A CRITICAL ANALYSIS OF THE SOUTH AFRICAN INTEGRATED INFORMATION AND COMMUNICATION TECHNOLOGY POLICY

by

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DECLARATION OF OWN WORK

I, Siyabonga Minenhle Mfuphi, hereby declare that **A critical analysis of the South African integrated information and communication technology policy** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.

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SIGNED

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DEDICATION

This dissertation is dedicated to my late parents, u **Mntwana Thobekile ka Mpikayivuswa ka Dinuzulu** and Dr Bhekithemba "Nyanga" Comfort Mfuphi.

always being there and for tremendously investing in me in the manner in which you have. U Nkulunkulu anibusise futhi anigcine bo Nkomonde! Bo Sompisi!

ABSTRACT

This dissertation underpins a qualitative document analysis of the 2016 South African integrated information and communication technology (ICT) policy: White Paper. However, in this study, this policy is referred to as the 2016 national ICT policy. Information and communication technology include critical digital hardware and software tools, content, applications and services that can be used to share ideas and innovations. Thus, the 2016 national ICT policy outlines crucial strategies that are pertinent to the use of ICT towards overall technological and infrastructural development as envisioned in the National Development Plan (NDP). Moreover, the 2016 national ICT policy outlines a national ICT vision that advocates for the universal service and access to ICT so that the opportunities and challenges of the fourth industrial revolution (4IR) are realised and addressed. This national ICT vision also includes strategies that are aimed at properly integrating the South African ICT sector and policy in a manner that is line with the 4IR context. Thus, this study will consider ICT development, convergence and digital inclusion as key themes in order to explore and describe the 2016 national ICT policy.

Therefore, this study explores and describes the initiatives of the 2016 national ICT policy, including the role of government entities towards the implementation of this policy. Thematic content analysis (documents) and interviews were employed to explore and describe the initiatives (ICT development, convergence and digital inclusion) and role of government entities. This study reveals that the 2016 national ICT policy aims to implement initiatives such as the wireless open access network (WOAN), rapid deployment of ICT, content and economic regulators and the digital development fund (digital-DF). Government entities tasked with implementing these initiatives include the Department of Telecommunications and Postal Services (DTPS), Department of Communications (DoC), Universal Access and Service Agency of South Africa (USAASA), Independent Communications Authority of South Africa (ICASA) and the South African Post Office (SAPO). However, these entities will assume different names, roles and responsibilities towards achieving the objective of the 2016 national ICT policy.

KEY WORDS

Convergence

Digital inclusion

Digital divide

Fourth industrial revolution

Information and communication technology

Inclusive digital society

ICT development

National ICT policy

Policy analysis and implementation

White Paper

LIST OF ABBREVIATIONS

ANC	African National Congress
AI	Artificial Intelligence
BCX	Business Connexion
CT	Communication Technology
CEOs	Chief Executive Officers
DoC	Department of Communications
DTPS	Department of Telecommunications and Postal Services
DG	Director-General
DPTB	Department of Posts, Telecommunications and Broadcasting
DST	Department of Science and Technology
DTI	Department of Trade and Industry
DED	Department of Economic Development
DHET	Department of Higher Education and Training
DSBD	Department of Small Business Development
DHL	Dalsey, Hillblom and Lynn
Digital-DF	Digital Development Fund
DA	Democratic Alliance
ECA	Electronic Communications Act
ECTA	Electronic Communications and Transactions Act
ECNS	Electronic Communication Network Service
ECA Bill	Electronic Communications Act Amendment Bill
ECTA Bill	Electronic Communications and Transactions Act Amendment Bill
4IR	Fourth Industrial Revolution
FMF	Free Market Foundation
GNU	Government of National Unity
GDP	Gross Domestic Product
GEAR	Growth, Employment and Redistribution
ISPs	Internet Service Providers
ICT	Information and Communication Technology
ICTs	Information and Communication Technologies
IT	Information Technology
ICASA	Independent Communications Authority of South Africa
ICT4D	Information and Communication Technology for Development
IBA	Independent Broadcasting Authority
ISAD	Information Society and Development
IMF	International Monetary Fund
ITU	International Telecommunications Union
ITSO	International Telecommunication Satellite Organisation
MDGs	Millennium Development Goals
MPCCs	Multi-Purpose Community Centres
MDDA	Media Diversity and Development Agency
MP	Member of Parliament
NICI	National Information and Communication Infrastructure
NDP	National Development Plan
NPC	National Planning Commission
NTIA	National Telecommunications and Information Administration
NCC	National Consumer Commission
NPPW	National Public Policy Workshop

OECD	Organisation for Economic Cooperation and Development
PPPs	Public-Private Partnerships
Post Net	Postal Numerical Encoding Technique
PIC	Public Investment Corporation
RDP	Reconstruction and Development Programme
RSA	Republic of South Africa
RIA	Research ICT Africa
SAPO	South African Post Office
SMMEs	Small Micro and Medium Enterprises
SATRA	South African Telecommunications Regulatory Authority
SADC	Southern Africa Development Community
USAASA	Universal Service and Access Agency of South Africa
USAF	Universal Service and Access Fund
USAOs	Universal Service and Access Obligations
UN	United Nations
US	United States
UNISA	University of South Africa
USA	Universal Service Agency
USALs	Universal Service and Access Licensees
WSIS	World Summit on the Information Society
WTO	World Trade Organisation
WB	World Bank
WIPO	World Intellectual Property Organisation
WOAN	Wireless Open Access Network
WEF	World Economic Forum
.zaDNA	.za Domain Name Authority

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CHAPTER 1: INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

During the introduction of a democratic dispensation in 1994, the South African ICT policy and sector were governed by three separate laws or frameworks, namely the Telecommunications Act No 103 of 1996, the Broadcasting Act No 4 of 1999 and the Postal Services Act No 124 of 1998. These frameworks were later revised to be the Telecommunications Amendment Act No 64 of 2001, Broadcasting Amendment Act No 64 of 2002 and the Postal Services Amendment Act No 33 of 2003. This separation of laws was revised when the telecommunications and broadcasting sectors converged and were regulated by one regulator, that being, the Independent Communications Authority of South Africa (ICASA) in 2000. Lesame (2000:34) maintains that one of the reasons for this convergence was that technological convergence was not well addressed in South Africa. Hence, ICASA needed to act towards effectively legislating for technological convergence.

This study embarks on an exploration of the 2016 national ICT policy initiatives and the role of selected government agencies in implementing these initiatives. It is necessary to determine how this ICT policy addresses issues of ICT development, convergence and digital inclusion. Though these issues might seem too broad, they underpin topical concerns regarding the current state of the South African ICT policy and sector (Cwele 2016; Gilbert 2017). These issues are also key when addressed in the context of the fourth industrial revolution (4IR), and how it is envisaged to take shape in South Africa (Ramaphosa 2018).

It is important to note that the 2016 national ICT policy takes its cue from the National Development Plan (NDP, 2012) Vision 2030. The NDP stresses the need for a converged ICT infrastructure that facilitates universal access to, affordability, and development of ICT for the use of citizens (South African Presidency 2012: s4.7). In this regard, the NDP provides the broader objective that initiatives of the 2016 national ICT policy should address, and put measures in place for these to be implemented. Conversely, initiatives of the 2016 national ICT policy ought to create an enabling environment in which the broader objective of the NDP can be accomplished (Smith 2016; Cwele 2018). The NDP therefore views a progressive and well converged ICT policy and sector as key towards achieving an inclusive digital society.

This chapter introduces and outlines a research endeavour that aims to explore and describe the 2016 South African integrated information and communication technology (ICT) policy: White Paper; hereafter referred to as the 2016 national ICT policy. To this effect, this chapter reveals the research problem, related research questions and assumptions. The context and objectives of the research are stated, following a literature review and a discussion on the main concepts. Thereafter, the research approach and methods are stated and how these are aimed at addressing the research problem. Signalling the end of this chapter is a detailed outline of the chapters that make up this dissertation and what each chapter addresses regarding a critical and balanced analysis of the 2016 national ICT policy.

1.2 THE RESEARCH PROBLEM

The South African ICT sector is not properly converged; neither is it well regulated (Gillwald et al. 2012). As a result, policies and laws within this sector are disintegrated and have not employed a fully integrated approach in dealing with burning ICT policy issues in South Africa (South African Department of Telecommunications and Postal Services 2015: s 1.13). Such disintegration presents a serious drawback that if left unaddressed will render ineffective any effort towards South Africa benefitting from the technologies and innovations of the 4IR. To understand how the 2016 national ICT policy aims to address this research problem, the researcher conducted a cross-sectional qualitative document analysis of the 2016 national ICT policy. Research was conducted by using the research methods of content analysis and five face-to-face semi-structured interviews with selected ICT policy government officials from DTPS (Berg 1998:224; Matthews & Ross 2010:218-395). The purpose was to analyse the initiatives proposed by the policy and the roles of selected government entities on implementing these initiatives. The initiatives explored are categorised into three broad themes of ICT development, convergence and digital inclusion. The research questions guarding this study are as follows:

1.2.1 Research questions (RQ) and Assumptions (A)

(1) A: There are key ICT policy initiatives identified in the 2016 national ICT policy in relation to ICT development, convergence and digital inclusion.

> *RQ: What are the key ICT policy initiatives identified in the 2016 national ICT policy in relation to ICT development, convergence and digital inclusion?*

(2) A: Government entities are identified in the 2016 national ICT policy to implement ICT policy initiatives linked to ICT development, convergence and digital inclusion.

> *RQ: Which government entities are identified in the 2016 national ICT policy to implement ICT policy initiatives (ICT development, convergence and digital inclusion) and what is their roles?*

(3) A: There is an interrelationship (in literature and in policy) between ICT development, convergence and digital inclusion.

> *RQ: What is the interrelationship (in literature and in policy) between ICT development, convergence and digital inclusion?*

1.2.2 Context and background of the research problem

The emergence of the 1990s resulted in many technologies and innovations that gave rise to a widespread use of ICT (Soete 2001:144; Singh 2010:212-13). Through ICT infrastructure development, the world was viewed by researchers to have entered what is now known as the information or knowledge age. The proliferated use and application of information, technology, globalisation, digital communication and services is viewed as being characteristic of the information age (Madikiza & Bornman 2007:11; Lesame et al. 2012:48; Lesame 2013:76). Furthermore, the information age, which is ICT induced, has a fundamental impact on communication as a core human practice (South African Department of Communications 2014: s1.1).

In response to the information age, the United Nations (UN) General Assembly approved the holding of the World Summit on the Information Society (WSIS) in December 2001 (Adomi 2011:260). As a result, a summit was held in December 2003 in Geneva and another one in November 2005 in Tunis. The two-phased summit created a platform and also encouraged governments, the UN agencies as well as the public-private sector to develop integrated ICT policy frameworks that would result in them reaping the benefits of the information age (ibid). This constituted an important global move that would see national ICT policies being developed and implemented as a way of being on par with and meeting the demands of the changed and changing times (Lesame 2005:219; Singh 2010:212).

In response to rapidly changing times, the World Economic Forum (WEF), in 2016, held a summit which deliberated on the advent of the 4IR (Schwab 2016). The WEF further emphasized the importance of having well integrated ICT policies in the wake of the 4IR. The fourth industrial revolution (4IR) is a crucial phenomenon that emanates from the proliferated use of ICT (Xu et al. 2018:91). This phenomenon is therefore characterised by the advanced use of ICT and innovations as a result of the complex nature of communication in the 21st century. Moreover, the 4IR is typified by the convergence of ICT which results in blurred realities between the online and offline world (Schwab 2016; Iraki 2018). Converged ICT and innovations can therefore assist in meeting the communication and connectivity needs of a digital society. Accordingly, the 4IR underscores an important context upon which this study is based, thus an analysis of the 2016 national ICT policy is located within the 4IR.

The South African ICT sector, before 2000, was separated into three different sub-sectors. This prompted the development and adoption of three separate White Papers on Telecommunications (1996), Postal Services (1998) and Broadcasting (1998) (South African Department of Communications 2014: s 3.1-3.3). This separation of the ICT sector is regarded as counterproductive in properly integrating this sector as well as policies within it (Duncan 2015:7). Such disintegration can also hinder the South African ICT sector and policy in properly addressing pressing communication issues of today's society (ibid.). The 2016 national ICT policy, which was developed within a three-year period (from the Framing Paper of April 2013 to the adoption of the White Paper in September 2016), intends to integrate the White Papers on Telecommunications, Postal Services and Broadcasting (Smith 2016).

As a result, the 2016 national ICT policy is regarded by the Department of Telecommunications and Postal Services (DTPS) as having adopted a new approach towards a communications sector that is more integrated; an approach that also prioritises issues of proper ICT infrastructure development as well as the universal service and access to ICT (Cwele 2016; Ndabeni-Abrahams 2017). To address this approach, it calls for a robust institutional framework as well as the proper alignment of government entities in making sure that such objectives are indeed being met (ibid.). Through an exploration of the 2016 national ICT policy and the role of government entities, namely the Universal Service and Access Agency of South Africa (USAASA),

the ICASA, DTPS, Department of Communications (DoC) and the South African Post Office (SAPO) outlined therein, the study aims to investigate how integrated is this ICT policy and how it addresses issues of ICT development, convergence and digital inclusion.

These three issues, namely, ICT development, convergence and digital inclusion are fundamental and viable global trends which South Africa should address in order to be a leading contributor and competitor in the knowledge society and economy (Paterson 2002:9; Adomi 2011:271; South African Department of Communications 2014: s1.2; Duncan 2015:3). These are also characteristic of the digital or information age (Mansell 2009:4; Duncan 2015:4). In addition, Gillwald et al. (2012) maintain that ICT development, convergence and digital inclusion are pivotal in today's economy and can be taken to constitute contemporary factors that are related to the ways of communication and gaining information in the knowledge age.

1.2.3 The objectives of the study

The objectives of this study are both exploratory and descriptive. The study will explore initiatives related to ICT development, convergence and digital inclusion as outlined in the 2016 national ICT policy in Chapters 5 and 10. A contextualisation and description of these initiatives as well as the role of government entities in implementing this ICT policy will then be discussed.

