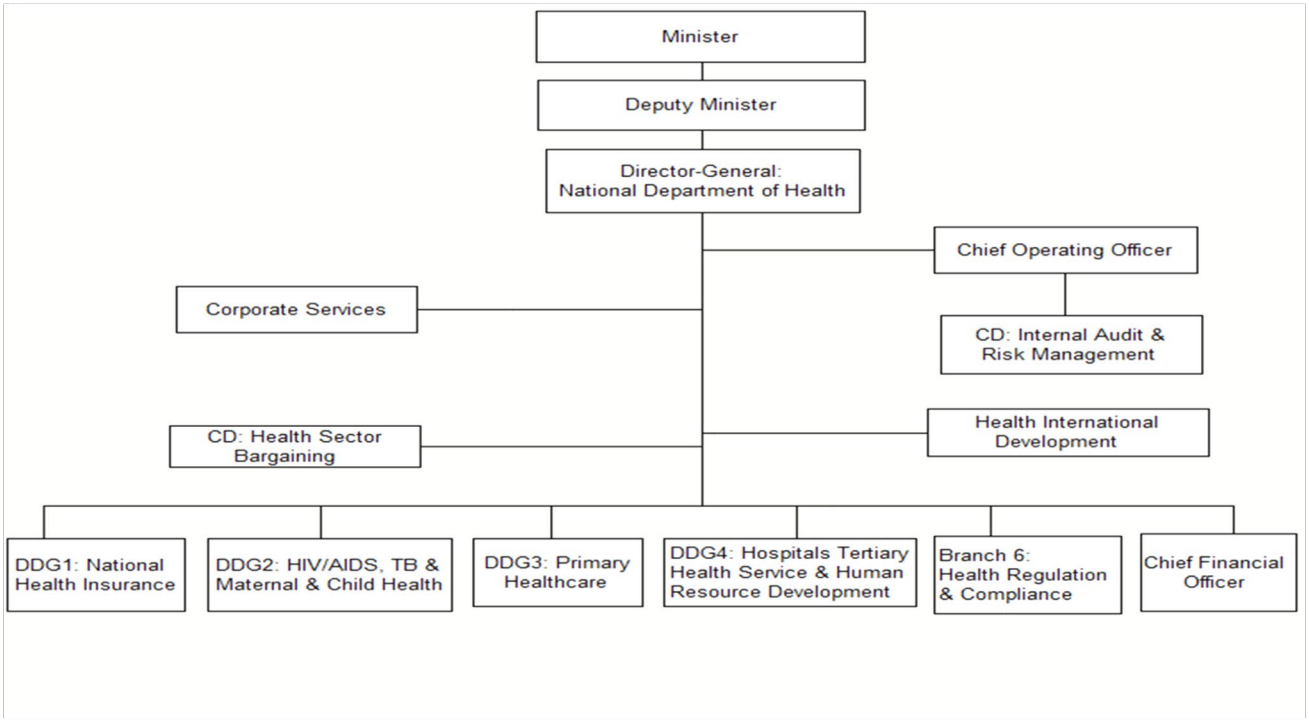
- Health Professions Council of South Africa - guides and regulates the health professions in the country in aspects pertaining to registration, education and training, professional conduct and ethical behaviour, ensuring continuing professional development, and fostering compliance with healthcare standards.

- National Health Laboratory Service - supports the DoH by providing cost-effective diagnostic laboratory services to all state clinics and hospitals. It also provides health science training and education and supports health research. It is the largest diagnostic pathology service in South Africa.

- South African Medical Research Council - promotes the improvement of health and quality of life through research development and technology transfer. Research and innovation are primarily conducted through council funded research units located within the Council and in higher education institutions

4.4 Organisational Structure

Figure 4.1: Organisational Structure for Department of Health



Director-General National Department of Health

The Deputy-General serves under the leadership of the Minister of Health and Deputy Minister of Health of South Africa. The office of the Deputy-General oversees managing health issues for the entire country, and reporting to and advising the Health Ministry.

Chief Operating Officer

The office of the Chief Operating Officer is responsible for overseeing the day-to-day operations of the organization, as well as ensuring the implementation of the organization's strategies.

National Health Insurance

The office of the National Health Insurance improves access to quality health services through the development and implementation of policies to achieve universal coverage, health financing reform, integrated health systems planning, reporting, monitoring and evaluation and research.

Some of the programmes of the NHI office are included in Table 4.1 below:

Table 4.1: Programmes under NHI

Technical Policy and Planning	Provides advisory and strategic technical assistance on policy and planning and supports policy analysis and implementation.
Health Information Management, Monitoring and Evaluation	Develops and maintains a national health information system, commissions and co-ordinates research, develops and implements disease surveillance programmes, and monitors and evaluates strategic health programmes.
Sector- Wide Procurement	Responsible for developing systems to ensure access to essential pharmaceutical commodities. This is achieved through the selection of essential medicines, development and review of standard treatment guidelines, licensing of persons and premises that deliver pharmaceutical services, and development of innovative medicine supply chain interventions.
Health Financing and National Health Insurance	Develops and implements policies, legislation and frameworks for the achievement of universal health coverage through the phased implementation of National Health Insurance; commissions health financing research; develops policies for the medical schemes industry and provides technical oversight of the Council for Medical Schemes; and provides technical and implementation oversight of the two National Health Insurance conditional grants.
International Health and Development	Coordinates the development and implementation of bilateral and multilateral agreements with strategic countries and economic groupings such as Brazil-Russia-India-China-South Africa (BRICS), the USA, the

	European Union, Botswana, Mozambique and Cuba. It also coordinates international development support, including domestication of multilateral treaties and conventions with strategic partners such as the Southern African Development Community (SADC), the African Union (AU), and United Nations (UN) agencies.

HIV/AIDS, TB and Maternal & Child Health

The office of HIV/AIDS, TB and Maternal & Child Health is responsible to come up with recommendations and strategies that can assist in the reduction of death due to preventable causes.

Primary Healthcare

The office of the Primary Healthcare is responsible to drive change in healthcare service delivery. The change in service delivery will be from the current curative model to one that promotes cost-effective primary healthcare (PHC) as close to the community and households as possible.

Health Regulation & Compliance

The Health Regulation & Compliance office is responsible for monitoring and ensuring that compliance standards and regulations, as prescribed by the Minister of Health, are being followed. The office ensures that public and private facilities comply with standards.

Chief Financial Officer

The Chief Financial Officer is responsible to ensure that the organization is operating in cost effective way. The officer is also in charge of managing the potential financial risks of the organization.

4.5 Field Work

Stakeholder: Medical Aid Scheme

Better Living has been selected because it is the one organization who opened its doors to allow the researcher to conduct data collection. In addition, Better Living forms part of the healthcare system within the country. To collect data, semi-structured interviews were selected as the technique of choice. Interviews were conducted from three participants, 1 IT and 2 business.

All the interviews conducted were recorded with permission from the participants. The recording was done with the use of the researcher's smart phone. This was done because recorded interviews assist the researcher to collect all the data and to use as proof that the researcher met with the participants and conducted the interviews. The interviews were all conducted in English. The shortest interview was thirty-eight (38) minutes and the longest was one hour and eleven minutes (01:11). Due to ethical reasoning, the identity of the organization and the participants are kept anonymous. The code name selected for this stakeholder is "Better Living". Also, the examples of the code name used for participants are as follows BT_01 to BT_03.

4.6 Organisation: Medical Aid Scheme

There are about eighty (80) medical aid schemes in South Africa. Better Living is one of the registered medical aid schemes established in 1965 and formally registered on the 19 November 1974. Better Living provides medical aid cover to private individuals or families, as well as employer groups across South Africa. Better Living is self-administered, with the pharmacy benefit management component administered by a third-party service provider. Better Living provides services such as medical insurance and hospital plan to the citizens of the country.

First and foremost, the priority of Better Living is the good health of its members - a vision that is encapsulated by their value statement, which ensures that they:

- offer a simplistic range of products that meets the essential healthcare needs of the members.
- take a sincere interest in their wellbeing and always provide personalised attention to the members.

- offer security to the members by ensuring that they always maintain a solid financial standing.
- are committed to providing excellent service to every member, in every instance, always.

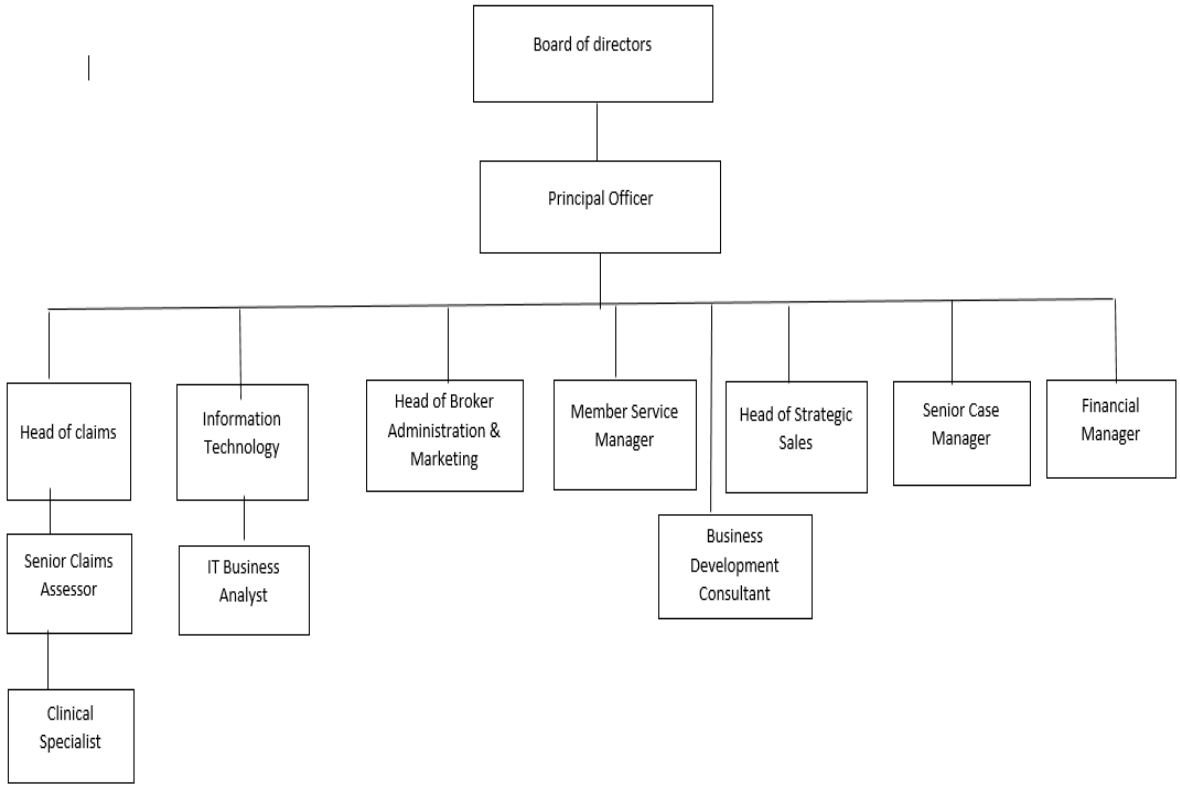
Better Living currently offers six benefit options including its new option which was added in 2017 to support the Scheme's growth objectives.

All the benefit options include:

- Unlimited hospitalisation at any of the Scheme's Designated Hospitals.
- Medicine on discharge payable from the hospital benefit.
- Unlimited emergency transport benefits where the services of ER24 is utilised in South Africa, Swaziland and Lesotho.
- Access to professional, specialised disease management programmes when diagnosed with a life-threatening condition, e.g., cancer or HIV/AIDS.
- MRI and CT scans payable from major medical benefits, both during and/or not during hospitalisation.
- Unlimited benefits for laser tonsillectomies, gastroscopies and colonoscopies when performed both during and/or not during hospitalisation (co-payments may apply).
- Generous benefits for pregnancy and birth, including home deliveries by a registered midwife and pre-birth education (ante-natal classes).
- Unlimited benefits for rehabilitation and home nursing, subject to scheme approval.

4.7 Organisational Structure

Figure 4.2: Organisational Structure for Better Living



Board of Directors

The board of directors control and manage the scheme and ensures that citizens medical cover continues going from strength to strength. The role of the board of directors is to ensure that the funds are built up and managed over time so that the scheme can continue to fund the benefits (or plans) it offers to its members. In simplest term, the directors manage and look after the wellbeing of the funds.

The Principal Officer

The role of the principal officer is to implement organisational plans that will ensure cost-effective and quality services to stakeholders. In addition, to maintain and promote the relationship with the Council of Medical Schemes. Duties and responsibilities as determined by the Board of Trustees

Head of Claims

The main focuses of the head of claims are to review for errors on medical claims denied or approved by employees. In addition, the head of claims creates and maintains financial reports for the claims department. This includes the number of claims received and the amount paid or denied.

Senior Claims Assessor

The senior claims assessor is responsible to communicate claims to members. Proactively engage with members to improve the claims assessment and management process.

Clinical Specialist

The clinical specialist provides support to the organization. The clinical specialist is responsible to provide training to staff by providing clear details of the products.

Information Technology

The information technology department is the department that deals with the maintenance of the existing, and the development of the new information system within the organization to assist the organization to provide better healthcare services to its members.

IT Business Analyst

The business analyst assists to identify problems or areas that need some improvement within the organization, to maximize its performance and profit. It is responsible to assess the financial services of the organization and to find ways to minimize expenses.

Head of Broker Administration and Marketing

Head of broker administration and marketing is responsible to perform all the administrative duties of the organization and to conduct marketing activities to promote the brand of the organization.

Member Service Manager

The Member Service Manager is the person who ensures that the organization delivers the highest standard of service to its customers. Also, ensures that there is communication between the customers and the organization.

Business Development Consultant

The Business Development Consultant is responsible for membership growth, stakeholder relations and membership retention. Its responsibility is to grow Scheme membership in line with the strategic objectives that are in place and activity plans.

Case Manager

The role of the senior case manager is to support the organization by assisting in the delivery of quality health care services. The case manager is responsible for providing communication to members on guiding and improving the morale of the patients by providing direct communication and personal attention, thus helping patients return to work quicker, and help eliminate repeated hospital admissions.

4.8 Field Work

Stakeholder: A Community

Based on the objectives of the study, survey design was followed on this study. The survey design allows the researcher to collect data from different populations in different demographic areas of the country. Data collection techniques selected for this stakeholder was semi-structured interviews and focus groups. The semi-structured interviews were conducted with four community members. The researcher sought permission from the participants to record the interviews. The researcher used a smart phone to record the interviews. Recording of interviews ensures that the researcher does not miss any information shared by the participants. Also, it allows the researcher to have proof that the researcher met with participants to conduct the interviews. The language of communication used was English however, since the participant's home language was isiXhosa, the interviews were conducted in both languages. The advantage of using both languages was that the participants were comfortable and able to give more information when they respond. The shortest interview was eighteen (18) minutes and the longest was twenty-seven (27) minutes. For ethical reasoning, the real names of the participants are kept unspecified, instead the code names were selected and used. The code name selected for the participants are as follows KT_01 to KT_04.

Focus group discussions have also been conducted. This is since focus groups are a great technique to be used with survey design. The radio program was broadcasted on two

different days. The total number of participants participated on the focus groups were twelve (12) for day1 and five (5) for day2. Code names were used to identify participants. The example of code names selected and used is as follows: RP01 to RP15.

4.9 Organisation: A Community

Statistics SA report states that there are 55.7 million people living in South Africa. This population has spread across the country's nine (9) provinces which are (1) Eastern Cape; (2) Free State; (3) Gauteng; (4) KwaZulu-Natal; (5) Limpopo; (6) Mpumalanga; (7) Northern Cape; (8) North West; and (9) Western Cape. Diagram1 below presents the 9 provinces of South Africa.

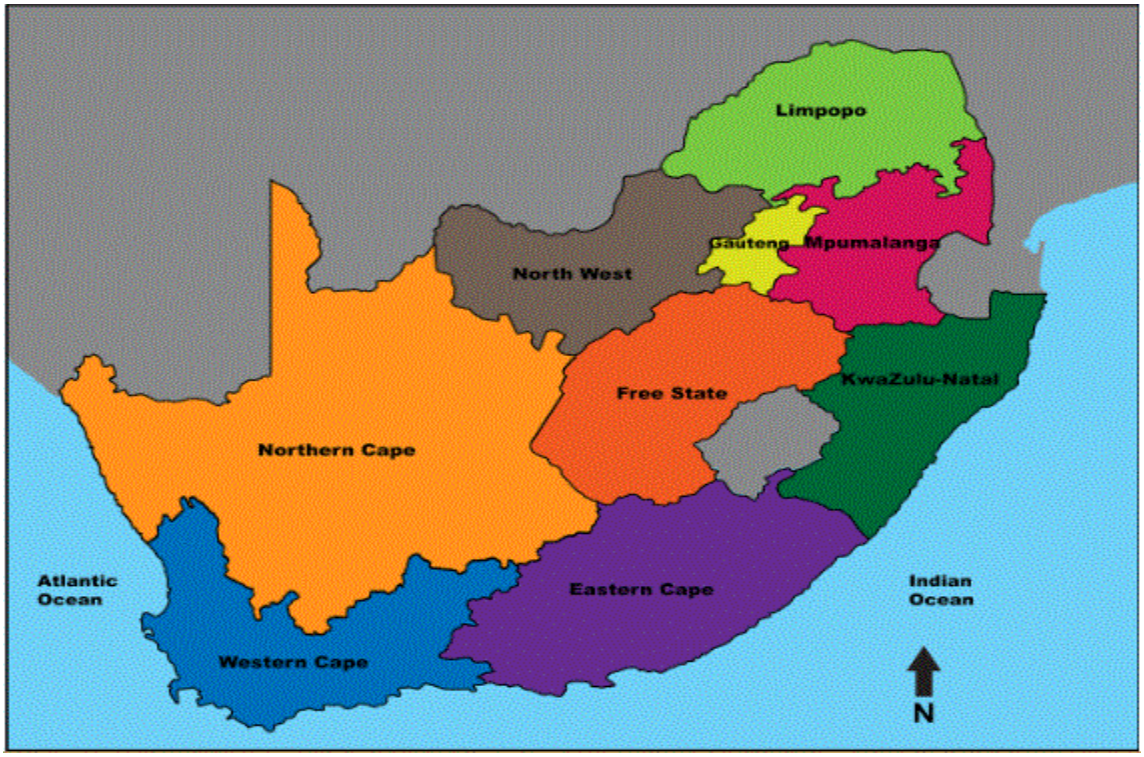


Diagram 4.1: Provinces of South Africa (Babingui-Takore, 2020)

The Eastern Cape Province which sits at the south eastern part of the country has a population of 6 522 700. The capital town is Bisho. The common language spoken in the province is isiXhosa. The Eastern Cape Province has two (2) metropolitan; six (6) district; and twenty-seven (27) local municipalities.

The Free State province is situated in the heart of the country. The population of the province is 2 954 300. In the Free State province, the language that is dominating is

Sesotho. Its municipalities are divided as follows: one (1) metropolitan; four (4) district; and nineteen (19) local municipalities.

The Gauteng province is referred to as the economic centre of South Africa. The province is the smallest out of all 9 provinces in the country. However, its population is 14 717 000 which is the largest amongst the other provinces. The primary language spoken is isiZulu. In Gauteng the municipalities are divided as follows: three (3) metropolitan; two (2) district; and six (6) local municipalities.

The second largest province with the population of 11 384 700 is KwaZulu-Natal. The population in KwaZulu-Natal commonly speaks isiZulu. The province is situated on the coastal south eastern side of the country. KwaZulu-Natal consists of one (1) metropolitan; ten (10) district; forty-eight (48) local municipalities.

Limpopo is sitting in the northern parts of South Africa. The principal language for the people of this province is Sepedi. The capital town of Limpopo is Polokwane. In Limpopo there are five (5) district municipalities and twenty-five (25) local municipalities.

Mpumalanga simply means “the region where the sun rises”. The overall population of this province is currently sitting at 4 523 900. Out of four common languages spoken in this province, 29% of the population speaks siSwati. The province has three (3) district municipalities and eighteen (18) local municipalities.

The Northern Cape Province is the province with a population of 1 225 600 which is the smallest portion of South Africa’s population. In this province Afrikaans is the dominating language spoken. This province has about five (5) district municipalities which when divided make up twenty-seven (27) local municipalities.

The northern part of South Africa is the home for the North West province. This province has a population of 3 979 000. From this population 71.5% of people speak Setswana. The province has four (4) district municipalities and eighteen (18) local municipalities.