1.3 LITERATURE REVIEW: DEFINING THE MAIN CONCEPTS OF THE STUDY

This section addresses the main concepts of the study. These concepts constitute key theoretical underpinnings upon which this study is based and are key in the analysis of the 2016 national ICT policy. More importantly, these concepts are addressed in a manner that is reflective of the discourse on information and communication technology (ICT) policy as it pertains to the 2016 national ICT policy and sector. These concepts include ICT, national ICT policy, White Paper on ICT and inclusive digital society.

1.3.1 Information and communication technology

Communication forms an important aspect in human life and interaction. Throughout the different industry ages, the practice of communication has been used to connect

with others and to share meaning, information and knowledge (Steinberg 2007). Moreover, Adomi (2011) maintains that communication combined with information, which then turns into knowledge, is a crucial element of present-day human life or interaction. This combination of information and communication through technological innovations became more pronounced during the period of the 1990s up until now (Mansell 1994:1; Nulens & Van Audenhove 1999:29; Soete 2001:44; Lesame et al. 2012:48).

Odhiambo (2008:1) argues that the convergence of information and communication through technological means has given rise to a new field of study, that being, information and communication technology (ICT). Information and communication technology, therefore, is a kind of technology used to gain as much information as possible with the aim of communicating it towards the achievement of a particular objective. Hence, ICT is defined as technologies that are both in hardware and software (content) format that are used for the "storing, managing, communicating and sharing information by electronic means" (Lesame 2005:6; Adomi 2011: 281; Lesame & Seti 2014:303). Information and communication technology, consequently, is the convergence of information technology (IT) and communication technology (CT) to form ICT (Odhiambo 2008:1). A third category is also argued to exist, that is, telecommunications technology (TT) (Nicol 2003:9).

Accordingly, Nicol (ibid.) unpacks these categories as to what is included in each one. Nicol (ibid.) unpacks these categories as follows:

(a) Information technology; includes computer hardware and peripherals, software and computer literacy.

(b) Telecommunications technologies; these consist of telephones system, radio and television broadcasting.

(c) Communication or networking technology; this category includes the internet, mobile telephones and other broadband connectivity.

This study therefore views ICT as a valuable tool that should be made available and accessible through implementable initiatives as these are outlined in a national ICT policy.

1.3.2 National ICT policy

A policy is a carefully drafted and well-purposed document which outlines the position of government or organisation concerning a specific issue or problem. Also, policies outline specific solutions or interventions that can be implemented in addressing an issue (Chisango 2014:19). Policies furthermore constitute a process that is followed to enforce, promote and maintain structure, regulation and the meeting of set objectives (Fourie 2009:5; Moyo & Chuma 2010:39; Chisango 2014:19). Chisango (2014) further explains that a policy process has many intricate processes that are embarked on; these include, policy-making, implementation and analysis.

Policy-making refers to developing a policy strategy whereas policy implementation involves the manner in which this strategy is carried out or executed. Policy analysis means analysing the objectives and initiatives of a policy and how these will be implemented towards addressing a specific problem (Chisango 2014). This study therefore addresses, and is located within the processes of policy analysis and implementation. These processes validate a policy and they can be used to ensure that policies are effective and well-implemented (Fourie 2009). Without the presence of such policies, topical government, business or societal issues and concerns can be left unaddressed, thereby causing a lack of direction and proper development in those aspects.

A policy on ICT, therefore, aims to develop and give direction to the area of ICT in a particular country (Chisango 2014). The implementation of such a policy, should be in a manner that reflects national interests and benefits citizens (Makoza & Chigona 2016:1). It is important to note that, in this study, *national* pertains to a country and this country is South Africa. Therefore, a national ICT policy in South Africa should outline a vision for proper ICT development and digital inclusion, and this should be linked to national development objectives (Zarenda 2013; Chisango 2014). Due to the complexity, fluidity and ever-changing nature of ICT, it is important to have a regulatory and robust ICT framework that will provide implementable strategies and initiatives towards national ICT development (Odhiambo 2008:1). Moreover, Nicol (2003:52) maintains that this national ICT framework should promote issues of access and civil liberties or rights.

1.3.3 White Paper on ICT

White Papers are regarded as *parliamentary papers* in some European and Asian countries because they involve various parliamentary processes before being signed into law. Rosenberg (2008) states that government White Papers constitute authoritative or implementable policies that outline the views of government concerning particular issues and ways in which they can be addressed. The term *White Paper* was initially coined in 1939 and referred to a government policy document in Canada (James 2017). In 19th century Britain, the term *blue papers* underpinned an official government policy targeted at certain issues. The British also refer to White Papers as *command papers* and these outline a government policy or strategy (Rosenberg 2008). South Africa, since democracy took place in 1994, has produced a number of White Papers that outline critical matters which are of importance to both government and the general population. These White Papers include important issues on health, education, the economy, and access to ICT (South African Presidency 2012: s 4.7).

White Papers do not refer to a white paper used for writing or printing but refer to a policy document with a white cover, hence, White Paper. James (2017) maintains there are two types of White Papers, namely, technology and government White Papers. The White Paper on ICT outlines the South African government's plans of effectively utilising ICT and postal services towards the realisation of an inclusive digital society (Smith 2016). More importantly, the White Paper on ICT seeks to strategically position South Africa to be a global competitor in terms of the provision of ICT infrastructural services and content that benefits citizens (Duncan 2015).

1.3.4 Inclusive digital society

Universal service and access to ICT, digital technologies and internet broadband can be used to bridge the digital divide as well as the socioeconomic disparities linked to it (Lewis 2017). In response to these disparities, one no longer refers to an information society but rather an *inclusive digital society.* An inclusive digital society means that all South Africans regardless of geographical location have equal access to ICT including fixed and mobile phone technology, digital technologies and internet broadband (South African Department of Telecommunications and Postal Services 2016: s7.1). Therefore, an inclusive digital society is one that is able to use the latest

technologies and innovations in ways that are more robust and integrated. These technologies should be well developed and be enabled to meet the communication and connectivity needs of an inclusive digital society (ibid.).

In addition, an inclusive digital society aims to ensure that ICT are effectively geared towards digital inclusion (Mansell 2010; 2012). Digital inclusion will ensure that South Africa is better equipped to deal with, and effectively address all the opportunities and challenges of the 4IR (Bankole and Mbimbi 2017; Xu et al. 2018). Accordingly, an inclusive digital society is one that thrives in, and is welcoming of an environment wherein ICT development, convergence and digital inclusion are a pronounced reality. Hence, the aim of the 2016 national ICT policy is not only to achieve a digital society, but an inclusive digital society that is able to empower and sustain itself through digital technologies, whilst redressing the inequalities of the past and bridging any form of digital exclusion (Lesame & Chigona 2017).

1.4 RESEARCH DESIGN AND METHOD

This study employed qualitative document analysis as its research design (Matthews & Ross 2010). This research design has an emphasis on thematic content analysis of the policy document under investigation, that being, the 2016 national ICT policy. Thematic content analysis was also conducted on the interview transcripts in order to ascertain the extent to which the key themes emerged (ICT development, convergence and digital inclusion). Qualitative document analysis was selected because it can assist the researcher to determine the main objective of the 2016 national ICT policy and how it aims to accomplish it. This research design will also prove instrumental in finding out key ICT policy issues in South Africa, and how government aims to address these. More importantly, qualitative document analysis will assist the researcher to address the research problem as well as respond to the research questions.

1.4.1 Data collection methods

As a means of collecting the data, the researcher will access and download the 2016 national ICT policy from the Web site of the Department of Telecommunications and Postal Services (DTPS). The researcher will then extract primary data to be subsequently analysed, contextualised and employed as evidence in addressing the research problem. Linked to this, the researcher will use relevant documents and

articles on the 2016 national ICT policy. Secondary data towards tackling the research problem will be extracted from this literature and media articles. These selected documents will be used to conduct qualitative document analysis (Matthews & Ross 2010:276). Five face-to-face semi-structured interviews will also be used as a data collection method towards addressing the research problem and questions (ibid: 221). A critical discussion on the research design and data-collection methods (documents and interviews) is outlined in detail in chapter 3 (research methodology).

Content analysis has conventionally been used quantitatively to count the number of times certain words are repeated in a speech, document or policy. This assumes that the more a certain word is repeated the more important it could be (Matthews & Ross 2010:394). This study aims to extend this understanding of content analysis and use it more qualitatively to explore themes, meanings and context of both the 2016 national ICT policy and interview transcripts. Tables will be used to present the data, as well as detailed descriptions to contextualise them.

1.4.2 Population and sampling methods

1.4.2.1 Target population

The target population are the following ICT and telecommunications policies drafted and adopted for the South African ICT sector: the White Paper on Telecommunications Policy (1996), the White Paper on Broadcasting Policy (1998), the White Paper on Postal policy (1998), National Broadband Policy South Africa Connect (2014), National e-Government Strategy and Roadmap (2017), National e-Strategy (2017) and the ICT SMME Development Strategy (2017). The target population also includes all DTPS employees.

1.4.2.2 Accessible population

The accessible population is the South African National Integrated ICT Policy White Paper (2016) as well as the five selected ICT policy government officials from DTPS.

1.4.2.3 Unit of analysis

The unit of analysis is the 2016 national ICT policy and interview transcripts. Five face-to-face semi-structured interviews were conducted at the DTPS because this department is the main custodian of the 2016 national ICT policy and is also

responsible for the implementation of this policy. As such, the interviewees were selected based on their role and expertise in the development and implementation of the 2016 national ICT policy. The researcher could not conduct more face-to-face semi-structured interviews due to issues of inaccessibility and unavailability (of interviewees due to Covid-19 restrictions), however, these five interviewees provided sufficient information (data saturation) in addressing the research problem.

1.4.2.4 Judgemental sampling and ethical considerations

This study will use a judgemental or purposive sampling method (Du Plooy 2009; Matthews & Ross 2010). This method will assist the researcher in purposefully selecting those documents and participants that will enable the researcher to both explore and describe in depth the research problem (see objectives of the study above). Moreover, the researcher will adhere to key ethical requirements when selecting documents and participants as this will assist in producing an ethically acceptable study (cf. Chapter 3).

1.4.3 Data presentation and interpretation

Data will be presented and interpreted by employing the thematic content analysis method (Braun & Clarke 2006:77; Matthews & Ross 2010:372). This method will assist the researcher in exploring the meaning in context of the themes ICT development, convergence and digital inclusion as they emerge in both the 2016 national ICT policy and interview transcripts. Thematic content analysis will also assist the researcher to look for links between different parts of the data, as well as describing any similarities and differences that emerge (Matthews & Ross ibid.). The researcher will make use of tables to present the findings yielded through or by this method. Some of these methodological aspects are discussed in detail in chapter 3 (research methodology).

1.5 OVERVIEW OF CHAPTERS

This dissertation is made up of five chapters. These chapters are geared towards critically exploring and describing the 2016 national ICT policy. Chapter 1 introduced the study and also pointed out the purpose, objectives and research methodology that will be used to address the research problem. Chapter 2 critically discusses the literature review and theoretical framework upon which the study is based. Chapter 3

discusses and unpacks the research methodology of the study in critical detail. Chapter 4 presents and interprets the data that were collected through the systematic execution of the research methodology. Chapter 5 concludes the dissertation and offers critical recommendations that are pertinent in addressing key South African ICT policy issues of today.

CHAPTER 2: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 INTRODUCTION

This chapter outlines the theoretical framework and literature review of the study. Theoretical framework is made up of two theories or perspectives, namely, the information society theory and digital divide theory. The fourth industrial revolution (4IR) is treated as an expansion to the information society thesis. These theories constitute the theoretical underpinnings of the study, and are used as a basis upon which much of the literature on the South African ICT policy emanates from, even though there is a gap in the literature as this is an under researched area. In addition, this chapter discusses the state of ICT policy in South Africa. This section critically discusses all the history and issues pertaining to ICT policy in South Africa. This section does not discuss the 2016 national ICT policy in depth; however, it does discuss why such a policy was needed as well as the challenges or shortfalls it is envisaged to address. The contents and critical analysis of the 2016 national ICT policy are discussed in chapter 4 (findings and data analysis).

This chapter outlines and discusses the literature review according to selected literature themes or issues. These themes include ICT development, digital inclusion and convergence. These themes are explained in a way that is interwoven into a discussion illustrative of a critical discourse and analysis of the research questions stated in chapter 1. These themes are also reflective of the discourse on information and communication technology (ICT) as it pertains to the South African ICT policy and sector. This constitutes the main objective of this chapter so that readers of this dissertation are clear about what these themes mean in relation to, and underpinning, the South African ICT policy discourse, implementation and challenges. Moreover, this chapter argues for the interrelationship between ICT development, convergence and digital inclusion. This interrelationship is based on the premise or idea that in order to achieve an inclusive digital society, adequate attention must be given to issues of ICT development, convergence and digital inclusion. We turn to such a discussion next.

Information and communication technology has profoundly impacted on almost every area of human life and behaviour. Accordingly, ICT has acquired working definitions in many sectors, namely, "economic development, education, IT, business and personal usage" (Zuppo 2012:13). Though a complex and ever-changing

phenomenon, ICT can be used for and is also dependent on socioeconomic national development (Crede & Mansell 1998: 45; Sein & Harindranath 2004: 15; Gillwald 2012: 25; Zarenda 2013: 1; Bankole & Mbimbi 2017:9). For example, Bankole & Mbimbi (2017) posit that the adoption of ICT has the potential to empower communities and countries as a driver of the economy and human development. They argue further that the ICT revolution can lead to imbalances and inequalities through lack of ICT adoption, access and usage. This means that individuals and countries that retard on adoption and use will be left behind. However, there are minimal broad studies (macro/micro) that investigate the impact of ICT on national development. For Sein and Harindranath (2004), the problem is that we do not have conceptual clarity on the roles of ICT in national development.