Lastly, the Western Cape Province is based on the south western part of South Africa. This province comprises of one (1) metropolitan municipality; five (5) district municipalities and twenty-four local municipalities. The population of the Western Cape province is at 6 621 100. Also, 46.6% of the population speaks the Afrikaans language.

There are three (3) capitals in South Africa namely:

- Cape Town – legislative
- Bloemfontein – judicial
- Pretoria – administrative

Situated in each province is a Legislature, Premier and Executive council. Table2 below shows the population of South Africa for each province.

Table 2: South African Provinces with their Population

Province	**Population**
Gauteng	14 717 000
KwaZulu-Natal	11 384 700
Western Cape	6 621 100
Eastern Cape	6 522 700
Limpopo	5 797 300
Mpumalanga	4 523 900
North West	3 979 000
Free State	2 954 300
Northern Cape	1 225 600

4.10 Conclusion

In this chapter, the overview of each of the stakeholders selected was discussed. This is done to give a brief background of each stakeholder and to identify the functions that are carried out within the stakeholder. The next chapter, chapter 5 will be conducted to detail the analysis that will be done from the data collected from the three stakeholders as explained above.

Chapter 5
Data Analysis and Interpretation of Findings

5.1 Introduction

This chapter presents the analysis of data. The aim of the study was to develop a framework that can be used to assess the readiness of the implementation of the National Health Insurance (NHI) system, from an ICT perspective, in South Africa. To achieve the aim of this study, the survey research design has been adopted. The data has been collected from the three stakeholders using different techniques such as semi-structured interviews, documentation and focus groups. The three stakeholders have been discussed in detail in chapter4. As discussed in chapters 1; 2; and 3, the Structuration Theory (ST) was selected and used as a lens to guide the analysis of data.

The chapter is divided into four main sections. The first section covers the overview of data analysis. The second section presents data analysis. The third section covers findings developed from the analysis and the discussion of the findings. The last section covers the conclusion of the chapter.

5.2 Overview of data analysis

In this study, the duality of structure of Giddens' structuration theory was used as lens to guide the analysis of the data. Structuration theory is a social theory that focuses on social interaction that happens between agents and structure over a period and space (Giddens, 1984). A detailed explanation about the theory is presented in chapter 2. The key tenets of the structuration theory are agents and structure (Rütten & Gelius, 2011).

Agents in structuration theory are technical and non-technical (Englund & Gerdin, 2014). The technical and non-technical agents are needed to be able to assess the readiness of the implementation of the NHI. On the other hand, structure is the combination of rules and resources (Mackay & Tambeau, 2013). Agents and structure cannot act in isolation instead they are connected to each other to construct and reconstruct, this is known as the duality of structure (Iyamu & Mphahlele, 2014).

In the duality of structure, people's actions are enabled and constraint by existing social structures (Dennis et al., 2017). The duality of structure from the structuration theory as presented below in figure 5.1 will be used as a lens (Bernardi, 2017). The duality of structure as shown in figure 5.1 comprises of three main elements which are: (i) structure; (ii) Modality; and (iii) interaction. The structure is made up of signification; domination; and

legitimation. Modality consists of interpretive scheme; facility; and norm. The interaction comprises of communication, power and sanction.

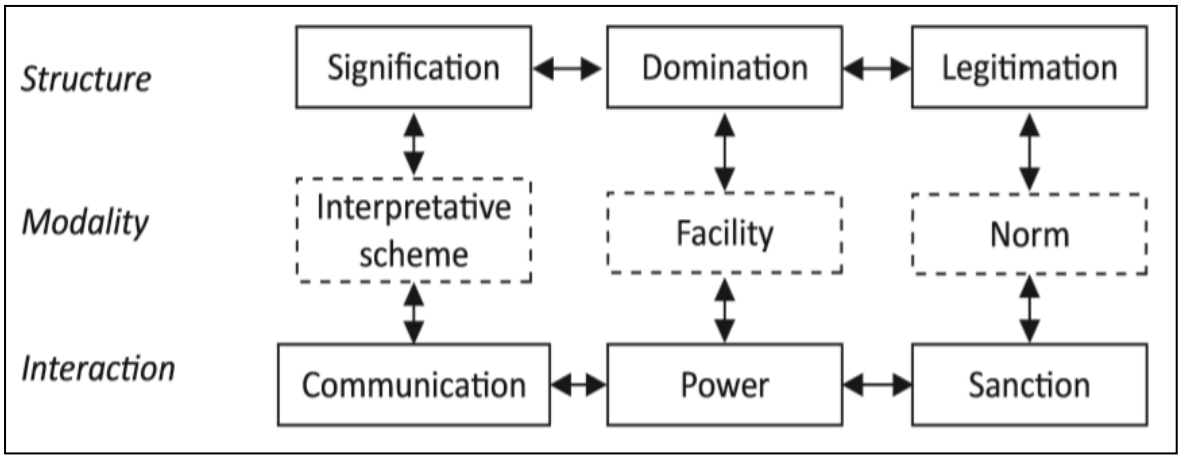


Figure 5. 4 Duality of structure (Giddens, 1984).

As discussed in chapter 3, the survey approach was selected and employed in the study. To achieve the aim of the study three techniques were used to collect data, which are: (i) semi-structured interviews; (ii) documentation; and (iii) focus group:

(i) Semi-structured interview - Semi-structured interviews were conducted with participants. For ethical reasons, participants' real names are not revealed and used in the analysis of the data. Instead, code names were assigned to each participant. The formulation of the code is as follows: participant code, page number: line number. This means for an example: BT_01, 2: 200-205.

(ii) Documentation - Five documents were collected from the web site of the Department of Health, who is the custodian of NHI in South Africa. Similar For referencing purposes, the documents were coded as follow: document code, page number. An example of the referencing formatting: NHI2017, 03.

(iii) Focus group - Focus group was conducted for 2 days. Twelve participants on the first day and on the second day there were five participants in the group discussion. In uniformity with the other types of data sources, codes names were also used. This has been done to easily identify participants and to simplify referencing during the data analysis. The researcher used codes such as HP01 to represent the host presenter of the program. The referencing format used is as follows: (program code, participant code, page number: line number). For an example: (RP01, HP01, 06: 9-10).

5.3 Data analysis

The analysis begins with an understanding of the agents and structure that were involved in the NHI. Thereafter, the duality of structure was employed towards achieving the aim of the study, which is to examine actors of influence, and develop IT readiness assessment framework for NHI.

5.3.1 Agents

Agents are technical and non-technical (Odejide & Iyamu, 2012). In a social context, for any technical and non-technical entity to be regarded as an agent there must be an ability to cause change (Iyamu & Mphahlele, 2014). Technical agents include printers, personal computers, storage and software, which are used one way or the other in the execution of the NHI. Non-technical agents include people, processes (e.g., practitioners' guidelines), policies (e.g., government healthcare bill) and documents. There are different non-technical agents involved in the implementation of the NHI. The people include patients, implementer (or interpreter) of the NHI, the minister of health, health practitioners such as nurses and doctors.

The agents or groups of agents have different roles and responsibilities in the implementation of the NHI. The roles and responsibilities are governed and managed through various rules and regulations, at various levels, such as district, local government, federal, as well as in facilities, clinics and hospitals.

5.3.2 Structure

In the context of structuration theory, structure is rules and resources (Iyamu, 2013). Within the DoH, rules and resources existed, and applied in the activities of healthcare services. These rules and resources are used to govern the conduct of the agents. There are policies and processes that needed to be approved and followed to implement the NHI. Also, the DoH had to use the resources that exist to ensure the successful implementation of the NHI. These resources include healthcare personnel (doctors, nurses, physicians, pharmacists and dentists), healthcare facilities and funds.

5.4 Duality of structure

Table 4: Implementation of the NHI in South Africa

Signification	**Domination**	**Legitimation**
The implementation of the NHI is viewed as an important program that can be used to bridge the gap between the rich and poor with regards to accessing healthcare services in South Africa.	The minister of health and the cabinet are responsible for the implementation of the NHI in South Africa. Other focal actors are the medical aids and health facilities.	The NHI program was developed within the rules and regulations of the country's legislative framework. This gives the Minister of Health mandate to enforce the implementation.
Interpretive scheme	**Facility**	**Norm**
Government's agents and agencies, health professionals, IT specialists, and the public have different interpretations of the NHI implementation. This is attributable to understanding, which emanates from the information they receive.	Existing resources and infrastructure were used to provide healthcare services to the community. Some of the resources determined accessibility to healthcare.	The implementation of the NHI is being carried out through the processes that were defined by the government who is the custodian.
Communication	**Power**	**Sanction**
Various medium and channels were used to communicate the introduction and implementation of the NHI. Some of the channels are through the government gazette, television and print media.	The ministry of health and the parliament are bestowed with the mandate to make decisions relating to healthcare legislative framework. In addition, each health facility has the authority to govern, based on which they decide on implementation of NHI.	The implementation of the NHI is approved at different levels, such as the South African Parliament, Cabinet, health professional association and citizens.

Duality of structure: signification, interpretive schemes and communication

Agents in a social system depend on their interpretive scheme which is the stock of knowledge that they gather of a period, to understand and decide whether the event is significant or not (Iyamu & Nunu, 2021). With the use of the interpretive scheme, the agents can communicate the meaning amongst themselves (Feeney & Pierce, 2016).