The South African ICT policy highlights two important viewpoints regarding the alignment between ICT and national development (Ntetha & Mosert 2011:127). These include that ICT are there to provide faster and affordable services to all citizens and thus they are seen as principal drivers or promoters of socioeconomic development. Hence, the 2016 national ICT policy is regarded as an ICT strategy that is geared towards the realisation of the national development plan (NDP, 2012) in terms of an improved and converged ICT infrastructure and sector by 2030 (Smith 2016). A concern or criticism levelled by ICT scholars and industries against the above proposal is that it tends to lean wholly on the viewpoint of "technological determinism" (Lesame et al. 2012:47). This is a concept which views technology as the only aspect that can bring about or maintain change and development in the information society (Van Audenhove 2001:26; Adomi 2011:281; Lorini et al. 2014:78). Whilst technological determinists profess an optimist view, it is true that ICT on their own will not bring about national development without being accompanied by societal changes.

Overall, ICT development, convergence and digital inclusion are key ICT policy issues in South Africa, and are pivotal in the formation and sustenance of an inclusive digital society. The theoretical framework provides a deeper review in understanding the interrelationship between ICT development, convergence and digital inclusion.

2.2 THEORETICAL FRAMEWORK

This section of the chapter defines and explores the theories that underpin this study. These theories form the theoretical framework upon which this study is based and from which it draws its literature review and debates. This section defines and unpacks the information society theory, fourth industrial revolution (4IR), and digital divide theory. The discourse and arguments that underpin these theories are discussed to illustrate their relevance to the 2016 national ICT policy and sector. Suffice to say at this point that these theories are relevant to the study because they argue for and resonate with the issues of ICT development, convergence and digital inclusion. These issues constitute cardinal themes which form the underlying analysis of this study, as envisaged in the 2016 national ICT policy (cf. Chapter 1).

It is important to note that theory or the body of knowledge (literature review) play a vital role in qualitative social research. Thus, Mitchell and Cody (1993) are of the view that theory in qualitative social research is crucial towards knowledge production and development. Moreover, the process towards a rigorous enquiry or study can be well executed alongside an explicit discussion and examination of theory which is used as a guide for this process (ibid.). In addition, Kelly (2010) states that theory in qualitative research affects or determines the research design, analysis, interpretation and the quality of this research. As such, greater attention and consideration should be given to theory in order to ensure quality research which addresses relevant questions and draws useful conclusions.

2.2.1 The information society theory

Lesame (2009:75) views information as a beneficial resource that people should have in order to effectively utilise ICT in their everyday lives. Therefore, it can be concluded from the foregoing that ICT constitutes a vital aspect in the information society. This is a kind of society that greatly uses and maximises on the potential benefit and exploitation of ICT (Dijk 2006:19). In addition, Van Audenhove (1999:15) advances the term *information society policy* and defined it as encompassing policies which advise on, govern, regulate and implement the proper access to and use of ICT.

The information society is considered as underpinning a post-industrial era or revolution in which the proliferated use of information and knowledge producing

technologies are growingly characterising all human interactions (Webster 2006; Mansell 2012; Lesame 2014). The first industrial revolution is regarded as the age of mechanical production which led to increased industrialisation in the workforce. The second industrial revolution gave rise to the advanced use of scientific tools and innovations which were used for mass production. This development led to the third industrial revolution in which digital technology and ICT characterised the manner in which people work, communicate and interact (Webster 2006). The proliferated and advanced use of digital technology and ICT has brought about a new reality or era known as the fourth industrial revolution (4IR). The 4IR is discussed in detail in section 2.2.1.1 (as part of the information society).

To comprehend a discussion of the information society, it is crucial to have an understanding or idea of the individual concepts "information" and "society". Information refers to a process involving the understanding or interpretation of "data and other signals by humans and animals with some of kind of consciousness" (Van Dijk 2005:133). The definition of society has greatly evolved from meaning a group or community of people with a "common culture, history, tradition and civilisation distinguished by physical boundaries" to that of a "virtual society" (Lesame 2005:77). A virtual society, thus, is a kind of society that maximises and thrives on high levels of online or digital connectivity that is further intensified by the use and exploitation of ICT for purposes of learning or producing new knowledge. Information, in this sense, becomes and also acts as a primary good, positional good and as a source of skills. The information society, therefore, is also referred to as the *knowledge society* (Mansell 1994; 2012), the *network society* (Van Dijk 2006), the *learning society* (Van Audenhove 1999) and the *capitalist society* (Webster 1995).

As early as the 19th century, the theory of a knowledge or information society came into being (Ampuja & Koivisto 2010). Henri de Saint-Simon, during the French revolution, anticipated this society, which is exploited or ruled by industrialists, technocrats and scientists (ibid.). In addition, Daniel Bell in the 1970s coined the *post-industrial society* to illustrate a society that prioritises the production of information goods and services (Duff 1998). These goods and services can be in the form of e-skills, electronic government or e-government and the ICT services that people get at MPCCs and telecentres (Lesame 2014). Frank Webster (1995) played a pivotal role

in the development of the information society theory and is viewed as one of the seminal researchers and authors in this field.

The information society theory views technology as the main instrument that can bring about an information society (Lesame et al. 2012). Technology, which comes as a result of human innovations and creativity, should be seen as a facilitator towards socioeconomic and ICT development. Van Audenhove (2003) maintains that knowledge should also be seen as a key element in the information society. Moreover, Fuchs (2012) argues that the information society theory emanates from two factors, those being, societal change and the informational qualities of these changes. As a result, there exists subjective information society theories and objective information society theories. Subjective information society theories give attention to human knowledge in contemporary society and objective information society theories are concerned with the knowledge gained from ICT and the role they play in society. The information society theory is regarded as a theory that explains the most recent age of social change or industrial revolution, that being, the 4IR (Karvalics 2007:21). South Africa has made notable progress towards aligning itself to this change and continues to do so through the formation and implementation of ICT development-driven policies that seek to improve the lives of citizens (Singh 2010:212).

The idea of an information society has become a crucial phenomenon which has progressed to constitute a theory with its own foundations and arguments (Van Audenhove 1999:15). An examination of this theory proves beneficial to studies which seek to investigate the ICT society as well as the policy issues that ensue. Accordingly, the information society theory proved relevant to this study in order to critically examine the 2016 national ICT policy initiatives towards the creation of a South African information society. The creation of this society is not a completely new policy objective and has been around since individuals and societies began to use information for "productivity, wealth, employment and power" (Van Dijk 1999:247). The movement now is in accommodating the 4IR, which is the new rhetoric passed the information society. Hence, this study maintains that a critical investigation of the 2016 national ICT policy should be done in order to determine how ICT is used for development, convergence and digital inclusion in South Africa today.

The 1990s were typified by an intensified use of information as a result of ICT, specifically the internet and mobile phones (Soete 2001:144; Van Audenhove 2003:48; Madikiza & Bornman 2007:11; Lesame 2014:333). During this period, the work of Manuel Castells (2000) gained momentum, giving birth to the network society theory (Ampuja & Koivisto 2010:447). As such, Castells (ibid.) was of the view that the information society includes and is characterised by networks through the flow of information from the developed to developing countries. However, Molwana (1997) argues that the global flow of information should also be from developing to developed countries and there are cases cited in this work which attest to this. The idea of a network society is driven and intensified by the use and exploitation of ICT services which then leads to the convergence of these services (Mansell 2010:50). The convergence of ICT services is critically examined under the discussion on ICT convergence in the sub-sections below.

Lesame (2014) maintains that the inception of democracy in 1994 improved the ICT usage levels and information production in South Africa. This was to create an environment for the inclusive use of ICT (digital inclusion) through laws and policies which promote ICT universal service and access towards an information society (ibid.).

Therefore, South Africa views an information society and the 4IR as contexts in which people utilise ICT for socioeconomic development and the provision of social services in order for people to improve their lives (Braman 1998:74; Van Audenhove 2003:52; Lesame 2013:75; Lesame 2014:331). To keep up with these global developments, South Africa, had to urgently align itself and its policy objectives that form part of the information society and now the 4IR (Duncan 2015). Consequently, South Africa, had to urgently address the issue of universal access and service in order to compete globally in a space of rapid ICT convergence (Lesame 2005:219; Lewis 2013:95; South African Department of Communications 2014: s 9.2). Moreover, issues of owner ship and control of ICT tools and services had to be addressed in order to make these services universally available and accessible (ibid.). Ownership and control of the ICT sector is another key issue that needs to be addressed so that this sector is able to effectively cater for the needs of an inclusive digital society.

Rhetoric around the information society resulted in the World Summit on the Information Society (WSIS) in 2003 and 2005 (Adomi 2011:260). The 2005 session,

held in Tunis, is considered to have marked the end of the industrial era characterised by mechanisation and the start of the information society which is characterised by ICT (Lesame 2014:333). It is therefore crucial for South Africa, on an ongoing basis, to address issues of ICT development, convergence and digital inclusion, as these are pivotal to the realisation of a fourth industrial revolution.

The 4IR is viewed as the most recent evolution stage in which the use of and proliferation of ICT, robotics and artificial intelligence (AI) are taking over and redefining the manner in which people communicate (Xu et al. 2018). In this sense, the 4IR underpins a more advanced ICT-infused reality than that which was presented by the information society or the third industrial revolution. Therefore, the researcher intended to investigate the extent to which the realities brought about by the 4IR are addressed in the 2016 national ICT policy.

2.2.1.1 The fourth industrial revolution

The fourth industrial revolution (4IR) builds on the third industrial revolution because of the continued belief that ICT can assist in improving people's lives and how they deal with the changed and changing times. The third industrial revolution is viewed to underpin a post-industrial era or revolution in which the proliferated use of information and knowledge producing technologies characterised all human interactions (Webster 2006; Mansell 2012; Lesame 2014). In this sense, the third industrial revolution gave rise to what is known as an information society wherein information underpinned a key commodity in all economic, global, social, cultural and political exchanges.

The 4IR, however, gives attention to digital information in the form of advanced ICT that use specialised machinery and online tools for people to communicate in both local and global spaces (Xu et al. 2018). In this regard, the 4IR gives rise to what is known as a digital society. In the 2016 national ICT policy, the principle of inclusivity is added which means that people should have equal access to ICT, the internet and digital technologies in order to communicate effectively (South African Presidency 2012: s4.7).

The phenomenon of the 'fourth industrial revolution' was coined by founder and executive chairman of the World Economic Forum (WEF), Klaus Schwab. The World Economic Forum General Meeting of 2016 was held under the theme "Mastering the

Fourth Industrial Revolution" and this is where it was conceptualised and revealed that the world has entered into the fourth industrial revolution (Iraki 2018). Moreover, the 4IR is viewed more as a technological and/or digital revolution because of its emphasis on "advanced digitalisation within factories, the combination of internet technologies and future-orientated technologies in the field of 'smart' objects" (Lasi & Georg Kemper 2014). Smart objects or technologies refer to devices and applications which perform a multiplicity of tasks via the internet and other broadband connections (ibid.). The 4IR is also referred to as industry 4.0 or globalisation 4.0 which replaces industry and internet 2.0 which was used by consumers to, for example, buy and market products online (Roblek et al. 2016: 7).

The 4IR also has great potential in fostering ICT development through achieving faster, innovative, converged and more convenient ways to communicate, and accomplish tasks within the shortest amount of time possible. In addition, Guliwe (2019) notes that the 4IR will cause a myriad of serious disruptive effects in the economies, governments and labour industries of developing countries. Reason for this is that the advent of the 4IR is more concerned with soft and capital intensive skills than labour-intensive skills (ibid.). In other words, industry 4.0 requires the labour market to have individuals who possess advanced computer and digital skills in order to survive in the industries and workforce of today. The 4IR is, therefore, forcing companies and big businesses to rethink their current human resource and how they can equip employees with the necessary skills in order to be more productive in the new advanced digital workforce (Petrillo et al. 2018).

According to Iraki (2018) technologies and innovations of the 4IR include, namely;

(a) Machine learning and artificial intelligence (AI)

(b) Robotics

(c) Internet of Things (IoT)

(d) Data mining technologies and/or data science

(e) 3D printing

(f) Block chain or trust technologies

(g) Convergence of physical and biological systems

These technologies and innovations are viewed to have great potential for being used to empower developing countries such as South Africa. South Africans, in turn, can

use these technologies to address issues of joblessness, poverty, unequal access to ICT and digital exclusion and illiteracy (Iraki 2018). Overall, South Africa has entered into the 4IR which is linked to national ICT development (if done correctly), however, there is a digital divide that must be dealt with. It therefore proves necessary to examine the 2016 national ICT policy to determine how it responds to issues of ICT development, digital divide (inclusion) and convergence.

2.2.2 The digital divide theory

Digital divide is regarded as a social phenomenon that refers to the gap between developed and developing regions in terms of access to and use of ICT services (Lesame et al. 2012)**.** As a theory, the digital divide also refers to explicit inequalities which are "perpetuated throughout the entire process of accessing and using technologies in society" (Pick & Sarker 2016:3890). Therefore, the digital divide theory is based on the assumption and observation that, since the introduction of the internet, information technology (IT) and communication technology (CT), there is unequal access, usage and application of ICT among people.

Digital divide theory therefore means the unavailability, and by implication, the unaffordability of ICT services to be utilised by people towards developing themselves in the 4IR society. These technologies and services include fixed-line or mobile telephony, personal computers (PC) and the internet (Van Dijk 2006:165). Unequal access to these is seen as counterproductive towards "developing the capability and skills to utilise information technologies" (Oyedemi 2009:164). Oyedemi (ibid.) further asserts that physical access to these technologies is not enough, therefore suggesting a comprehensive strategy in tackling or bridging the digital divide. This strategy includes paying attention to other motivational, skills, and usage access.

The existence of a robust and effective ICT policy is needed to address the issues of the digital divide or exclusion. In this regard, Oyedemi (2009:165) maintains that policies should not only focus on providing physical or material access to ICT but equal attention should also be given to other types of access already mentioned. Such policies should play a key role in the promotion of e-skills through the constant rollout of telecentres, multi-purpose community centres (MPCCs) and other ICT centres towards bridging the digital divide (Van Audenhove et al. 2001 & Van Audenhove

2003). These policy initiatives not only bridge the digital divide but are also key in the accomplishment and provision of universal service and access to ICT for communities.

Moreover, the digital divide is viewed as revealing of or it is a result of other socioeconomic divides. These include the income divide, rural-urban divide, gender divide, educational divide, race and ethnicity divide and the economic divide (Van Dijk 2005:7; Salman 2009:3; Oyedemi 2009:155). Public or private sector initiatives aimed at addressing the digital divide should also address these socioeconomic divides. Addressing these divides calls for an effective strategy that can bridge the digital divide and ensure that citizens purposefully develop themselves. Consequently, a situation has emerged in which some have access to ICT and others do not have such access. It therefore proves necessary at this point to expand on the origins and initial thinking on the digital divide and align this to present-day debates on the digital divide as propounded by this study.

According to Gunkel (2003), the term 'digital divide' was coined in 1995 by assistant secretaries at the United States (US) Department of Commerce's National Telecommunications and Information Administration (NTIA, 1999), Larry Irwing and Amy Harmon. During this period, the digital divide was indicative of a serious social gap between "those who were very involved in technology and those who were not" (ibid.) In 1997, the digital divide concept gained momentum and was utilised not only as a theory to explain differences of access to and usage of technology but also technical incapability of users. For this reason, present-day studies on how to address the digital divide advocate for the development and usage of electronic skills or e-skills for users to be able to gain access to and use ICT (Sikhakhane et al. 2005; Oyedemi 2009; Lesame 2014; Chisango & Lesame 2017).

The early 2000s were characterised by the introduction of concepts such as digital exclusion and digital inequalities that were growingly used to explain the digital divide theory (Van Dijk 2012). These concepts are of interest to national and international ICT policy-makers as well as researchers from various disciplines including human geography, media communications and telecommunications, sociology and public policy (Phillip et al. 2017). In addition, Lesame (2014:332) contends that digital exclusion illustrates a contemporary phenomenon which views some to have access

to and usage of ICT and others to have no access at all. Lesame (ibid.) was also of the view that digital exclusion presents an obstacle towards the realisation of critical e-skills which can empower developing societies like South Africa.

The digital divide theory is primarily based on two extremes, which argue for access to or no access to ICT (Bornman 2016). Consequently, scholars that subscribe to this viewpoint argue that the digital divide entails a gap or distinction between those that possess physical access to ICT and those that do not (the haves and the have-nots) (Oyedemi 2009:164; Lesame et al. 2012:117; Chisango 2014:24). However, Van Dijk (2012) advanced the existence of a third extreme or distinction, which consists of the 'want-nots' referring to those who do not want access to ICT and do not see its relevance or use in their lives.

Therefore, no matter how this theory is defined, it is mostly described in terms of "two extremes or dialectically-opposed types" (Gunkel 2003:505). A concern raised by digital divide theorists and scholars is that these extremes are always defined in purely technological terms (technological determinism) (ibid.). This suggests that, to bridge the digital divide, people should only have physical access to technology, thereby ignoring other types of access (Kritzinger 2015:1). In addition, Pick and Sarker (2016) maintain that these are factors that should be considered whenever there is a lack of access to ICT and ways to address it.

The lack of access to and use of ICT (digital divide) is viewed as a hindrance towards socioeconomic development in the South African context (Nulens 2003:74; Giebel 2013:14). In this context, the digital divide is also regarded as an obstacle which is counterproductive to ICT policy objectives aimed at universal service and access to communication services (South African Department of Communications 2014: s 9.1). As a result, South Africa had to embark on a number of initiatives in order to reform the telecommunications and ICT sector and to make ICT accessible to all citizens, including those living in rural or peri-urban areas (Horwitz 1997:63).

Digital divide ICT policy initiatives in South Africa are aimed at tackling the issue of the lack of access to ICT and to ensure that citizens exercise their democratic right to "communicate and take part in democratic processes" (Chisango & Lesame 2017:48). Accordingly, ICT development and bridging the digital divide towards overall digital

inclusion are key ICT policy objectives in South Africa (ibid.). As alluded to in Chapter 1, these are objectives that this study seeks to examine through an in-depth analysis of the 2016 national ICT policy. Furthermore, Giebel (2013:17) states that initiatives and research projects aimed at bridging the digital divide should focus on these three pillars;

    (a) the promotion of an ICT infrastructure

    (b) the access of information and knowledge

    (c) the building of capability and confidence

Furthermore, Pick and Sarker (2016) contend that studies on the digital divide are mostly drawn from theories that account for inequality between individuals, households and organisations in terms of access to and usage of ICT. This study gives attention to the inequality of access to and usage of ICT by investigating the role of the 2016 national ICT policy towards addressing this inequality.

Chisango and Lesame (2017) embarked on such a study in order to examine the lack of ICT access and usage or digital exclusion in the Eastern Cape Province. The purpose of their research was to investigate the implementation of South Africa's ICT policy towards the provision of ICT services to rural women and high school learners in the Chris Hani District Municipality in Queenstown in the Eastern Cape (ibid.) These services were examined in terms of their affordability, availability and accessibility (ibid.:58). The findings pointed to the fact that there are serious challenges linked to the usage and uptake of ICT, due to issues of affordability, accessibility and availability. A similar finding was arrived at during an earlier research conducted by Sikhakhane et al. (2005) when they investigated the extent to which residents in Melmoth in KwaZulu-Natal have access to ICT infrastructure and services. In both studies, the recommendation is that South African ICT policy initiatives should address these issues in order to minimise any further spread of digital inequality.

Furthermore, Lesame (2009) proposes that the implementation of public-private-partnerships (PPPs) between willing participants or entities can therefore play a crucial role in dealing with digital exclusion, as well as addressing any other inequalities that may ensue. Sekeleni (2014) suggests a similar digital divide solution, having

conducted research on South African women who own small ICT enterprises (entrepreneurs) in the Eastern Cape Province.

In response to these challenges, Tongia (2006:2) proposes a four-A framework which should be used by governments, the private sector and individuals towards addressing the digital divide:

(a) Awareness—people and countries should be made aware of the potential benefits of ICT in creating and sustaining development. This can be achieved through ICT training programmes brought by the effectual implementation of ICT policy initiatives.

(b) Availability or accessibility—this is linked to the notion of universal access to communication services, meaning that ICT services should be available and accessible to users within a reasonable distance (Hudson 2010:19). The effectual roll-out and working of MPCCs and telecentres can assist to ensure that ICT are available and accessible to citizens.

(c) Ability to use ICT—the motivation and ability to use computer and ICT services is critical towards addressing the digital divide (Van Dijk 2005). In addition, Van Dijk (ibid.) also referred to this usage as *access* and determines that it is a crucial policy initiative which should be employed towards digital inclusion. In this regard, Van Dijk (2012) emphasized that ICT usage has its own conditions or determinants, namely, usage time and frequency, number and diversity of usage applications, broadband or narrowed use and active or creative use.

(d) Affordability—this places priority on the fact that ICT services should be affordable to users regardless of geographic location. This was also championed by Hudson (2010), who regarded affordable ICT as instrumental towards universal access to ICT. Thus, affordable ICT entails easier access and usage to ICT towards achieving a South African information society (Lesame 2013). In South Africa, affordable ICT is therefore a primary objective of the universal access and service (UAS) policy (South African Department of Communications 2014: s 9.1). In this regard, ICT sector regulators should play a pivotal role in ensuring that ICT are affordable and accessible to citizens.

Consequentially, this study aims to determine if the 2016 national ICT policy addresses these four initiatives towards bridging the digital divide and achieving an

inclusive digital society. This study also aims to determine if those who are meant to implement these initiatives, those are, the government and ICT policy entities, are achieving their mandate of universal service and access to ICT.

2.3 LITERATURE REVIEW

This section of the chapter unpacks the literature review. The literature review provides a deeper understanding on the state of ICT policy in South Africa, both past and present. This is followed by a discussion on key themes or issues (ICT development, convergence and digital inclusion) and the manner in which they are linked to the theoretical framework, as well as how they provide a critical understanding and analysis of the 2016 national ICT policy.

2.3.1 THE STATE OF ICT POLICY IN SOUTH AFRICA

The South African government, post-1994, has made significant progress towards a reformed telecommunications sector that is responsive to the communication needs of citizens (Horwitz 1997; Van Audenhove 1999; James 2001; Lesame 2009). To achieve this, the government had to ensure that universal service and access to communication and ICT services is accomplished and made available to citizens at an affordable low cost (South African Department of Communications 2014: s 9.1; Lewis 2017:3). However, universal access and service to ICT, this study maintains, can be accomplished through the implementation of integrated ICT policy strategies aimed at achieving an inclusive digital society. Universal access and service to ICT, more essentially, is crucial in this study and therefore necessitated a critical analysis of the 2016 national ICT policy.

In a democratic dispensation, the development of an ICT policy had to address issues of inequality that had been brought about by the unbalanced access to communication services (Oyedemi 2009; Pick & Sarker 2016). As a result, James (2001:38) contends that ICT policy development in South Africa took place in four periods or phases:

  (a) Transition period pre-1994
  (b) Transformation period post-1994
  (c) Implementation period mid-1997 until mid-2000
  (d) Evaluation and policy reformulation period mid-2000 until the present

Moreover, Lesame (2005) argues that the South African ICT policy development and implementation evolved significantly as a consequence of the enactment of the Telecommunications Act (No 103 of 1996), the Telecommunications Amendment Act (No 64 of 2001) and the Electronic Communications Act (No 36 of 2005). These Acts are used by the government to inform ICT policy development and implementation towards the creation of an information society (James 2001). For this to be achieved, James (ibid.) maintains that ICT policies in South Africa and other developing countries should not only focus on infrastructure development but also address issues of human resource capacity or development. Failure to employ this integrative approach of ICT infrastructure and human resource development can result in an ineffective and ineffectual ICT policy, thereby exacerbating even further the inequalities of universal service and access to communication services (Van Dijk 2005; Oyedemi 2009; Hudson 2010).

Universal access and service to communication services is not only an objective of the South African ICT policy but constitutes a global agenda towards bridging the digital divide (Van Audenhove 1999). As such, Lesame et al. (2012:210) maintain that international and regional agencies should play a pivotal role towards the accomplishment of universal access and service to ICT. The International Telecommunications Union (ITU), the World Trade Organisation (WTO), the World Bank (WB), the International Telecommunication Satellite Organisation (INTELSAT) and the World Intellectual Property Organisation (WIPO) as well as the International Monetary Fund (IMF) are regarded as key agencies which advise on the direction, development and implementation of ICT policies globally (ibid.).

Regionally, the Southern Africa Development Community (SADC) plays a key role towards the development of numerous policies which guide many sectors including the ICT and telecommunications sector (James 2001). Hence, it is no surprise that South Africa has aligned and continues to align its ICT sector towards being an ICT global competitor and to achieve socioeconomic development by means of universal access and service to ICT (Lewis 2013; Zarenda 2013; Chisango & Lesame 2017). However, the inequality of ICT access and service as a consequence of the digital divide continues to be a stumbling block in South Africa and other developing countries (James 2001:64).

To counteract this, Chisango and Lesame (2017:58) propose that ICT policies and projects should be assessed and reviewed in order to track progress towards providing universal access and service to ICT in rural areas. Hence, this study seeks to investigate the extent to which the 2016 national ICT policy addresses issues of universal service and access to communication services. Moreover, to determine the initiatives that are geared towards ICT development, convergence and digital inclusion and the challenges that ensue (cf. Chapter 1).

During the transformation period (post-1994), the South African ICT sector was divided into three sub-sectors, namely, telecommunications, broadcasting and postal services (James 2001; Department of Communications 2014: s 1.2). Due to increasing convergence in the ICT sector, these sub-sectors have merged to provide communication services at a faster and affordable rate (Lesame 2000; De Lanerolle 2011). More importantly, ICT convergence was the driving force that led to a review of how the communications sector is structured and how it can best be utilised to fully address issues of the 4IR (South African Department of Telecommunications and Postal Services 2015: s 1.8.2). Accordingly, the current South African ICT policy and sector are considered to be made up of and address telecommunications services, hardware, packaged software and services (Mzekandaba 2016).

According to Sekeleni (2014:5), the South African ICT sector is estimated to be worth R60-billion and contributes significantly towards the Gross Domestic Product (GDP). Moreover, this ICT sector consists of and provides regulation for the telecommunications industry, the mobile phone industry, the information technology (IT) industry and the electronics industry (ibid.). In terms of regulation, the ICASA has been mandated, in terms of the Electronic Communications Act (No 36 of 2005), to regulate a reformed communications sector which is responsive to the demands of universal access and service to ICT by all citizens (Department of Communications 2014: s 1.2).

The ICASA, Hawthorne (2015) advises that it should be completely independent of government in order to carry out its ICT mandate. The current positioning and functioning of the national ICT regulator indicate that this has not yet been accomplished or addressed in relevant ICT policy objectives and initiatives (ibid.). In

response to this, Chisango (2014:55) is of the view that a national ICT policy should play a crucial role towards creating a favourable regulatory and tariff environment that seeks to promote equal access to and affordability of ICT.

In addition, the period of the mid to the late 1990s was characterised by crucial sectoral and socio-political changes in South Africa (James 2001:37). These changes were a consequence of a new era that had emerged that promised to transform South Africa as well as redress the social and sectoral ills of the past (ibid.). The ICT sector, among others, received keen interest from the newly and democratically elected South African government of national unity (GNU) (Horwitz 1997:63). In this regard, ICT was regarded as a potent tool that could be used for technology infrastructure development and inclusivity.

Policies and laws within the ICT sector were then developed and interwoven into the national ICT for development (ICT4D) agenda, as propagated in the Reconstruction and Development Programme (RDP, 1994). Thus, this period witnessed the enactment and implementation of the White Papers on Telecommunications (1996), Postal Services (1998) and Broadcasting (1998) (South African Presidency 2016: s 1.1). Furthermore, these White Papers were formulated and given effect by three separate laws, namely, the Telecommunications Act No 103 of 1996, later amended to the Telecommunications Amendment Act 64 of 2001, Postal Services Act No 124 of 1998, later amended to the Postal Services Amendment Act No 33 of 2003, and the Broadcasting Act No 4 of 1999, which later became the Broadcasting Amendment Act No 64 of 2002 (South African Department of Communications 2014: s 1.2).