The South African government comprises of two healthcare systems: (1) The public healthcare system which provides services to the wider population of the country, most of which are the low-income earners groups; and (2) The other system is the private healthcare system, which provides services to the citizens, majority who are working-class and can afford the services. The systems are differentiated by affordability which stem from income groups. These two systems illustrate the inequality that exists in the country's healthcare system. To increase access to healthcare services, integration of the systems was required. As stated in one of the documents that forms part of data in this study:

> *"The South African health system has been described as a two-tiered system divided along socio-economic lines" (NHI2015, 01).*

Approval of the NHI system by the cabinet shows its importance and criticality to the public, towards getting access to better healthcare. Also, the implementation of the NHI system is intended to help reduce the inequalities in the healthcare sector. In addition, the NHI system will allow the nation to achieve the Universal Health Coverage as proposed by the World Health Organization. Significantly, it fosters access to equal and better healthcare services that are available in the country. It also means that the former healthcare systems that were working in isolation will now be integrated to provide quality healthcare services to the citizens of the country. As gazette in 2017:

> *"NHI is a health care financing system that is designed to pool funds to actively purchase and provide access to quality, affordable personal healthcare services for all South Africans based on their health needs, irrespective of their socioeconomic status" (NHI2017,03).*

Another importance of the NHI system is from the perspective of the DoH, in terms of its mandate to deliver better healthcare to the citizens. DoH is responsible for formulating guidelines for healthcare policies in the country. These guidelines and policies are extremely important, from three main perspectives: (1) it provides scope and boundaries

within which health facilities are operated and managed in the country; (2) it provides measure for governing the activities processes of the health professionals; and (3) it defines the roles, responsibilities and conducts of the individuals and patients. Thus, for the government to successfully achieve its mandate in the country, the implementation of the NHI has been the solution. As stated in one of the government's reports:

> "*One of the core functions of the DoH is to develop and adopt national policies, strategies and guidelines to help guide the functioning of the South African health system and to improve the health of the South African people" (NHIREP2018, 23).*

The NHI system is not significant to the DoH only also to other departments within the South African government and the public. Thus, the department of the National Treasury provides financial budget for the implementation and management of the NHI. These necessities include the strategies to be used to allocate funds in support of the NHI. These funds will also assist in improving the quality of the healthcare facilities, defined by the DoH, for the NHI. These critical resources include infrastructure and sanitation: In NHI2015, it states:

> *"For the proper functioning of NHI, a safe and conducive environment for patients and health workers is essential. One of the key components of such an environment is good quality public health infrastructure complete with bulk services such as provision of electricity, water supply, sanitation and waste management supported by effective transport and communication systems" (NHI2015, 02).*

From the South African government's point of view, there are strategies in place to source the funds in support of the NHI system. For example, one of the strategies is to collect taxes paid by the working class and use as a pool of funds. These funds will then be distributed to the country's nine provinces and are used as support for different service deliveries including the public healthcare system. This would work better if the systems were integrated. However, integration of systems does require assessment of its readiness. These funds are the core element for the implementation of the NHI as they can determine if the system will be successful or not. According to one government employee:

> "*The current money that is spent on the public sector plus some other sources of funds which are not usually recognized by the public like the*

road accident fund, the tax credits which everybody is talking about that, the relevance medical scheme members and few other sources would be the feed primary that will come to the funding" (RP02, RE02, 8: 361-365).

This shows that even though the Cabinet has approved the NHI system and DoH deemed it as significant, not all the stakeholders or citizens connected to healthcare sector share the same sentiment. With the existing medical aid schemes in the country there are some concerns. One of the concerns is that the national government will use their member's funds to fund the NHI. This is seen as a threat as it will break the private healthcare system. These concerns and perceptions manifest from individuals and groups interpretation of the information that they receive. One of the participants explains his views by stating that:

"The people are spending for themselves on their private healthcare coverage, to take that money away from people and put it into the state system, there's no mechanism for doing it and so it's not going to happen" (RP01, RE01, 6: 242-244).

Another requirement is that all citizens of the country must register on the system, to get services through the NHI system. Even though the Cabinet did approve the NHI system, some of the service providers in the private healthcare sector have their own concerns as well. One of the concerns is moving the members who belong to the private medical aid schemes and deemed to offer quality health care compared to the public health care which is regarded as low standard. One participant expresses his concern as follows:

"What is really being proposed in NHI model is not to increase coverage for that group, but actually to bring people on medical schemes into state coverage" (RP01, RE01, 2: 72-73).

Apart from the inequality, the two healthcare systems are also faced with their own challenges. These challenges can be attributed to technical and non-technical factors. In the public healthcare sector, some of the challenges include lack of governance, shortage of healthcare personnel, and hybrid health information systems and technology. For example, lacks governance to support and manage the public healthcare facilities remain highly challenging.

This type of challenges lead to reducing trust level which many South Africans have in the government's ability to successfully implementing the NHI system. This challenge can be the result of lack of interest from the citizens or how the implementation of NHI has been communicated across regions, tribes and income groups. The stakeholders and the public draw their meaning from the current state of the public healthcare system in the country.

Another factor is that the state hospitals do not have modern technological equipment to provide good healthcare to the citizens of the country. Some hospitals and clinics are believed to be using paper-based, manual approaches. These approaches are eliminated in implementing the NHI because patient's records will be stored and stored electronically. Some people believe these factors will hinder the implementation of the NHI. This would mean that the objective of the NHI will not be fulfilled. As stated by one participant:

> *"The government system for patients is totally paper based. You've got to file in a hospital in Durban I think it's paperless. That's one facility I know. But your patient's health record is in a paper-file at this hospital. And if I go to another hospital, I can't access that information" (BT_01, 5: 214-217).*

In the private healthcare hospitals, some of the challenges are: (10 different schemes, some of which are considered more sophisticated and better than those operated in the public health facilities; and (2) charges different rates for consultation, treatment, and specialists' services. These challenges overwhelm the members of the scheme as they sooner than later run out of finances for healthcare. Thus, integration of the systems, processes and procedure need to be integrated, which can be effective through the implementation of the NHI. For example, one of the participants confirmed that these high rates are because there are no regulations in place to control how the people are being charged. According to one participant:

> *"The rates for healthcare services are not standardised. In addition, besides the differences in the facilities' rates (fees) some of the doctors and specialists have their own fees. They are 3, 4 or even 6 times more than the medical aid rates (BT_02, 10: 434-437).*

Significantly, many citizens feel that the National government has done nothing to address the challenges that currently exist between the public and private healthcare systems. Also, some citizens feel that the government should first understand the underlying causes of these challenges before it creates a single system that combines the two healthcare sectors. The level in which these two sectors operate differs in terms of skills, infrastructure and management. Hence, there are concerns that the NHI system will not work with the current state of the countries healthcare system.

The information shared by the DoH allowed people to understand and interpret the NHI concept differently. The different interpretation is influenced by the level of understanding people have about the concept. Hence training was needed. However, the trainers require developmental through the ranks, to gain deeper understanding of the factors and requirements that are associated with the implementation of the NHI. This includes assessment of individuals and groups' readiness for the NHI. Some people within the organization (health facility) felt that the NHI is a good system, but the problem is that the country is currently not in a good state to implement it. One participant state that:

> *"But at the end of the day the state clearly shows that our healthcare system, our state-run healthcare system has grossly failed its people due to lack of planning that time already. And now it's almost out of control. I asked myself how are we going to implement NHI? How are we going to do it?" (BT_03, 20: 945-948).*

In terms of readiness, and to expand the communication channels, the DoH conducted NHI workshops around the country. These workshops allowed government to engage with the citizens of the country. The advantage of conducting the workshops was to get everyone to have the same understanding of the concept of the NHI system, and thereby prepare the implementation better. Despite these efforts, the concept of the NHI system is still not clear to some of the citizens. Government report explains as follows:

After all the comments have been gathered in the proposed NHI bill, the document is updated and reviewed by the DoH, based on the power that is bestowed on the health department. Only after the NHI bill has been reviewed and finalised then it can be submitted to the Cabinet for approval. The process can take longer and can have effect on the targeted implementation dates as being initially set on the bill.

Duality of structure: domination, facility and power

At the time of this study, the Minister and the senior management of the DoH at the national, provincial and local levels were responsible for the implementation of the NHI in the country. The role of the management was to ensure that the processes that were put in place were being followed, to achieve the Universal Health Coverage. These processes were also applied to entities that were appointed and contracted by DoH for service delivery purposes. As stated by one participant:

> *"The bill provides a lot of flexibility with delegation of functions" (RP02, RE02, 13: 565-566).*

The NHI system has been made a dominating entity in the South African health sector in recent years. Through its dominance, new benefits are being offered to the South Africans which will result in the ease of access to quality healthcare. This was due to multiple benefits that were linked to it, such as:

> *"improved financial risk protection through prepayment funding and reducing out-of-pocket payments; reduced inequities and fragmentation in both funding and provision of health services in both the public and private health sectors; improved access to quality health care; improved efficiency and cost containment through streamlined strategic purchasing; improved accountability on the use of public funds through appropriate governance mechanisms and transparency in performance reporting; and better health outcomes across all socio-economic groups through improved coverage" (NHI2017:19).*

The government has highlighted process to be followed to be able to access the services through the NHI system, in the process, the Minister was the dominant actor. The process clarifies the registration procedure and defines the legibility of individuals and groups. One of the documents explains as follows:

> *"South Africans that have been registered will be issued with an NHI card linked to the Department of Home Affairs' smart identification system. The information on the NHI card will be encrypted and will be utilized to access services at different levels of the health system" (NHI2015: 25).*

The card serves as a facility for gaining access to healthcare services in the country. Also, through this process there will be an interaction between the organizational processes, the actions of the citizen's, technologies that will be used to capture and store information and the rules. Awareness about these processes entails training of the people.

During the registration process, factors such as the population, type of diseases, topography and the facilities of the area are said to be taken into consideration because they assist the government in the allocation of service providers. Also, implementers require training about the factors, to ensure smooth implementation. The NHI2015 document describes the process as follows:

> "Teams are allocated based on various criteria such as the size of the population, disease profile, geography, the living environment, and social and health deprivation" (NHI2015: 32).

This means that the allocation of service providers differs from area to another. According to a government employee:

> *"The idea is to spread resource in accordance with population of the locations, towards ensuring equal access to healthcare services" (RP02, RE02, 9: 416-419).*

In managing the implementation of the NHI, facilities were required for enablement and support. This includes IT solutions such as databases, servers, and network protocols. Each of these facilities needs requirements for assessing the geographical locations and existing infrastructure. This was highly recommended because of the infrastructure differentiation between the geographical areas. For example, not all areas of the country have strong or equal internet connectivity. This seems to be a requirement that dominated the implementation of the NHI.