In an attempt to properly integrate the ICT sector as well as make it more responsive to the current realities of ICT convergence and the fourth industrial revolution (4IR), the South African government, through the NDP, initiated a review of all ICT related policies and laws in 2012 (South African Department of Telecommunications and Postal Services 2015: s 1.3). Interestingly, this was also the year that the national planning commission (NPC) concluded its work and released an ICT development-driven plan which was included in the national development plan (South African Presidency 2012: s 4.7). Therefore, the NDP underpins a crucial document from which

the 2016 national ICT policy take its directive on how to address issues of digital inclusion, convergence and technological or ICT development.

The process of reviewing all national ICT policies and laws began with the appointment of a 22-member advisory panel by the then Minister of Communications, Dina Pule (South African Presidency 2016: s 1.1). This advisory panel was chaired by Group Executive for Strategic Relations at Business Connexion (BCX), Joe Mjwara. The primary aim of this review process was to develop and implement an integrated ICT strategy or policy that would cover the entire communications sector as well as realign this sector with local and international trends of ICT development, convergence, digital inclusion and the 4IR.

According to the 5th African National Congress (ANC) national policy conference discussion document (2017: s 6.1), South Africa released a number of telecommunications policy interventions that preceded the 2016 national ICT policy. These include, the Independent Broadcasting Act of 1993, Triple Enquiry Report of 1995, the already discussed Telecommunications Act 103 of 1996, White Paper on Postal Services of 1998, Postal Services Act of 1998, White Paper on Broadcasting of 1998, Broadcasting Act No 4 of 1999, ICASA Act of 2000, Media Development and Diversity Act of 2002, Electronic Communications and Transaction Act of 2002, Electronic Communications Act 36 of 2005, and finally the 2016 national ICT policy.

Towards developing the 2016 national ICT policy, a Framing Paper was released in April 2013 which gave context to the review process as well as outlined objectives and time frames for when these objectives should be achieved. In January 2014, the national integrated ICT policy Green Paper was released which contemplated progress made and how this progress is in line with the initial objectives outlined in the Framing Paper (2013). In November 2014, a Discussion Document was published that aimed to outline possible strategies and options that can be adopted towards an integrated approach to ICT usage, access, regulation, applications and services (South African Presidency 2016: s 1.1). Consultations with the public and ICT industry (this includes telecommunications, broadcasting and postal services sub-sectors) were included in all these stages so as to make the process towards the 2016 national ICT policy more inclusive and robust.

These documents and policies were considered, debated and juxtaposed with sectoral and technological changes linked to the current South African ICT sector. Subsequently, the ICT policy review panel presented its final list of recommendations to the Minister of Telecommunications and Postal Services in March 2015. The 28-page national integrated ICT policy Review Report, therefore, consists of 168 recommendations that government, through the Department of Telecommunications and Postal Services (DTPS) ministry, had to carefully consider (South African Department of Telecommunications and Postal Services 2015: s 1.13). These recommendations focused on six objectives that should be addressed in the 2016 national ICT policy (ibid.):

    (a) Regulatory principles and approaches;

    (b) Infrastructure and services;

    (c) The digital society;

    (d) Audio and audio-visual content services;

    (e) Industry growth; and

    (f) Institutional frameworks.

These ICT policy objectives are key towards an integrated ICT sector that aims to be responsive to the era of ICT convergence in the 4IR and to do so in an effectual and robust manner. Moreover, these objectives, once broken down into smaller units or themes, can prove instrumental towards addressing the research problem of this study (cf. Chapter 1). In this sense, these ICT policy aspects attest to the problem or main argument of this study, that is, the South African ICT sector is not properly integrated and the 2016 national ICT policy aims to integrate it. In so doing, the 2016 national ICT policy aims to implement initiatives towards proper ICT infrastructure development, digital inclusion and convergence in order to address issues of the 4IR. These initiatives are envisioned to be implemented through the new roles of key government agencies, namely, DoC, DTPS, ICASA, USAASA and SAPO (Smith 2016; Lewis 2017). The outcome of the ICT policy review process resulted in the release of the 2016 national ICT policy. Essentially, the 2016 national ICT policy is a result of numerous and involved consultations and debates that argued for the proper direction and structure that the national ICT sector should take in the wake of the 4IR.

The release of the 2016 national ICT policy has been received with much debate. The initiatives contained therein are an increasingly contested domain by government and the ICT industry (Gilbert 2017). The reason for this is that this policy comes at a time when South Africa is faced with the challenge of developing the ICT sector so that it is on par with global trends and innovations that characterise this sector (cf. Chapter 1). Additionally, the 2016 national ICT policy exists during a time when South Africa is constantly thinking of ways to robustly transform the ICT sector and make it more digitalised and converged. It is therefore imperative for this transformation to take place unhindered so that South Africa can compete globally in terms of ICT products and be an example to other African countries as a leading ICT exporter (Duncan 2015; McLeod 2016).

Moreover, the 2016 national ICT policy exists in an environment characterised by widespread changes due to ICT convergence as well as the increased level of digitalised communication as a result of the looming 4IR (Ndabeni-Abrahams 2017). This ICT policy comes at a time when universal access and service to ICT has become a key national priority or necessity. Thus, the 2016 national ICT policy is an essential policy that should address issues of affordability, accessibility and availability of ICT in South Africa (Smith 2016). Such issues are key in addressing the digital divide as well as closing the gap between the haves and the have-nots.

Basically, the 2016 national ICT policy, as maintained in this study, has an enormous task to achieve a converged ICT sector that extensively uses ICT towards an inclusive digital society. The task is enormous but not impossible; nor is it far-fetched. However, the implementation process might experience some delay and certain alterations might need to be made to this process before it gets underway. In consideration of these aspects, former DTPS Minister Siyabonga Cwele, at the telecommunications and postal services parliamentary portfolio committee meeting in May 2017, outlined the following key challenges that the 2016 national ICT policy seeks to address (Cwele 2017):

  (a) The unequal access to ICT services
  (b) Frameworks and definitions for universal service and access were extended to cover access to high-quality broadband.

(c) There was a duplication and lack of alignment in institutional frameworks and roles.

(d) There was vertical and horizontal integration between content and telecommunications providers.

(e) There was an ineffective regulatory regime.

(f) The high cost of communication

(g) The current exclusive spectrum regime favoured a few market players at the expense of broader socioeconomic development.

(h) Balancing the rights of licensees to enter premises

(i) The lack of coordination between stakeholders in different sectors

(j) The Post Office required a full restructuring to play a leading role in the provision of universal access to converged services.

(k) There is a need for whole-of-government approach commitment to digital; transformation.

(l) The regulation of the ICT sector is currently spread across different entities.

(m) Uneven access across society to access skills and services

These are among the foremost challenges that the 2016 national ICT policy is expected to address as well as to put strategies in place to effectively deal with them. Furthermore, these challenges present many implications in terms of the convergence and regulation of the ICT sector. Many of the criticisms or drawbacks directed to the 2016 national ICT policy are based on these challenges not being properly addressed nor taken as a matter of urgency (Cwele 2017). Therefore, it is important for the ICT industry to work closely with government and the private sector to address these challenges. The 2016 national ICT policy is still fairly new and it should therefore be given a chance to develop and implement that which is necessary to advance the ICT sector to new levels of ICT convergence and digital inclusion.

A primary concern brought against the 2016 national ICT policy is that it is still not integrated or holistic enough to sufficiently cater to the increasing convergence of ICT. As a result, the 2016 national ICT policy still views the ICT sector as being made up of different sub-sectors (Smith 2016). This goes against the principle of convergence because convergence calls for the coming together of different communication sectors and technologies to provide unified content and services to citizens (Duncan 2015:1).

Information and communication technology convergence underpins a critical global trend that is increasingly being used for socioeconomic development (ibid.). In South Africa, a converged approach to ICT should be prioritised because this can play a cardinal role towards a proliferated and development-driven usage and exploitation of ICT.

However, South Africa has not yet achieved proper convergence of its current ICT sector (Cwele 2018). For this to be achieved, it calls for up-to-date and implementable policy frameworks expressly aimed at establishing an inclusive and converged ICT sector and society. The current structure and initiatives of the 2016 national ICT policy are viewed as being counterproductive towards achieving this (McLeod 2016). This is caused by the fact that this ICT policy still relates to ICT matters as separate issues that require separate legislative and regulatory interventions (ibid.).

Furthermore, member of parliament (MP) and Democratic Alliance (DA) Shadow Minister of Telecommunications and Postal Services Marian Shinn is of the view that government and the ICT sector should carefully scrutinise the challenges and criticisms (as listed above) so that an effectual way forward is established (Shinn 2016). The direction taken after this process is one that should put the communication and development needs of citizens first. In this sense, the 2016 national ICT policy initiatives should at all times reflect the current state of society and what society needs in terms of access to and usage of ICT.

The merging of the DoC and DTPS in November 2018 is a good first step towards an effective ICT policy and implementation plan (Mzekandaba 2018). Therefore, strides should continuously be made to ensure that the 2016 national ICT policy is implemented in a manner that is comprehensive and inclusive. To accomplish this, adequate attention should be given to issues of ICT infrastructure development, convergence and digital inclusion (Cwele 2017). The researcher maintains that these issues are the most pressing whenever one ponders on the South African ICT policy and sector of today.

2.4 LITERATURE THEMES

The following section of the literature review addresses the literature themes of the study. These themes are key in understanding the state of ICT policy in the South

African context. These themes also underpin important issues that are pertinent in the analysis of the 2016 national ICT policy. These themes include ICT development (as part of the national development plan), digital inclusion and convergence.

2.4.1 ICT development

This study views ICT development as being inclusive of technology hardware, software and broadband connectivity (South African Presidency 2012: s 4.7). Moreover, ICT development refers to proper development of ICT infrastructure and software in a manner that is beneficial to citizens or end-users (Lesame 2009: 81). In this regard, ICT development is viewed in more technological deterministic terms. Technological determinism puts technological tools and innovations at the centre of all social and economic development (Dafoe 2015). This study places the responsibility of proper ICT infrastructure development on an integrated and well-purposed ICT policy and sector. As such, Salman (2009:1), maintains that ICT policies are important and much-needed vehicles in laying a strong foundation on which ICT development can be addressed. Such ICT policies should therefore ensure that ICT development initiatives are well implemented and act as a tool for ICT skills development.

With the proliferation of internet broadband connectivity, new media, and related ICT services, a link between ICT policies and development has been established (Bankole & Mbimbi 2017). This linkage rests on the assumption that the proliferated usage and application of advanced ICT should be reflected in ICT policies of developing countries such as South Africa (ibid.). Through the adoption of ICT, scholars or researchers maintain that developing countries can minimise the possible risk of being excluded from the digital society (Sein & Harindranath 2004:15; Van Dijk 2006:232; Lesame 2014:334; Xu et al. 2018:91). The role of an ICT policy, is to educate industry people, policy-makers and citizens about the positive impact of ICT for development and economic stability (Salman 2009). In the digital society, ICT development proves achievable through the effectual implementation of information and communication technology for development (ICT4D) projects or initiatives.

The idea of ICT4D emerged in the ICT discourse and policy frameworks as a result of the increasing prioritisation of accelerating development in developing or transition

countries (James 2001:4). Consequently, Mansell (2012) maintains that a great deal of research in this area concerned how and why people use ICT and what are the implications of this in terms of development in social, economic, cultural and political settings. Hence, effectual development in all four settings can bring about a beneficial environment in which ICT4D initiatives can flourish. Lesame and Seti (2014:306) attribute the following factors to the failure or ineffectual impact of ICT4D initiatives. These include;

(a) Poor or absence of a telecommunications infrastructure

(b) Absence of a well-integrated or unclear government ICT policy

(c) Scarcity or lack of social capital to use ICT or lack of interest in using ICT

(d) Irrelevance or detachment of technology to local problems

(e) Lack of dedication by ICT centre operators to the ICT project and community development

These factors, arguably, need the implementation of an integrated ICT strategy to address these issues and make ICT4D a beneficial reality for citizens (Salman 2009:5). This is the kind of reality that this study seeks to investigate through an analysis of the 2016 national ICT policy. Hence, the question asked in 2020 is, how far has the 2016 national ICT policy addressed these five challenges? Moreover, the other concern or question raised is the extent to which the 2016 national ICT policy is in line with the NDP (Bankole & Mbimbi 2017:78).

A number of scholars and researchers are of the view that national ICT policies should reflect the objectives of the national development agenda (Mansell 1994:4; Sein & Harindranath 2004:15; Lorini et al. 2014:90). In this sense, the development and implementation of ICT policies should be geared towards achieving these objectives, especially those that concern issues of ICT development, convergence, and digital inclusion (Odhiambo 2008:5). In summary, national development goals ranging from essential issues of poverty to unemployment to education and health could be well confronted alongside a conducive environment wherein ICT is allowed to permeate.

2.4.1.1 National development plan

The Reconstruction and Development Plan (RDP, 1994) was the first South African post-apartheid government policy that included ICT development. This is the kind of

development that aimed at using ICT to eradicate the inequalities or injustices left behind by the apartheid era (Van Audenhove 2003:134; Oyedemi 2009:156; Lewis 2013:95; Zarenda 2013:7). This policy was later referred to as the RDP Base document (James 2001:37; Van Audenhove 2003:129). During the introduction of the RDP, the telecommunications infrastructure in South Africa was highly concentrated in and used by white people in urban areas (Van Audenhove 1999). The Growth, Employment, and Redistribution (GEAR, 1996) programme followed the RDP and constituted a policy geared towards South Africa being a developmental state in terms of the redistribution of wealth and employment resources to those who were previously denied access.

Furthermore, Karriem and Hoskins (2016:325) argue that GEAR ascribed great significance to market forces as these were seen as vital towards implementing the developmental agenda. The National Development Plan (NDP, 2012) is seen as the latest policy that contains South African government's stance on issues related to ICT development, socioeconomic development, convergence, and digital inclusion (ibid.). These areas therefore underscore crucial post-apartheid government objectives of which the achievement can result in a progressive society that benefits all citizens.

It is important to note that according to this study, *national* refers to the country South Africa; *development* refers to ICT initiatives that are put in a policy or plan of action that are envisaged to benefit citizens, and implemented towards achieving an inclusive digital society. A plan, therefore, constitutes a progressive policy or strategy that is put in place which prioritises the national developmental objective of effectively using ICT content and infrastructure (Lesame 2009). Moreover, Bankole and Mbimbi (2017:78) proclaim that development through using ICT infrastructure is dependent on two main aspects. These include proper adoption of ICT to create an ICT-enabled community and the promotion of ICT adoption, usage and access. These aspects, arguably, should be addressed alongside practical strategies as these are envisaged in an NDP aimed at the development of the ICT sector.

The NDP was adopted in 2012 after a lengthy consultative process that began in 2010. In May of 2010, the former South African President Jacob Zuma appointed the national planning commission (NPC), which was led by the then Minister in the Presidency for

National Planning, Trevor Manuel (Zarenda 2013:2; Lesame 2013:74). The NPC was tasked with the responsibility of putting together a vision in the form of a national plan or policy that would include a deadline as to when this vision was to be accomplished. As such, the objective or vision of the NDP is envisaged to be accomplished by the year 2030 (Zarenda 2013:3). The NDP, consequently, consists of "well thought out programs to achieve outcomes that people value and for which they are willing to labour" (Bankole and Mbimbi 2017:77). These programmes are intended to eliminate poverty, inequality, unemployment and the unequal access to and service of ICT (Zarenda 2013:7).

Therefore, the NDP constitutes a broader objective that outlines directives on how the national ICT policy and sector should be structured, and what it should prioritise (Lesame 2013). As such, the 444-page NDP document stresses the need for the converged use of ICT infrastructure and content. This should be provided for the benefit of citizens at affordable cost (South African Presidency 2012: s 4.7). Affordability and accessibility of ICT services as well as the proper distribution of ICT infrastructure constitutes a major objective of the NDP. However, Odhiambo (ibid.) contends that this NDP policy initiative at times proves unsuccessful because of a lack of coordination, which results in the duplication or repetition of ICT resources.

Alongside a lack of institutional capability in the ICT sector, the NDP emphasizes the need for an integrated ICT policy and a national e-strategy that recognises the contribution of the ICT sector in the national economy (Gillwald 2012:31). Overall, an NDP, when effectively implemented, can play a cardinal role towards the achievement of an inclusive digital society as envisaged in an integrated ICT policy.

The South African government, in September 2017, commemorated the fifth anniversary since the adoption of the NDP (Herman 2017). Speaking at the Unisa NDP 2030 lecture, former Minister in the Presidency for Planning, Monitoring and Evaluation, Jeff Radebe, cited a few key areas in the NDP where notable progress has been made. They include accelerated socioeconomic change for citizens, especially the youth and university students, higher education and leadership roles. Moreover, Vorster (2012) maintains that these objectives should be implemented and enhanced by a robust ICT vision or policy. This vision or policy should ensure that a

seamless information infrastructure is realised and the ramifications of the digital divide are addressed.

2.4.2 Digital inclusion: universal access and service to ICT

The inclusiveness of society is important to the cultural and socioeconomic development of South Africa. As a result, initiatives aimed at an inclusive society in South Africa seek to redress or rectify the practice of non-inclusion which was perpetuated by the apartheid government (James 2001; Van Audenhove 2003; Oyedemi 2009; Lesame 2009; Lewis 2013). Inclusion in terms of access to affordable electronic communications has been a primary concern since the introduction of democracy in 1994 (Lewis 2017:1). Furthermore, digital inclusion and the promotion of an inclusive digital society are seen to underpin an important communications goal in post-apartheid South Africa (Horwitz 1997:69; Van Audenhove 1999:16; James 2001:37; Van Dijk 2005:134; Lesame 2013:76).

The previously discussed notion of ICT4D and its related projects is furthermore used to, among other things, create and maintain inclusive communities or regions (Lorini et al. 2014:78). Therefore, it is the view and operational definition of this study that digital inclusion in South Africa fundamentally includes a well-regulated and unbiased access to, usage and affordability of ICT to every citizen (Deen-Swarray 2016:31). Digital inclusion in this manner should be reflected or addressed in a progressive ICT policy framework.

Proper access to ICT means an initiative which has the potential to create and maintain digital inclusion while acting as an instrument that can minimise the digital divide or exclusion. Suffice to say, digital inclusion and digital divide are viewed as sometimes co-existing, especially in countries such as South Africa, which equally consist of both developed (urban) and undeveloped (peri-urban or rural) areas in terms of access to and usage of ICT (Lesame & Seti 2014). This further exacerbates the digital divide and diminishes or slows down the realisation of an inclusive digital society (Lesame 2005; Van Dijk 2005; Lewis 2013; Lorini et al. 2014; Lesame & Seti 2014).

Access to ICT, Lesame (2014:331) maintains, is a crucial constitutional right enshrined in the South African Constitution (RSA, 1996). Therefore, not having access to ICT not

only infringes on the constitutional right of citizens but it also increases digital illiteracy and a shortage of much needed electronic skills or e-skills to survive in an inclusive digital society. Universal access to ICT, thus, is key to achieving digital inclusion in the South African post-apartheid society.

Inclusive access to basic telephony, mobile telephony, the internet, a computer and other ICT services or applications constitutes digital inclusion in developed, transition and developing countries (Mansell 2012; Lewis 2013; Lesame & Seti 2014; Deen-Swarray 2016; Lewis 2017). The prevailing situation in South Africa, however, is that it is predominantly in the area of access to mobile phones (this is an example of a communications technology, CT) that digital inclusion is being realised (Lesame 2005:8; Lorini et al. 2014:83; World Bank 2014:191). According to the ICASA report on the state of the ICT sector, access to mobile phones increased to 81.72% at the end of September 2018 (Gilbert 2019). Hence, Lesame (2013:84) concludes that if telecommunications service providers intend to offer any kind of new or existing service to consumers, the mobile phone or cell phone would be an effective ICT to utilise for this purpose.

Access, for example, to other forms of ICT, such as household internet connection, personal computers (PCs) and individual internet usage is improving in South Africa (Walker 2019). It is estimated that 64.7% of South African households have at least one (family) member who is able to access the internet from any tool or device (ibid.). However, Lewis (2017:2) emphasises the fact that these services need to be made available at affordable tariffs to citizens especially the "marginalised and excluded". To accomplish this, Oyedemi (2009:156) maintains that an appropriate ICT governance framework would need to be adopted and implemented. Moreover, this ICT governance framework should not act in isolation to other socioeconomic inequalities and policies but be in line with them (ibid.). Socioeconomic imbalances thus have the potential to render digital inclusion strategies ineffective, as they are a driving force in terms of who gets access to which ICT and for how much.

For digital inclusion to effectively take place, there would need to be a widespread and well-regulated usage of ICT. Usage of ICT coupled with the knowledge of ICT are important so that people are less anxious in using ICT and this, in turn, can ensure that digital illiteracy is reduced among the poor in rural areas (Mansell 2012; Lesame

2014:332). Furthermore, Odhiambo (2008:5) proposes the proliferated use of ICT is indicative of development and maintained that national development goals require not only the existence of policies but proper usage of ICT which is accessible and available to citizens. Zainab, Adullah and Edzan (2002) maintain that ICT usage and, by implication, ICT skills and literacy promotes the existence of an ICT enabled inclusive society.

Lesame (2014:332) also links the proliferated use of ICT to be indicative of a knowledge-based society and maintains that the primary goal of this society is for individuals "to be able to access the world of electronic communications and utilise it". Hence, access to electronic communication tools coupled with the knowledge, willingness and ease that comes with using them at affordable low cost translate to digital inclusion. Access to ICT can also lead to access to ICT skills and higher literacy. These are critical to advance development goals, as stated by the United Nations MDGs (2015) and the national development plan (NDP).

The universal provision of ICT services has become a key policy intervention in developing countries (Oyedemi 2009; Lesame 2009; Lesame 2013; Makoza & Chigona 2016; Lewis 2017). Thus, to survive in an inclusive digital society, people need to make effective use of telecommunications services and to do so at affordable and inclusive rates. In this regard, the Malaysian National Public Policy Workshop (NPPW, 2005), in one of its recommendations towards digital inclusion in that region, saw affordability and sustainability as constraints which need to be considered before a certain ICT application is introduced. The South African development plan (NDP, 2012) also promotes the affordability of ICT services and furthermore proclaims that these should be provided using a converged ICT infrastructure that benefits citizens while making South Africa a global competitor in terms of affordable ICT (Duncan 2015:3; Bankole & Mbimbi 2017:91). A converged ICT infrastructure can assist in meeting the communication needs of citizens and to do so within less time than was the case previously.

The objective of affordable ICT services in South Africa has not yet been achieved (Smith 2016). An example of this was the public outcry which resulted in nation-wide protests under the banner or hashtag data must fall or #datamustfall (Gilbert 2017).

These protests were then followed by an inquiry into the high cost of communication and how this nullifies any efforts or initiatives aimed at achieving digital inclusion (ibid.). As alluded to in previous sections, the high cost of communication is one of the challenges that the 2016 national ICT policy is expected to address.

Moreover, Gillwald et al. (2012:1), argue that, although South Africa's ICT sector has progressed significantly since telecommunications reform began in the 1990s, digital inclusion as a result of affordability, access to and usage of ICT has not been achieved. Poor institutional arrangement, an ineffectual regulatory environment, high wholesale pricing and high mobile and fixed retail prices are cited as encompassing some of the reasons for an unaffordable ICT environment in South Africa (ibid.). These aspects, therefore, amplify the reality of digital exclusion and by extension socioeconomic exclusion (Lorini et al. 2014). These are counterproductive to the national development plan (Zarenda 2013), and make digital inclusion unachievable (Smith 2015). Proper implementation of ICT policy initiatives and proactive government entities that can identify and assist in areas where digital inclusion is still not achieved can play a major role in addressing some of these challenges, as outlined here.

Lesame (2000:31) contends that in South Africa universal service is paramount in the provision of telecommunication services and applications that citizens can utilise to acquire "basic life-sustaining needs, develop self-esteem and be allowed to make socio-political and economic choices". Universal service initiatives, moreover, should not only focus on the provision of ICT but also identify other gaps, such as providing proper electricity for ICT services to work efficiently (South African Department of Communications 2014: s 9.5). As such, Eskom, South Africa's power utility, should form partnerships with ICT service providers towards the uninterrupted provision of ICT services and managing any risks of possible power cuts or load-shedding, especially in rural or peri-urban areas.

In terms of policy interventions, the Telecommunications Act No 103 of 1996, the Telecommunications Amendment Act No 64 of 2001 and the Electronic Communications Act No 36 of 2005 address the issue of universal service in South Africa. These Acts were instrumental in the formation of the universal service obligations (USOs), universal service fund (USF) and the universal service agency

(USA) which later became the Universal Service and Access Agency of South Africa (USAASA). The USAASA has been mandated to oversee or manage the USF and to promote ICT universal service and access to every citizen regardless of socioeconomic status or geographical location (Lewis 2017:3). Lesame (2005:165) further states that the USAASA is also a crucial government initiative towards telecommunications reconstruction and development in post-apartheid South Africa. The provision therefore of ICT services is equally important as the provision of other services, as they are critical to achieving an inclusive digital society.

By its own assessment or admission, the USAASA has not been successful in providing universal service to every citizen (Lewis 2017:11). This is due, among other things, to institutional capabilities or incapability, poor human resource and a lack of clear independence from government (ibid.). Other universal service and access (UAS) policy interventions include the universal service and access licensees (USALs) and a discounted school internet rate called education rate or e-rate (ibid.). Ensuring affordability, availability, and accessibility of ICT services are viewed as primary objectives of the UAS policy. This responsibility has been given to government entities such as the USAASA, ICASA and the Media Development and Diversity Agency (MDDA) (South African Department of Communications 2014: s 9.4).

The proliferated supply of ICT services and applications should lead to universal access to these services (Horwitz 1997:63). Furthermore, Lesame (2000:31) regards universal access as having access to a telephone at a reasonable distance. This distance varies from country to country (ibid.). In Brazil, for example, a telephone should be accessed less than 5 km away. In Japan and the United States (US), it is required to be a telephone in every household. A 30-minute journey to a telephone booth is traditionally required in South Africa (James 2001:66; Lesame 2005:157; Oyedemi 2009:158). The establishment therefore of multi-purpose community centres (MPCCs) in developing countries is key in facilitating universal access to ICT services as well as the promotion of e-skills (Hudson 2010).

Inequality of access, as a result, exacerbates digital exclusion and digital illiteracy, thereby creating a situation wherein the poor in society are unable to participate in the digital society and economy (Van Dijk 2006:232; Oyedemi 2009:158; Salman 2009:3;

Lesame 2014:332; Chisango & Lesame 2017:58). Limited participation in the digital society could be tackled through rigorous ICT policy initiatives that seek to provide effectual digital inclusion for the benefit of citizens. Oyedemi (2009) further emphasises that such initiatives should underpin a pro-poor policy driven towards universal access for the poor in under-serviced areas. Such universal access should be implemented in ways that are more integrated or converged.

2.4.3 Convergence

The trend of technological convergence came about in the early 1980s, suggesting a practice of combining all media activities, including telecommunications, broadcasting and print. These activities were to be carried out by a single common carrier (Mueller 1999:11; De Lanerolle 2011:41). In addition, Garcia-Murillo and MacInnes (2003:57) define convergence in this way and maintain that convergence relates to an evolutionary technological trend or practice that permits the "coming together of telecommunications, computing and broadcasting into a single digital bistream". The bundling up of these communication services to form one converged ICT service was the consequence of major "technological trends in liberalised telecommunications markets" (Lesame 2000:29).