Also, the use of the NHI card is enabled and support by IT solutions. Using the NHI card, the citizens can consult with primary healthcare providers in any geographical location, whenever they need healthcare services. The enablement of the IT solutions makes this

possible. One government employee explains how NHI beneficiaries access healthcare services:

> *"They go to a primary healthcare facility, or a GP and they register either near to their place of work or to their residence. And that becomes a primary point at which they enter the health system" (RP02, RE02, 8: 334-336).*

Access to other level of care will not be allowed without the referral from the primary healthcare provider. According to the NHI2018 document:

> *"A user will not be allowed to seek the services of specialists and hospitals without first obtaining a referral from his or her health care provider, except in cases of emergency" (NHI2018: 25).*

Purchasing of the healthcare services provided by the service providers will be done by the NHI fund on behalf of the beneficiaries. Hence, the government strategy to link the three databases namely (i) the NHI fund database; (ii) beneficiary database; and (iii) the database of the contracted healthcare providers to ensure the ease of tracking of the healthcare services provided and allocation of funds. As described in one document:

> *"The NHI Fund will be a single national pool of funds that will be used to purchase personal health services The NHI Fund will be appropriately financed in order to be able to actively purchase personal health services for all who are entitled to benefit" (NHI2017: 49).*

The entire process is synchronised and requires integration, enabled and supported by IT solutions. The implementation of NHI as a dominant, its success requires all the existing resources in the healthcare sector must be made available. These resources include healthcare facilities, service providers and healthcare personnel from the public and the private healthcare sector. Private healthcare sector having improved resources with the implementation of the NHI these resources will be used to supplement the demand faced in the public healthcare sector, through integration mechanism.

The DoH being the oversee of the health matters in the country automatically has power to command what needs to be done to better the health of the citizens. This power was

exercised in different ways. In some cases, the power was used to monitor the efficiency of service delivery in the healthcare facilities especially in public facilities. For example, monitoring if there were enough medical practitioners to support the large number of patients that visit a healthcare facility daily. As stated in the National Department of Health Annual Report 2017/18:

> *"The current Cuban programme is expected to increase the number of qualified medical doctors in order to meet the country's growing health demands, especially in under-served rural areas where the Department has always struggled to attract and retain medical practitioners" (NHIREP2018: 3).*

In addition, some members of the DoH require technology devices to monitor and evaluate the services that healthcare practitioners provide to the patients. The implementation of the NHI system affects each citizen of the country. Some participants feel that the government of South Africa did not involve citizens by communicating seeking their opinions first before the implementation. The citizens believe that the government becomes too quick, without proper readiness assessment, to implement the NHI system. The government's action was based on the success of other countries, which have situations that are different from South Africa. For example, South African has higher rate of unemployment and sharper racial and cultural divide than those countries that have successfully implemented the universal healthcare.

Duality of structure: legitimation, norm and sanction

The South African constitution states that all citizens of the country have the right to access healthcare services. Government legislation such as the National Health Act governs how the citizens of the country access and make use of healthcare services that are available to them. The aim of the government legislation is to provide a structure on how the (i) national; (ii) provincial; and (iii) district healthcare should deliver healthcare services to all the South Africans. The focus is more on the quality, effectiveness and the efficiency of these healthcare services that are provided.

For these different domains of government deliver better healthcare services, they develop their own institution that they need to follow. The provincial institution is then designed to be in line with that of the national government. This means the national government or the national DoH is responsible for what is happening in the provisional and district levels.

> *"National government is in charge of the decision not the provinces" (RP01, RE01, 5: 206-207).*

In addition, the regional and district offices ensure that the processes for the NHI system are adhered to. Also, the distribution of work to the district offices affords the management of these offices with responsibility and accountability. As explained by a government employee:

> *"There are no ways that there is even contemplate that everything will be administered from one office. The bill provides for regional offices. There's provision made for district health management offices, contracting units for primary healthcare and exactly how we use these various decentralized entities to make sure that they are able to, first, to organize the health services in the way that we integrate as a private and a public capacity in a geographical area for all the people, not for those who can or can't pay but everybody in that area" (RP02, RE02, 12: 553-559).*

Management in the healthcare facilities is very crucial in the implementation of the NHI system. Failure to appoint management with expertise in the healthcare facilities can result into poor service delivery. Hence, governance is needed to monitor and manage the training and development. One participant explains that:

> *"a report from the national health trust that was done a few years ago there was something like 30% of state hospitals management that didn't have matric. So that's the problem you need to get in. A system like a hospital is a very complex system to manage. This necessitates training and developments of the actors that are involved in the healthcare processes and activities, to improve the quality-of-service delivery" (BT_01, 2: 66-73).*

The lack of governance has resulted in the state facilities difficulties having long queues and lack of doctors. The long queues are due to the shortage of the healthcare personnel. According to one participant the state nurses are working overtime in the private hospitals and there is nothing done about that.

> *"The other reason is that the lack of governance makes nurses and doctors to have systematic moonlighting. As a result, many public sectors staff are working in the private sector. That's not being managed by the hospitals, or by the provincial government or by the national government. They haven't created the single law to stops this" (RP01, RE01, 3: 124-127).*

Legitimately, the NHI bill created standards and processes that need to be followed in the healthcare sector. Thus, for any service provider to be able to provide services through NHI system they need to meet certain standards. These standards are developed and revised to ensure that safety, hygiene and respect for patients are met. In a government white paper of 2015, it states that:

> *"Health facilities that meet nationally approved standards will be certified by the OHSC to render health services and will be eligible for accreditation and contracting by the NHI Fund" (NHI2015: 40).*

In terms of governance and legality, there are bodies in the healthcare sector such as the Office of Health Standards Compliance (OHSC), which was formerly known as the Office of Standards Compliance (OSC) that are put in place to ensure that the healthcare facilities meet the approved healthcare standards. The healthcare facilities are being inspected, when they meet the required standard, they are given a certification of accreditation which gives them right to offer services under the NHI system. These standards must be always adhered to. As stated in one of the documents:

> *"The Office of Health Standards Compliance (OHSC) has been established to assure quality of health services and it will be key in the certification of health establishments throughout the country. The Inspectorate will ensure compliance with norms and standards" (NHI2015: 2).*

There are different committees that have been put in place to ensure the successful implementation of the NHI. Since the selected members of these committees will represent the citizens of the country, the communication regarding the selection was published in the

Government gazette so that the citizens can make comments. The 2017/18 annual report states that:

> *"The proposed Terms of References (ToRs), Functions and Composition of Implementing Bodies were published in the Government gazette for public comments and inputs. Comments on the ToRs were received, evaluated and integrated. Calls for nominations were also published, and nominations were received for the appointment of experts for these committees" (NHIREP2018: 5).*

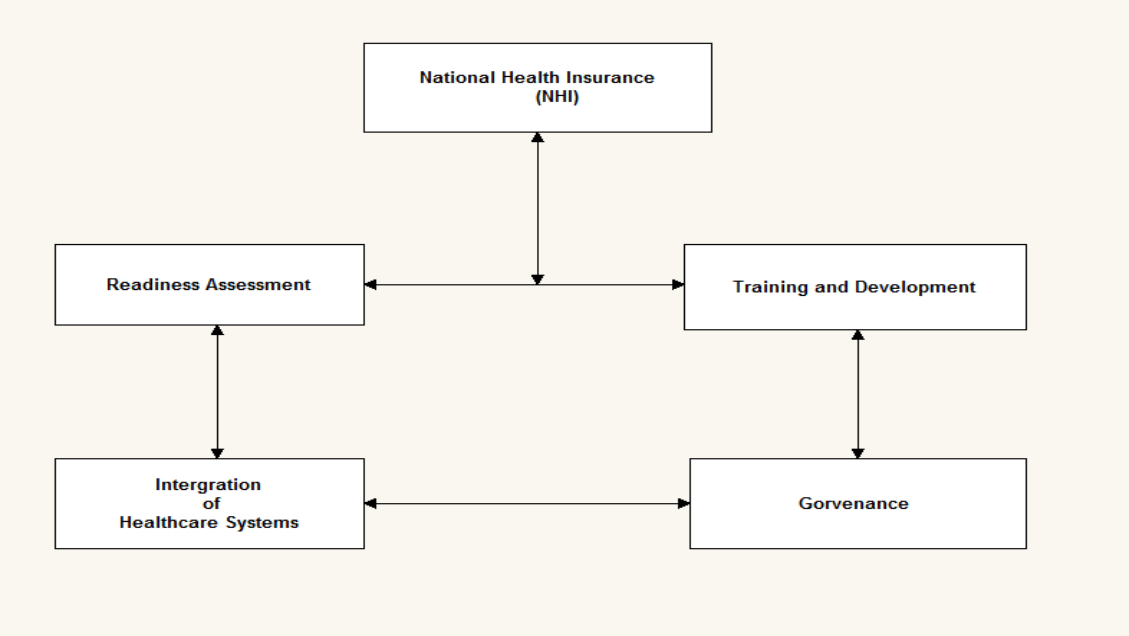
These committees have been formulated to ensure that the healthcare facilities and the service delivered to the citizens are of good quality. However, some individuals have challenged the work of these committees. The argument is whether all aspects relating to the level of standard that is accepted has been taken into consideration. One participant argues that:

> *"What is accepted good standard or level of care if you have this disease? What is the standard the accepted level of care standard with regards to that? All those must be taken into consideration, there's a very big picture and I don't believe that now that people have got the correct perception and they are putting things together and they are missing a lot of vital information" (BT_03, 23: 1108-1112).*

5.5 Findings and discussion

Based on the above analysis conducted using the duality of structure from the structuration theory, four factors that can primarily influence the implementation of the NHI system were found. They are (1) readiness assessment;(2) training and development;(3) integration of healthcare systems; and (4) governance. The remainder of this section will present in detail the discussion of the findings as shown in figure 5.2 below.

Figure 5. 2 Factors influencing implementation of the NHI



Readiness assessment

Readiness assessment according to Farzaneh et al. (2019) is the set of procedures that are used to evaluate whether the environment is ready to implement a new system or technology. When an assessment is conducted in an environment, it allows the organization to gain a better and realistic insights about its weaknesses and strengths (Hedayati et al., 2014). In the implementation of the NHI system in South Africa, these procedures cover entities such as existing health infrastructure, IT capacity, and available skillsets. Understanding of the readiness levels of the various entities assist the implementers and stakeholders of the NHI to have a better view that fortify plan towards technological change, contextually.

The implementation of the NHI system was the plan of the South African government to provide affordable equal quality healthcare to all the citizens of the country, combine both private and public healthcare systems and remove out of pocket payments. Without readiness assessment it could be difficult or impossible for the government to achieve its goal due to the many risks that may arise when they execute the plan. For example, the integration of the public and the private system could yield risk such as challenges with current technology infrastructure, and organizational culture. Facilities in the public healthcare don't have the same technology infrastructure and culture as those in the private healthcare. The NHI is the system that is implemented for the service delivery. The readiness assessment should not only be limited to health facilities but extended to human

state of readiness to accept the change. Thus, the community can be assessed to know their level of readiness to accept the healthcare services.

Training and development

Training as well as the development of the health practitioners and IT specialists were critical in the implementation of the NHI. This is primarily because the practitioners need to have a good understanding of how the integration of the previous systems will work. Also, the IT specialists must be conversant with the requirements and expectation, to enable and support the new system. According to Ganesh and Indradevi (2015), training is defined as the process that is aimed at improving level of understanding by acquiring new skills that assist to increase the performance and the productivity of individuals in an organization.

Healthcare and IT personnel responsible for both private and public healthcare systems needed to improve on their skill to support the new system. Skill of the healthcare personnel plays a big role in the implementation of the NHI system. Without the needed skill it is difficult or impossible for the healthcare personnel to appropriately interpret the process or provide accurate and timely diagnosis to patients. For example, healthcare personnel in a primary healthcare while interviewing and examining a patient might miss some key points that would require referral of a patient to a secondary healthcare**.** This would mean that the patient did not receive the quality of service which can lead to incorrect diagnosis or death. Also, due to the lack of some IT solutions in the public healthcare, proper training of personnel to make use of the different systems would be required. The training and development are intended to address the skills gap and ensure smooth implementation of the NHI.

Integration of healthcare systems

The aim of the NHI system was to combine the two main, private and public healthcare systems into one entity. This was to improve access and provide affordable healthcare services to everyone in the country. When two systems are integrated, they combine different management standards to work as a single system (Barbosa et al., 2018). This means that the components of the two systems must be compatible with each other, to increase information usefulness and improve quality of service. For healthcare facilities to provide efficient service delivery they need components such as financing, information

systems, infrastructure, human resource development, planning and managerial capacity (Windisch et al., 2011).

The private and public healthcare systems have been different in the way they work. The provision in terms of infrastructure in the private system is not the same as that of the public system. Generally, the private system is well equipped with technological resources compared to the public system which means the processes and standards of these systems differ. This could hinder the process of sharing information such as patient's records amongst the two healthcare systems which can improve service delivery to the people of the country. Sharing of patient information will allow the healthcare personnel to be flexible and be able to provide quick treatment as they will have easy access to historical patient information.

Governance

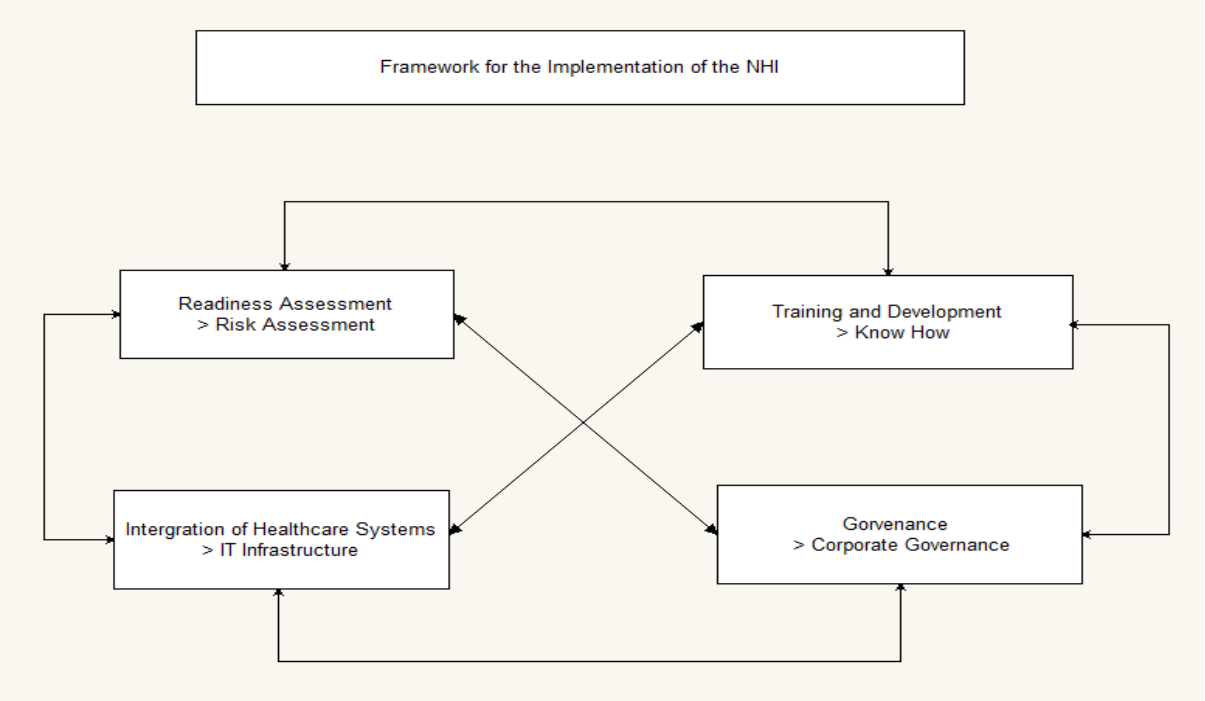
Governance is about the ability to take leadership and exercise powers and authority, to control and manage processes and activities of an entity (Gisselquist, 2012). In addition, Bannister and Connolly (2012) refer to governance as the structures and processes that are designed to ensure that accountability, transparency, integrity, honesty, impartiality, and efficiency is achieved. Thus, governance is critically important in the implementation of the NHI in South Africa. The stakeholders in the healthcare sector took a decision to implement NHI system to improve health service delivery in the country. Implementation of the NHI system required the management and stakeholders in the healthcare to set new policies, rules, controls and system to ensure that the goal and the objective are achieved. These rules and policies are applied first in the national office, from there to the provincial offices. Lack of alignment between these offices can have a negative impact in the healthcare service delivery. This means that the government officials from these government offices must familiarise themselves of the rules and policies that are required.

As stated by Gisselquist (2012:1) "in poorly governed countries, it is argued, corrupt bureaucrats and politicians baldly hinder development efforts by stealing aid contributions or misdirecting them into unproductive activities". Therefore, if the leadership fails to enforce governance in the country, implementation of the NHI will be inefficient. This will mean that implementation of the NHI for healthcare service delivery has not been achieved.

5.6 Readiness assessment framework for the NHI

The factors that influence the implementation of the NHI as depicted in Figure 5.2 and discussed in the above section, were interpreted. The interpretation was done through subjective reasoning. From the interpretation, another four factors were found to fundamental, based on which a readiness assessment framework for the implementation of the NHI is developed, as shown in Figure 5.3. The factors are discussed below, the discussion should be read with the figure to gain better understanding of the framework.

Figure 5.3 Framework for the Implementation of the NHI



Risk assessment

Risk assessment is critical to the healthcare, particularly for the sensitive of the environment. The criticality can be attributed to the fact that risk assessment helps to gain deeper insight to any potential shortcomings and its robustness (Hedayati et al., 2014) associated with implementing a new system. Risk assessment is defined as the process where risks are discovered, estimated and prioritized against organizational assets and its operation (Nurse et al., 2017). Furthermore, Aven (2011:509) state that risk assessment is "specifically valuable in detecting deficiencies in complex technical systems and in improving the safety performance of the technical system".

From the study, assessment of risks is crucial from two main perspectives: (1) detect factors in the precious systems that could possibly derail implementation and post-implementation of the NHI; and (2) understand the factors and attributes that can pose challenges to compatibility of IT solutions, and synchronisation of patients' data. In addition, readiness assessment conducted inappropriately can also have negative impacts. As a result, the government is highly likely not able to achieve its goal of providing quality affordable healthcare services to all the citizens of the country.

Stock of knowledge

The successful implementation of the NHI system strongly relies on human (implementers) experiences and skills, a stock of knowledge that the individuals have gathered over a period. These stakeholders occupy different roles within the health facilities. Some of the knowledge is gained through working on processes, rules and standardization of health activities. These types of knowledge are needed achieving the implementation and goals of the NHI. According to Sadeghi and Rad (2018), accessibility of information and knowledge is regarded as a key to increase change in any environment.

As discussed in the findings, there is a gap between the processes followed when attending a patient between the different healthcare facilities in South Africa. For example, in some cases the healthcare personnel in the public facilities make use of the paper-base system to record patient information while in the private facilities employ electronic or automated system. Thus, conducting training to develop many of the stakeholders requires knowledge of those who have paper-based and electronic-based systems' experiences. The combined stock of knowledge of individuals and groups is certain, adds to smooth implementation and practice of the NHI, for improved efficiency of health service delivery.

Information Technology Infrastructure

Information Technology infrastructure refers to IT solutions, such as network, databases, computer hardware, and software (Lee, 2018). The IT solutions are applied to provide services in an environment or organisation. Increasingly, healthcare facilities are relying on the use of IT solutions to improve the quality of the services that they provide to patients (Mgudlwa & Iyamu, 2021). Shibambu and Ditsa (2017) indicate that when the IT infrastructure is implemented organizations can share IT services which assist to improve service delivery. Therefore, the implementation of the effective IT infrastructure in the

healthcare sector assists in the fulfilment of NHI implementation. Effective IT infrastructure will ensure that healthcare personnel in different facilities are able to communicate and share information at real-time and seamlessly, which can improve the quality-of-service delivery.

Corporate Governance

Corporate governance refers to the strong leadership effort together with the strategy that has been put in place, to regulate how an environment is managed and controlled (Posthumus, 2010). Corporate governance involves transparency, accountability, integrity, honesty, impartiality, efficiency (Bannister & Connolly, 2012). As revealed from the findings on this study, one of the challenges encountered in the implementation of the NHI is governance. In the area of health-related matters, the well-being of individuals highly relies on the standard of health facilities in the country.

The standard is enacted by the governance that is formulated and promulgated, which remains the responsibility of leadership. If the stakeholders involved in the implementation of the NHI do not comply with the guidelines as outlined in the governance process and procedure, the quality-of-service delivery will remain challenging. For example, in the implementation of the NHI the South African citizens must be registered to access the healthcare services. This indicates the importance in following the processes that are put in place.

5.7 Conclusion

As discussed in the beginning of this chapter, the duality of structure was employed as the lens to analyse the data. The findings were developed and discussed. From the findings, the factors that influence the implementation of the NHI were identified and presented in figure 5.2 above. The findings were interpreted, and the framework was developed as shown in figure 5.3 above. The next chapter which is chapter 6 discusses the conclusion and recommendations of this study.