The current discourse on ICT convergence involves the coming together of advanced ICT including internet and broadband-based technologies, platforms, services, applications and devices (Kim et al. 2014). It is no surprise, therefore, that nearly all human, business, economic, political and global transactions are done through converged and internet-based technologies and services (Roblek et al. 2016: 12). In addition, the merging of technologies and the quick and easy functions that these perform is, consequently, viewed as a major trend or convenience in an inclusive digital society (ibid.). This is a society, among other things, that thrives on and is welcoming of devices or services that perform previously protracted online functions in no time at all. Functions like ordering a cab, Uber or Taxify (Bolt), booking a flight, buying a product online, making a payment, listening to music, watching a movie or playing a game can now be done using one device that has the in-built capacity to perform all these functions (Schwab 2016).

Convergence of technological devices, platforms, applications and services is characteristic of the present technological era known as the fourth industrial revolution (Guliwe 2019). In this regard, technological convergence has completely altered the manner in which people communicate including how and where they work. Though this might seem as a good move towards the future, it has the potential to threaten people's jobs and livelihoods (Gavaza 2019). The case of MultiChoice threatening to retrench almost 2000 of its employees exemplifies how converged and digital technologies can 'replace' human beings or hard labour (ibid.). It is therefore important to keep guard of these issues while also embracing the benefits of ICT convergence in today's society.

Moreover, technological convergence has an impact on ICT policy development and implementation (McLeod 2018). In this regard, the trend of converged and converging technologies and services ought to be addressed in national ICT policies (Duncan 2015). Additionally, De Lanerolle (2011:49) cautions policy-makers in the ICT sector to be sensitive to both the intended and unintended benefits of ICT convergence for citizens, by ensuring that they pay attention to what is beneficial for "a society as a whole, in each case and based on the aims of maximising economic, social or political welfare (or a combination of them)". Policy-makers, industry-sectors and government, in addition, should ensure that there exists an effective regulator that is tasked with regulating a converged ICT sector in an inclusive and unbiased manner. Van Audenhove et al. (2001:45) proclaim that such regulation should inspire a fundamental transformation at national policy level in terms of how this sector can be utilised for ICT development.

In response to increasing convergence, in 2000, the Independent Broadcasting Authority (IBA) and the South African Telecommunications Regulatory Authority (SATRA) merged to form the Independent Communications Authority of South Africa (ICASA). This merger came about during a time when ICT converged services were not well addressed in South Africa and there lacked a suitable regulator to be responsive to the needs of converged telecommunications (Lesame 2000:34). The ICASA, as a result, needed to bridge this gap by being responsible for the regulation of the telecommunications, broadcasting and postal-service sectors (ibid.). This development was also promoted through the enactment of the Electronic

Communications Act (No 36 of 2005) (South African Department of Communications 2014: s 1.2). The ICASA, according to the Convergence Bill (2004), ought to play a leading role towards ensuring that South Africa is on par with the rest of the world in as far as ICT convergence and infrastructure development is concerned.

There are a number of challenges that ICASA needs to address as well as find workable solutions to them. According to Muharo and Kennedy (2005:79), these include technology-neutral regulation, regulation of content, market regulation, tariff regulation and effective interconnection. In dealing with these issues, Garcia-Murillo and MacInnes (2003:60) advise regulators to devise effectual regulatory strategies that will assist in dealing with the fluidity and complexity that comes with converged ICT and computing services. To address the challenges of the regulator in a constructive manner, Tubbs (2014), furthermore, maintains that the independence of ICASA remains a prime concern that should be dealt with if ICASA is to effectively regulate a converged and converging ICT sector. Independence, especially from government, is therefore key to ICASA maintaining a formidable regulatory imprint in the space of telecommunications and the laws that govern this space.

2.5 SUMMARY AND OUTLINE OF CHAPTER 3

This chapter sought to outline and discuss the theoretical framework and literature review of the study. This chapter discussed the information society theory (4IR) and digital divide theory as key theories or perspectives upon which this study is based. The state of ICT policy in South Africa was discussed in order to contextualise all issues related to the South African ICT policy environment, both past and present. The literature review consisted of specific literature themes or issues that were used to further explain and contextualise the state of ICT policy in South Africa. More importantly, these themes underpin key issues and challenges that the 2016 national ICT policy is anticipated to address. These themes included ICT development, digital inclusion and convergence. The next chapter, Chapter 3, explains the research methodology in detail.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter outlines and unpacks the research methodology that was executed for the study. Research methodology underpins the overarching objective of this study as it seeks to describe in critical detail the strategies or methods that the researcher utilised to address the research problem stated in Chapter 1. A discussion and execution of a research methodology is an essential part towards a rigorous, valid and reliable study (Berg 1998:25; Creswell 2007:35; Yin 2011:7). In addition, Babbie (2013) maintains that the existence of a research methodology assists the researcher to embark on a rigorous process of enquiry into their research problem with the intention that this enquiry yields valid and reliable findings.

Hence, Denzin and Lincoln (2005) postulate that a research methodology purposes to demonstrate how information is acquired and determines the researcher's choice of research design. For this reason, social research is viewed as a primary tool towards "acquiring knowledge and uncovering causes of behaviour" (Wagner et al. 2012:3). This study, which mainly employed qualitative methodology, research is described as an undertaking that collects information or data in the form of words (Creswell 2007). Furthermore, Wagner et al. (2012) record that document analysis, as a method of data collection is used for exploring, describing or explaining social phenomena as depicted in (policy) documents. Data collection techniques are examined in critical detail later in this chapter.

The study employed a qualitative research design which is explored and discussed in greater detail in this chapter. However, it proves noteworthy at this introductory part of the chapter to be explicit on the role of the researcher who uses a qualitative research design. In this sense, the researcher engaged in qualitative research is regarded as the primary tool for data collection and analysis (Terre Blanche et al. 2006:272). Furthermore, Jensen (2012) is of the view that researchers in qualitative research are interpretive subjects who play a crucial role towards analysing and contextualising data while adhering to all manner of rigour and ethical conduct in doing this.

Consequentially, the researcher was mindful of his role and strived to maintain a caring and ethical attitude throughout the research process. This was done by being always objective and sensitive to the prescripts of acceptable research conduct especially in the research stages of data collection and analysis. More importantly, the researcher was aware of and honest about their own biases and subjectivity and sought to always keep these in check in order to produce quality research results that are scientifically viable, trustworthy and transferable (Creswell 2014:207).

In an attempt to unpack the research methodology used in the study, this chapter critically discusses the research aim and questions, the research approach, data collection and analysis techniques, triangulation, population and sampling methods, limitations of the study, issues of validity and reliability and crucial ethical considerations. As stated in Chapter 1, the study utilised qualitative research methods in a quest to explore the 2016 national ICT policy initiatives which are linked to and address ICT development, convergence and digital inclusion. Qualitative research methods were also used to describe the role of communications government entities (for example, the ICASA, USAASA, SAPO, DTPS and DoC) towards the implementation of this ICT policy. Therefore, qualitative research methods in this study were aimed at an overall critical analysis of the 2016 national ICT policy in order to determine how it plans to integrate the South African ICT sector for the benefit of citizens.

3.2 RESEARCH AIM AND RESEARCH QUESTIONS

3.2.1 The research aim

The research aim is equivalent to the research purpose and reveals the overriding motive of a research project (Creswell 2007). In addition, Babbie (2013) asserts that there are three basic aims or objectives of social research, namely, exploratory, descriptive and explanatory. The aim of this study resonates with and reflects two of the basic objectives of social research, namely, exploratory and descriptive (cf. Chapter 1).

3.2.2 The research questions

The research questions or sub-problems were based on and aimed at addressing the research problem as discussed in Chapter 1. Moreover, the researcher used these

research questions to guide, direct and give meaning to the data collection and analysis processes in order to satisfy the overarching purpose of the study (Berg 1998). As discussed in Chapter 1, the research questions of the study are:

(1) What are the key ICT policy initiatives identified in the 2016 national ICT policy in relation to ICT development, convergence and digital inclusion?

(2) Which government entities are identified in the 2016 national ICT policy to implement ICT policy initiatives (ICT development, convergence and digital inclusion) and their roles?

(3) What is the interrelationship (in literature and in policy) between ICT development, convergence and digital inclusion?

3.3 THE RESEARCH APPROACH

3.3.1 Qualitative research

This study employed a qualitative research approach because it sought to explore and describe the 2016 national ICT policy. Equally important, the study sought to determine and contextualise the ICT policy initiatives and juxtapose these with their natural setting or in practice (Wagner et al. 2012:265). Accordingly, qualitative research was utilised in order to fully comprehend the meaning and implementation of key ICT policy initiatives, namely, ICT development, convergence and digital inclusion.

Gone are the days when qualitative research was regarded as non-scientific and its contributions to scientific research seen as invalid and lacking rigour (Bricki & Green 2002:2; Jensen 2012:265). At the beginning of the 1990s, qualitative research grew as a formidable and preferred research approach towards producing quality results whenever a study seeks to explore and describe phenomena in depth (Jensen 2012). In addition, Alasuutari (2009) is of the view that the rise of qualitative research was indicative of a change in the world of social science research wherein contextual relationships of everyday reality gained more prominence than statistical relationships.

As a result of this development, Creswell (2014:187) advances the viewpoint that qualitative research is in fact interpretive research. In this regard, Jensen (2012) states

that the researcher in qualitative studies is regarded as the primary interpreter of the data collected and analysed. Interpretation underscored a crucial exercise that was done throughout the process of data collection and analysis in this study (Terre Blanche et al. 2006:276). Furthermore, qualitative research is also referred to as *social constructionist research,* meaning that it is a type of research that is concerned with the social meaning encoded through language (ibid.). With the use of qualitative research methods, this study sought to determine the social and developmental meaning of the 2016 national ICT policy towards the achievement of an inclusive digital society (cf. Chapter 1).

It was in the 1960s and 1970s that the rise of qualitative research became more prominent (Terre Blanche et al. 2006:274). Furthermore, Alasuutari (2009:5) maintains that two intertwined developments led to this rise:

(a) There was growing disappointment and discontent with the results and promise of survey methods and with the scientific approach in which social reality is reduced to causal chains.

(b) There was pressure from both within and outside to retain and develop sociology as an empirically grounded social science.

These crucial developments in the history of qualitative research led to this approach to be viewed and defined as one that "observes everyday life through interpretive frameworks to get close to the context of the study, and to reveal unfolding social processes" (Pettigrew 2013:124). Adding on this, Lee (1999) records that the best interpretive research project is one that is grounded in context and meaning and purposes to explore and describe social phenomena in a clear and rigorous manner. Hence, this study regards qualitative research as an approach characterised by its purposes which seek to comprehend some aspect of social life and its methods which "in general produce words, rather than numbers as data for analysis" (Bricki & Green 2002:2). In this sense, words, specifically themes, constituted the primary data for the study as it sought to qualitatively analyse the 2016 national ICT policy.

As stated in the introductory part of this chapter, the role of the researcher in qualitative research is of critical importance. In this regard, Bowen (2009) postulates that the qualitative researcher is required to obtain data from multiple sources of evidence.

These sources can include documents, interviews, participant or non-participant observation and physical artefacts (ibid.). The researcher in this study utilised the 2016 national ICT policy and numerous other related documents as well as conducted interviews. In so doing, the study adhered to a critical requirement in qualitative research, that is, triangulation (Fusch et al. 2018). Data collection and the type of triangulation used in the study are discussed later in this chapter. Jensen (2012:266) highlights six basic concepts in qualitative research:

    (a) Meaning
    (b) Natural contexts
    (c) The native's perspective
    (d) Emic and etic analysis
    (e) Researchers as interpretive subjects
    (f) Iterative process of research

In relation to these basic concepts, this study sought to carefully unpack and contextualise the meaning of the 2016 national ICT policy and how this policy addresses the South African ICT sector of today. Through a careful analysis of the 2016 national ICT policy, the researcher aimed to understand the (natural) context and perspective that this policy has on the advancement and integration of the national ICT sector. In this regard, the researcher sought to undertake an emic (internal) and etic (external) analysis of the 2016 national ICT policy and juxtapose this to the main objectives and argument of the study. This analysis is discussed in detail in Chapter 4 (findings and data analysis).

Throughout the process of data collection and analysis, the researcher remained the main interpreter of data. Moreover, the researcher adhered to and maintained an iterative process of research on the 2016 national ICT policy. An iterative process was maintained in the sense that the researcher actively and reflectively read the 2016 national ICT policy and interview transcripts until the point of data saturation (Fusch et al. 2018). Data saturation refers to the point at which no new information or knowledge emerges from the data (2016 national ICT policy and interview transcripts). The 2016 national ICT policy and interview transcripts were read and analysed in extensive detail. This process was also practiced in the writing of the research findings (analysis) wherein the researcher strived to present the findings in critical detail, which is free of

any inconsistencies or disconnection in relation to the objectives and overall purpose of this study.

From these basic concepts emerge or unfolds certain characteristics that distinguish qualitative research from other research designs. Burns and Grove (2003:357) unpack these characteristics as follows:

(a) It uses an inductive form of reasoning: develops concepts, insights and understanding from patterns in the data.

(b) It uses the emic perspective of enquiry: derives meaning from the participants' perspective.

(c) It regards reality as subjective

(d) It captures and discovers meaning once the researcher becomes immersed in the data.

(e) It seeks to understand phenomena.

(f) It determines observations by information-richness of settings and modifies types of observations to enrich understanding.

(g) It presents data in the form of words, quotes from documents and transcripts.

(h) It analyses data by extracting themes.

(i) It uses words as the basis for analysing, rather than numerical data.

The researcher made use of both inductive and deductive forms of reasoning (Natow 2020). In this sense, the researcher made broad generalisations, assumptions and themes about the 2016 national ICT policy (inductive reasoning). Thereafter, the researcher drew conclusions from the data that confirmed their assumptions about this policy (deductive reasoning). Moreover, the researcher established patterns from the data which became themes that contributed to a valid and reliable analysis of the 2016 national ICT policy (Fusch et al. 2018). In so doing, the researcher aimed to understand the phenomena under investigation, that is, the 2016 national ICT policy. Linked to this, the researcher sought to understand ICT and how this technology underscores an integral part in terms of how people communicate and how this affects government ICT policy.