CHAPTER 6
CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This is the last chapter of this thesis. It presents the conclusion and recommendations based on the aim of the study. The aim of the study was to develop a framework that can be used to assess the readiness of the implementation of the National Health Insurance (NHI) system, from an ICT perspective, in South Africa. Based on the aim, the study was carried out as documented in the chapters, from 1 to 5.

This chapter is divided into seven main sections. The first section covers the summary of the study. This is followed by the evaluation of the study, it covers how the research questions were answered and ultimately, achieving the objectives of the study. The contributions of the study from both theoretical and practical perspectives are discussed in the third section. The fourth section covers the limitations of the study while section five presents the recommendations. In the sixth section, areas of further studies are highlighted. Finally, the chapter is concluded.

6.2 Summary of the Study

Although brief of the chapters is presented in chapter 1, this is not a repetition. This is a revisit, which expands the summarisation of the chapters that is presented in chapter 1.

Chapter1

In chapter 1, the first and second sections provide the introduction and background, respectively, to the entire study. The first section is where the challenges in the implementation of the NHI system are identified, from an IT perspective. In addition, the section also justifies the need to carry out the study. Section three discusses the research aim, objectives and questions. The three objectives of the study are: (i) to examine and understand the factors that could influence the implementation of the NHI system in the rural areas of South Africa; (ii) to examine how the NHI system can be implemented in the rural areas of the country; and (iii) to understand how the current state of the implementation of the NHI system were formulated.

In section four, introductory literature review is presented. The focus areas of the literature review are Information and Communication Technology (ICT); Healthcare; National Health

Insurance (NHI); and Readiness assessment. A review is also conducted on structuration theory, which is the theory that underpins the study. In section five, the research methodology is discussed. The methodology covers research approach, methods, design, data collection technique, and how structuration was applied as a lens to analyse the data. Section six and seven discusses the significance of the study and ethical consideration respectively. Lastly, section eight presents a table of the structure of the thesis.

Chapter2

This chapter provides a detailed review of literature. It is expansion of the review that is presented in chapter 1. Thus, the focuses of the literature review remained unchanged. As mentioned in chapter 1, the focus areas are: ICT; Healthcare service delivery; Implementation of Health Insurance; Readiness assessment; and Structuration Theory. The first section focuses on how the organisations make use of ICT when implementing a new system especially in the healthcare sector. The section further discusses the use of ICT in the context of healthcare and developing countries and the challenges that persist.

Section two explains healthcare as a service delivery. How important it is to the communities of the South African populace, particularly as a developing country, in accessing healthcare services. Section three explores the health insurance, what it is, how it can be implemented and its advantages in the healthcare sector. Section four focuses on the importance of conducting readiness assessment, its advantages and disadvantages in the context of healthcare. Section five further discusses the use of structuration theory as a lens to underpin the study. In this section the duality of structure is examined in detail in the context of this study. The last section, section six discusses how structuration theory has been applied in information systems, which is the relationship that exists between them.

Chapter3

Like chapter 2, the methodology that was applied in the study is first introduced in chapter1. Chapter3 presents the research methodology in detail. It particularly covers the: (i) philosophical assumptions; (ii) research approach; (iii) research methods; (iv) research designs; (v) data collection techniques; (vi) data analysis approach; and (vii) ethical consideration. The first section, which is about the philosophical assumptions, discusses ontology and epistemology in the context of the study. In the second section, the common research approach which are deductive and inductive were discussed. Research methods are in the third section, it explains qualitative and quantitative methods relative to the study.

The following section discussed the research design, in which survey, ethnography, and case study are covered.

In section five, the data collection techniques: semi-structured interview technique, focus group, and documentation analysis, which were used to collect data are explained. The sixth section detailed the theory that was used to underpin the study and how the concept of the theory was followed. In the seventh section, ethical consideration as applied to guide the study is explained. This was the process followed to ensure the study is conducted in an ethical manner. Lastly, the chapter is concluded.

Chapter4

This chapter presents an overview about the case, NHI and the stakeholders that were selected in this study. Furthermore, in section one and two, the breakdown of the organisational structure of the department of health (DoH) and medical aids were sketchily presented. This is carefully done, to avoid disclosure of sensitive information, to comply with the code of ethics. The participants who took part in the study were selected from the stakeholders using a set of criteria. The technique used for each stakeholder was discussed including the process followed.

Chapter5

This chapter presents the data analysis in which the duality of structure from the structuration theory was used as a lens. The first section covers data analysis overview. In this section the three techniques that were used for data collection are discussed. In addition, the formatting used in each technique to ease referencing in the analysis was provided. The second section discusses the tenets of the duality of structure in the context of the study. Furthermore, the analysis is presented with references from the data that was collected. The third section presents the discussion of findings.

6.3 Evaluation of the Study

At the end, it is essential to evaluate the study. When evaluating the study, there are a few factors that need to be taken into consideration. These factors include revisiting the aim and objectives of the study, as well as the contributions that the study might have (Mårtensson et al., 2016). Dane (2011) suggests evaluation primarily from the research methodology and findings standpoints. Thus, Dane (2011) discusses six important questions which can be used for the evaluation of a study as follows: who, what, where, when how and why. The factors as proposed by Dane (2011) have been applied in both

Master's and Doctoral IS and IT studies such as Andries (2016); Joseph (2013); Okon (2013); and Mashilo (2010).

Who - refers to the participants and how well the participants fit the criteria that were used to select them in achieving the aim and objectives of the study? **What**- is concerned with gaining an understanding of the phenomenon that is being studied. **Where**– this is to understand the geographical location where the phenomenon is being studied. **When**- refers to the period of carrying out the study including the data collection and analysis. **How**–is to gain insight of the vehicle (methods, approaches, and techniques) that was employed in conducting the study. Finally, **Why**- refers to the aim of the study as well as the rationale to carry out the study. The table below presents the discussion of these questions.

Table 6.1 Evaluate research (Dane, 2011).

Questions	Evaluation
Who	A set of criteria as presented in section 361 of chapter 3 was used to select the stakeholders that took part in the study. The criteria help to confirm that the selected participants were directly and indirectly involved in the implementation of the NHI in South Africa. The semi-structured interviews and document review were used as the data collection techniques. The use of criteria helps to improve the richness of data that was collected. This is primarily because the most relevant people were selected as guided by the set of criteria. There were different criteria for the different groups of participants: For the medical aid organisation: (i) the participant must have a good understanding of the concept of NHI. (ii) the participant must be involved with the concept in one way or the other. (iii) the participant must volunteer to participate in the study. For the community: (i) the participant must have resided in the area for the past two years.

Questions	Evaluation
	(ii)the participant must have used the healthcare facilities in the area. In total, six participants were interviewed. To uphold ethics, the names of the participants were substituted with pseudo names. For example, code names such as KT_01 were used for the participants from the community and BT_01 for the medical aid organisation. The code name such as NHI2018 was also used for the policy documents collected from the government website.
What	The implementation of the South African NHI was investigated to gain a better understanding of the factors that influence readiness assessments. The factors that influence the implementation of the NHI in South Africa were revealed to be (1) integration of healthcare systems;(2) training and development;(3) readiness assessments; and (4) governance and controls. The investigation has helped to gain a better understanding of how the two systems (private and public) work. Also, through insight about the influencing factors, how the current state of these systems can be prevented from hindering the implementation of the NHI is now known.
5 Where	6 An organisation in Cape Town and the South African community were identified. That is where the research was conducted. Interviews were conducted in places such as offices of the organisation, workplace canteen and restaurant in the mall. The participants were given a choice to select the place where they wanted to be interviewed. This was done so that the participants felt comfortable during the interview. The selection of the canteen and the office was due to the fact the interviews were conducted during office hours.
7 When	8 The collection of data was for a period from July 2018 to September 2019. This includes the time it took for the organisation to grant permission, for the study. In total, the research has been carried out over the period of four (4) years. There have been many factors that has influenced this lengthy period. One of the factors has been discussed above which was the

Questions	Evaluation
	waiting time while seeking permission from the organisation. Other factors were personal trials which affected the dedication and the focus on the study of the researcher.
How	In the research methodology section, the approach, method, design and the technique were carefully selected and applied, based on the objectives of the study. Ontologically, the South African government has implemented the NHI system in some parts of the country. Epistemologically, the study seeks to understand the factors that influence the implementation of the NHI. The inductive approach was employed in this study, the reason is that it helps the researcher to gain in-depth knowledge of the phenomenon being studied, towards building a theory, which is the framework (Figure 5.3) that is presented in chapter 5. Qualitative methods were selected and employed mainly because it was considered most suitable in achieving the aim and objectives of the study, as opinions, views and experiences were sought from individuals and groups, toward developing the framework. Semi-structured interviews and document review were the two techniques used for data collection. Recorded interviews were transcribed and cleaned. Documents were downloaded and each document was assigned a codename, as explained in chapters 3 and 4. The duality of structure from Giddens structuration theory was used as a lens to guide the analysis. The framework was then developed from the findings of the study as presented in chapter 5.
Why	Conducting a study in the healthcare sector was based on the interest of the researcher and the contribution it can make to society and the body of knowledge. This is since healthcare is one of the most important sectors as it focuses on areas such as social and economic domains. The study was significant as it will help the government to consider certain factors before fully implementing the new system, NHI.

Questions	Evaluation
	The study was conducted to investigate and understand how the NHI system can be implemented in the communities of South Africa and to contribute to the body of knowledge. To achieve the objectives of the study the framework was developed. This framework assisted in understanding the factors that influence the implementation of the NHI system in South African communities.

How research questions were answered

The aim of the study was to develop a framework that can be used to assess the readiness of the implementation of the National Health Insurance (NHI) system in South Africa. The intention is that the framework guides the South African government in identifying the influencing factors, to gain a better understanding of how things manifest in the various steps that are involved in the implementation of the NHI. Based on the aim of this study, the three research questions were formulated: (i) what is the current state of the implementation of the NHI system in the communities of the country? (ii) what are the factors that can enable or constrain the readiness of the NHI system? and (iii) how can the NHI system be implemented in the communities of the country? The following are the summaries of the answers to the questions.

What is the current state of the implementation of the NHI system in the communities of the country?

Using structuration theory, the empirical evidence was presented to answer the question. The duality of structure presented the current state of the implementation of the NHI system in the communities of the country. From the signification structure, the importance of the implementation of the NHI system as the system that promotes access to quality healthcare services for all the citizens of the country. As the South African government communicate regarding this new system the citizens used their stock of knowledge to consider whether what has been communicated was important or not.

The minister of health and the cabinet are responsible for the implementation of the NHI in South Africa. This gives them power to use existing resources to provide healthcare services to the community. Through their power the minister and the cabinet have authority to make decisions relating to the healthcare legislative framework. Hence, the

implementation of NHI which was developed within the rules and regulations of the country's legislation. During the implementation, processes were created and approved.

What are the factors that can enable or constrain the readiness of the NHI system?

As revealed from the analysis and presented in chapter 5, there are four factors that can enable the readiness of the NHI system: readiness assessment, training and development, integration of healthcare systems and governance and controls. The same factors have the capability to constrain the readiness of the phenomenon. Iyamu (2017) argues that factors enable and at the same time constrain processes and activities in IT projects. Also, factors of influence can happen consciously or unconsciously (Giddens, 1984). Readiness assessment means that the technical and non-technical structure of the organisation must be assessed first before the implementation of the NHI system. Readiness assessment allows the organisation to understand its current state and at the same time be able to identify any risks that can have an impact and come up with ways to reduce those risks to achieve its objective.

The second factor was training and development, which highlighted the need for the organisation to continuously train and develop the stakeholders in the healthcare sector on the processes and the procedures that exist. This factor was significant in a sense that it ensures that all the different stakeholders adhere to the tasks and processes that are in place for the implementation of the NHI. Thirdly, the integration of healthcare systems ensures that the systems from different healthcare facilities are compatible to each other. The rationale for this is that the systems will be flexible and accommodate new and old systems when sharing data in an organisation. This also ensures the efficiency and the effectiveness of service delivery that is needed in the healthcare sector. Lastly, the factor which is governance and controls plays a big role in the implementation of the NHI. The implication of mismanagement of funds can affect the objective of the organisation and can result in the failure of the implementation of the NHI system. With strict policies and accountability this can be minimised.

How can the NHI system be implemented in the communities of the country?

The NHI system can be successfully implemented in the communities of the country using the framework to understand the processes and activities better. The framework shows that over and above the influencing factors, it reveals the relationship that exists between the factors. Critically, this is intended to guide the interaction between the people involved in the implementation of the NHI. Through the practical application of the framework,

government can become more knowledgeable on what to do before implementing a new system in South Africa. In addition, the framework can assist the South African Department of Health to improve the healthcare services delivered to the citizens of the country.

6.4 Contributions of the Study

The study contributes from two main perspectives, theoretical and practical.

Theoretical Contribution

Using the duality of structure as a lens is one of the core concepts of the structuration theory. The application of the theory in this study assisted to identify and understand the structures and the agencies in the healthcare sector and how they interact with each other. Moreover, the study revealed the factors which hinder the implementation of the NHI system in the healthcare sector in South Africa. These factors include readiness assessment, training and development, integration of healthcare systems and governance and controls. These factors were identified in the analysis in this study. In addition, this study contributes theoretically to the body of knowledge through the understanding of the structures and agencies and the interaction that exist between them and the factors which influence the implementation of the NHI. This contribution will help the government agents and agencies, health professionals, and IT specialists, including other stakeholders to make informed decisions on how to implement the NHI system within their organisations.

Practical Contribution

The practical contribution of this study is through the framework which was developed based on the analysis as presented in chapter 5. The framework was developed as a guide for the government of South Africa so that the healthcare services delivered to South Africans can be improved.

6.5 Limitations of the Study

One of the limitations is that the study focuses on the implementation of the NHI system within the healthcare sector in the context of the development country. Thus, generalising the findings that are drawn from the analysis of this study would be limited to sectors other than the healthcare sector. The limitation of the study is also due to the time constraint experienced by the researcher.

6.6 Recommendations

Based on the findings derived from the analysis in chapter 5 of this study, the recommendations were drawn by the researcher. The readiness assessment, training and development, integration of healthcare systems and governance and controls are the factors that influence and affect the implementation of the NHI system in the communities of South Africa. Based on this statement, it is recommended that the government agents and agencies, health professionals, and IT specialists have the knowledge and understanding of the factors when implementing the NHI system.

The government agents and agencies, health professionals, and IT specialists need to understand the processes, procedures and systems to be followed. This will require different departments within the South African government to work together to achieve the objective. Lack of teamwork can impact the organisation negatively. It is also recommended that the systems from both private and public healthcare facilities are compatible and flexible, to successfully implement the NHI system. The stakeholders should ensure that the healthcare facilities meet the minimum requirements defined for the NHI. Furthermore, the government agents and agencies, health professionals, and IT specialists need to comply with the rules and regulations that have been set for the success of the implementation of the NHI.

6.7 Further Research

The NHI system in South Africa has been implemented in phases. Based on this, further research can be conducted as there might be new factors that surface as the implementation continues. Also, other theories such as Actor Network Theory (ANT) can be used to analyse data. Further research can be done to implement the framework in an organisation.

6.8 Conclusion

This chapter presented the summary of all the previous chapters. Furthermore, the evaluating of the study was conducted. This was done to show the quality and the usefulness of the study. Also, a section on how the research questions were answered based on the analysis was presented. The contributions and limitations of this study as well as further research were presented.

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APPENDIX A: INTERVIEW GUIDELINES

Community members

i. Can you please share your understanding of the NHI with me?
ii. What do you think of it (NHI)?
iii. In your view, do you think that it would work?
    a. Why do you think so? Please give me some examples.
iv. What are some of the challenges that NHI would have in your area?
    a. Why do you think so?
    b. How do you think those challenges can be addressed?
v. What do your friends and family think of the NHI?
vi. Why do you think that they think so?
vii. How do those challenges affect you?
viii. In your view, what can be done to eliminate those challenges?
ix. Is there anything that I might have forgotten that you would like to add?

Organisation

i. Can you please share your understanding of the NHI with me?
ii. What do you think of it (NHI)?
iii. In your view, do you think that it would work?
    a. Why do you think so? Please give me some examples.
iv. What are some of the challenges that NHI would have in your area?
    a. Why do you think so?
    b. How do you think those challenges can be addressed?
v. What does your organisation think of the NHI?
    a. Why do you think that they think so?
vi. Does your organisation think that the NHI would work?
    a. Why does your organization think so?
vii. What do your colleagues think of the NHI?
    a. Why do you think that they think so?
viii. How do those challenges affect you?
ix. In your view, what can be done to eliminate those challenges?
x. Do you your organisation have system to support NHI?
    a. What challenges do you think such system will encounter?
    b. Why do you think so?

c. How would such challenges be addressed?

xi. How do you think the NHI will affect your current services to your clients?

a. Why do you think so?

xii. How do you think the NHI will affect your current systems?

a. Why do you think so?

xiii. Is there anything that I might have forgotten that you would like to add?

APPENDIX B: INDIVIDUAL CONSENT

FACULTY OF INFORMATICS AND DESIGN

Individual Consent for Research Participation

Title of the study: An Information Technology Readiness Assessment Framework for the South African National Health Insurance

Name of researcher: Nomawethu Tungela

Contact details: email: tungela.kwezi@gmail.com phone: 067 805 5541

Name of supervisor: Prof Tiko Iyamu

Contact details: email: IyamuT@cput.ac.za phone: 021 460 3025

Purpose of the Study: The aim of this research is to develop a framework that can be used to assess the readiness of the implementation of the National Health Insurance (NHI) system, from an ICT perspective, in South Africa. The objectives are as follows: (i) to examine and understand the factors that could influence the implementation of the NHI system in the communities of South Africa; (ii) to examine how the NHI system can be implemented in the communities of country; (iii) to understand the current state of the implementation of the NHI system.

Participation: My participants will consist essentially of interviews

Confidentiality: I have received assurance from the researcher that the information I will share will remain strictly confidential unless noted below. I understand that the contents will be used only for purpose of this research study which is to develop a framework to assess the readiness of the implementation of the National Health Insurance in South Africa and that my confidentiality will be protected by assigning codes to all participants.

Anonymity will be protected in the following manner (unless noted below). Participants real names will not be used instead codes will be used.

Conservation of data: The data collected will be kept in a secure manner. Only the researcher, supervisor and the institution will have access to data collected.

Voluntary Participation: I am under no obligation to participate and if I choose to participate, I can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. If I choose to withdraw, all data gathered until the time of withdrawal will destroyed

Additional consent: I make the following stipulations (please tick as appropriate):

	In thesis	**In research publications**	**Both**	**Neither**
My image may be used:				
My name may be used:				
My exact words may be used:				

Any other (stipulate):				

Acceptance: I, (print name)_____

agree to participate in the above research study conducted by Nomawethu Tungela of the Faculty of Informatics and Design, Department of Information Technology at the Cape Peninsula University of Technology, which research is under the supervision of Prof Tiko Iyamu.

If I have any questions about the study, I may contact the researcher or the supervisor. If I have any questions regarding the ethical conduct of this study, I may contact the secretary of the Faculty Research Ethics Committee at 021 469 1012, or email naidoove@cput.ac.za.

Participant's signature: _____ Date: _____

Researcher's signature: _____ Date: _____

APPENDEX C: ETHICAL CLEARANCE

Cape Peninsula
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80 Roeland Street, Vredehoek, Cape Town 8001

Office of the Research Ethics Committee	Faculty of Informatics and Design

28 November 2018

The Faculty Research Ethics Committee hereby grants ethics clearance to Ms Nomawethu Tungela, student number 217300804, for research activities related to the MTech in Information Technology at the Faculty of Informatics and Design.

Title of thesis:	An information technology readiness assessment model for the South African National Health Insurance

Comments

Research activities are restricted to those details in the research proposal.

Signed: Faculty Research Ethics Committee	Date
Mcintu	28/11/2018

RESEARCH ETHICS COMMITTEE
INFORMATICS AND DESIGN
ETHICS APPROVAL GRANTED
28 NOV 2018
Cape Peninsula
University of Technology

APPENDEX D: ORGANISATION CONSENT LETTER

genesis
MEDICAL SCHEME

29 August 2019

To Whom It May Concern

RE: NOMAWETHY TUNGELA

I have been approached by Ms Nomawethy Tungela in connection with her research proposal in Information Readiness Framework for the SA National Health Insurance in fulfilment of the requirements for the degree Master of Technology at CPUT.

This serves to confirm that I have agreed to a brief interview on the subject matter with Ms Nomawethy Tungela to answer thirteen (13) questions as part of her data collection for the purpose of her studies.

Yours sincerely

ME Jensen
Marketing Manager