The researcher made use of information-rich documents that contained the most recent analysis of the 2016 national ICT policy. These documents were purposefully chosen in order to confirm that this policy aims to address three principal themes or

issues, these are, ICT development, convergence and digital inclusion. In addition, interviews were conducted at the DTPS because this specific setting provided information-rich analysis which was pertinent to the study. Throughout this research process, words remained a crucial basis for analysis. More to the point, words in the 2016 national ICT policy and interview transcripts were systematically analysed to prove the argument of this study as well as address the research problem (cf. Chapter 1).

Qualitative research characteristics were indeed evident and sought after by the researcher in order to produce a valid and comprehensive qualitative document research and analysis (Wagner et al. 2012). In conducting such a study, the researcher was mindful of the pitfalls and criticisms levelled against a qualitative research methodology and sought to guard the study against these. In this regard, Bricki and Green (2002:2) distinguish between three of these pitfalls:

    (a) Samples are small and not necessarily representative of the broader
        population, so it is difficult to know how far we can generalise the results.
    (b) The findings lack rigour
    (c) It is difficult to tell how far the findings are biased by the researcher's own
        opinions.

On the whole, a qualitative research approach proved to be consistent with and suited to adequately address the research problem as discussed in Chapter 1 and theorised in Chapter 2 of this dissertation.

3.3.2 Population and sampling

Population is defined as a company of items, occurrences and individuals that possess similar characteristics which a researcher is keen on exploring through scientific research tools, or, as is the case in this study, through qualitative research tools (Mouton 1996:34). Information and communication technology (ICT) policy documents as well as human participants (selected government officials) formed the population in this study. Documents are utilised in order to investigate and analyse their importance, relevance and meaning in relation to the research problem of this study (Wagner et al. 2012:142). Government officials were purposefully selected based on their expertise and knowledge on issues pertaining to the state of ICT policy in South Africa.

In addition, Du Plooy (2009) distinguishes between two types of population, namely, target population and accessible population. The target population in the study consists of the following ICT frameworks drafted for the national ICT environment and sector, the White Paper on Telecommunications policy (1996), the White Paper on Broadcasting policy (1998), the White Paper on Postal policy (1998), the National Broadband policy South Africa connect (2014), National e-Government Strategy and Roadmap (2017), National e-Strategy (2017) and the ICT SMME Development Strategy (2017). The accessible population is items, occurrences, individuals or documents that the researcher can gain access to and can use for research purposes (Du Plooy 2009:51). As stated in Chapter 1, the accessible population in the study is the 2016 national ICT policy. This policy document underscored the prime purpose and focus of this study upon which a qualitative document analysis was conducted.

The study employed a non-probability sampling method called a purposive or judgmental sampling method (Du Plooy 2009). This sampling method assisted the researcher to purposefully select and analyse documents that expand on the role of government entities, namely, the DTPS, DoC, USAASA, SAPO, and ICASA (cf. Chapter 1). Furthermore, a purposive sampling method guided the study towards the recognition and singling out of specific information-rich documents that were used to shed more light on the document of interest, namely, the 2016 national ICT policy (Palinkas et al. 2015:1; Benoot et al. 2016:2).

Consequentially, documents that were purposefully chosen for this study shed light on, as well as critiqued, the initiatives of the 2016 national ICT policy. These documents, which ranged from online media or newspaper articles to government talks and press releases (see appendix C and list of sources consulted), were used for purposes of critical analysis of this ICT policy and the role of government entities towards the implementation of this policy. Moreover, a purposive sampling method was utilised in this study in order to identify and select specific participants that are well informed and knowledgeable about the 2016 national ICT policy and the role of government entities towards implementing it (Palinkas et al. 2015:2).

In addition, Benoot et al. (2016:11) caution researchers who employ a purposive sampling method, that it is time consuming and requires much flexibility on the part of

the researcher. Concerning South African researchers who employ purposive sampling in their studies, Wagner et al. (2012:95) maintain that these are faced with unique challenges. These challenges stem from two significant aspects, namely, the South African history of unequal distribution and the diversity of cultures which characterise the South African society (ibid.). Therefore, as a South African born citizen the researcher was aware of these issues when selecting the sample (documents and interviewees) for the study. The researcher also appreciated the unwanted and unfavourable implications of these aspects and sought to maintain an environment where these would be minimised.

3.4 DATA COLLECTION INSTRUMENTS

This section discusses data collection tools or instruments that were used in this study. Documents and interviews were employed as data collection instruments in order to conduct a critical analysis of the 2016 national ICT policy.

3.4.1 Documents

The study conducted a cross-sectional qualitative document analysis of the 2016 national ICT policy (cf. Chapter 1). In order to achieve this, the researcher accessed and downloaded this ICT policy document from the Web site of the Department of Telecommunications and Postal Services (DTPS). This policy document was analysed according to the research purpose of this study. In particular, Chapters 5 and 10 of this ICT policy received the most focus and this was where textual data was collected in order to be analysed using the appropriate data analysis method (Kawulich 2004). Qualitative data presentation and analysis method that was used in the study is discussed in critical detail below.

Furthermore, related documents, namely, previous ICT policy studies were considered as additional data. In addition, the researcher used newspaper articles or reports, government talks and press releases to supplement the data. (Matthew & Ross 2010:276; Beaudry & Miller 2016:45). These documents were reviewed and re-read until the researcher reached a point of saturation at which no new information was revealed by the documents (Naidoo 2015). It is crucial at this point of the data collection discussion to unpack what documents are according to this study, and by extension, what a document analysis is, including how it was conducted in this study.

It is critical to note that, in this research, document analysis assumed both the role of being a data collection and data analysis method. However, it assumed more the role of a data collection method than that of a data analysis method. As a data collection technique, document analysis is defined as a systematic and meticulous process for investigating, assessing and reviewing documents both in soft (computer- and internet-based) and hard (printed) copy (Bowen 2009:27). Qualitative document analysis is regarded as a crucial research method in the larger category of documentary research methods (Wagner et al. 2012:140). Therefore, the use of documents in qualitative research can play a significant role towards a reliable, valid and well-rounded study.

Moreover, documents are viewed as social artefacts that are created and disseminated in socially organised ways for the benefit of citizens (Atkinson & Coffey 1997:47). In this regard, Wagner et al. (2012:148) are of the view that documents are social products that can yield useful textual and qualitative data which can then be organised into crucial concepts, themes and classifications through employing content or thematic methods of analysis (Bowen 2009:28). In this study, documents were collected, organised and analysed according to specific ICT policy themes and initiatives that the researcher sought to investigate. These themes and initiatives include ICT development, convergence and digital inclusion. More crucially, these documents were analysed for their relevance, significance and meaning which was constantly being measured against the purpose and objective of this study (cf. Chapter 1).

Wagner et al. (2012:142) propose a five step procedure for conducting document analysis. The study made ample use of this procedure in the quest to critically analyse the 2016 national ICT policy. The steps include:
   (a) Decide on a specific problem to investigate.
   (b) Explore possible sources of information that will help you to answer your research question.
   (c) Become familiar with several examples of relevant documents, noting the format and other feature.
   (d) Engage with the documents using an analytical attitude.
   (e) Code the documents.

The researcher made use of this five step procedure to critically explore and describe the 2016 national ICT policy. The researcher sought to investigate a problem of the disintegration of the South African ICT sector and policy. Therefore, the 2016 national ICT policy, its initiatives and role of government entities received the most attention during this investigation. Furthermore, the researcher located several sources (documents) of information and actively engaged with these sources in order to answer the research questions (cf. Chapter 1). In so doing, the researcher sought to analyse these documents and present their analysis in a persuasive manner so that it is clear as to how these documents are relevant to the study.

In addition, Bowen (2009:31) states that the advantages of documents clearly outweigh the disadvantages or limitations. The advantages and limitations are unpacked as follows:

Advantages:
  (a) Efficient method
  (b) Availability
  (c) Cost-effectiveness
  (d) Lack of obtrusiveness and reactivity
  (e) Stability
  (f) Exactness
  (g) Coverage

From these advantages, the following limitations ensue:

  (a) Insufficient detail

  (b) Low retrievability

  (c) Biased selectivity

Qualitative document analysis proved to be an efficient and cost-effective method for this study. Although the study was funded, the researcher was able to save costs by using this research method. As a result, the expenses incurred during the study were well within the budget allocated. Qualitative document analysis proved to be a suitable research and data collection method in addressing the research problem. In this sense, qualitative document analysis provided stability and validity in the study. As a result, a sufficient number of relevant documents were collected that covered a wide range of burning issues related to the 2016 national ICT policy. More essentially, the

use of documents to collect data gave credence to the research findings (analysis) of this study (cf. Chapter 4).

3.4.2 Interviews

The researcher conducted five face-to-face semi-structured interviews that, in conjunction with documents, were used as a data collection instrument in this study (Wagner et al. 2012). These interviews were conducted with government officials who were purposefully chosen or sampled in accordance with the objective of this study. Furthermore, these government officials were purposefully chosen from the Department of Telecommunications and Postal Services (DTPS) to shed light on the initiatives of the 2016 national ICT policy as well as the role of government entities including the DTPS (cf. Chapter 1). These government officials work in sub-directorates such as ICT policy strategy development and ICT policy implementation agencies. Therefore, their role is to conduct research on and develop ICT policies and to oversee government entities whose job is to implement such policies. Due to confidentiality observations, the names of the interviewees cannot be divulged. The content and structure of interviews with government officials was purposefully aimed at addressing the research problem as discussed in Chapter 1.

Interviews are regarded as one of the most popular and widely used data collection methods in qualitative social research (Matthews & Ross 2010:221; Turner 2010:754). The reason for this, Bricki and Green (2002) reckon is because interviews are similar to everyday conversation, even though they are aimed at the researcher's need for information (Wagner et al. 2012:133). Conversely, interviews differ from normal day-to-day conversation because they need to be conducted in the most rigorous manner to ensure the attainment of valid and reliable data (ibid.).

Jamshed (2014:57) advances the viewpoint that research interviews should have, and also maintain, a structure when being conducted. In this sense, there are three commonly used structures in research interviews, namely, semi-structured, lightly structured and in-depth interviews (ibid.). The researcher conducted semi-structured interviews at the DTPS. These semi-structured interviews were conducted using a loose structure with open-ended questions in order to get an in-depth meaning and

understanding of ICT policy issues that the study was interested in (Bricki & Green 2002:23).

Furthermore, Turner (2010:757) states that there are eight principles or rules of thumb that should be adhered to when conducting interviews. In addition, Wagner et al. (2012) propose these same principles and further caution social researchers of the implications of not adhering to these principles:

(a) Choose a setting with little distraction.
(b) Explain the purpose of the interview.
(c) Address terms of confidentiality.
(d) Explain the format of the interview.
(e) Indicate how long the interview usually takes.
(f) Tell them how to get in touch with you later if they want to.
(g) Ask them if they have any questions before you both get started with the interview.
(h) Do not count on your memory to recall answers.

The researcher made impactful use of these principles when conducting interviews at the DTPS. The interviews were conducted on different dates; the first interview was conducted on 4 October 2018, the second one was on 5 December 2018, the third interview was on 17 October 2019, the fourth one was on 24 October 2019, and the fifth and last interview was conducted on 1 November 2019. All five interviews were conducted at one of the boardrooms at the DTPS head office in Pretoria. The boardroom constituted a setting or environment with little to no distraction. The researcher introduced themselves and explained the purpose of the interview as well as how the interview is structured. Moreover, the researcher explained aspects that the interview will cover and how these aspects fit into the purpose of the interview and the study.

During each interview session, the participant would ask a few questions to which the researcher gave clear responses to. The researcher asked for permission to use a recorder and permission was granted. The researcher used both his mobile phone and a digital voice recorder so that interview responses are saved in more than one device, in case of damage or loss of either device. After each interview the researcher and participant exchanged contact details in case the participant needed to add something to their responses or to find out about the results of the study. Throughout these interviews, the researcher adhered to and maintained an ethical and transparent

environment that was free of judgement or any professional, physical or psychological harm to the participant.

3.4.3 Triangulation

The use of documents and interviews points to the fact that the study adhered to the principle of triangulation in collecting data. Triangulation is widely used in qualitative or interpretive research and refers to the use of several methods or sources of information "to develop a comprehensive understanding of phenomena" (Carter et al. 2014:545). In addition, Fusch et al. (2018:19) regard triangulation is an indispensable approach that qualitative researchers can use to "promote social change, mitigate bias, and enhance reaching data saturation". Accordingly, triangulation assisted the researcher to properly converge all the collected data in order to present a full picture of the research problem (Natow 2020). There are four types of triangulation, namely, data triangulation, investigator triangulation, theory triangulation and methodological triangulation (Fusch et al. 2018).

Data triangulation means the collection of information from different individuals, societies or groups in order to gain a variety of interpretations on a certain phenomenon. Investigator triangulation refers to the involvement of two or more investigators or researchers who are responsible for the collection and analysis of data. Theory triangulation, as the name suggests, refers to the application of multiple theories or perspectives through which the data is interpreted. Methodological triangulation is a type of triangulation mostly used by qualitative researchers and is defined as the use of multiple research methods that are found within one research design (Carter et al. 2017; Fusch et al. 2018). These research methods can include interviews, documents, field notes, focus groups and observations (ibid.). This study made use of methodological triangulation and employed documents and interviews which were taken from one research design, that is, qualitative research.

3.5 DATA COLLECTION PROCEDURES

As discussed in Chapter 1, documents and interviews were used as data collection methods. In terms of documents, these were accessed and downloaded from various government, media and academic Web sites in order to assist towards the analysis of the document or phenomenon of interest in this study (Pettigrew 2013:124). The

document of interest for this study, namely, the 2016 national ICT policy, was accessed and downloaded from the DTPS Web site to be analysed for the purpose of addressing the research problem for the study. As discussed in the above sections, Chapters 5 and 10 of this ICT policy received keen interest and these were analysed to address the research problem of the study.

The interviews at DTPS, on the other hand, were conducted in a rigorous, systematic but flexible and transparent manner (Bricki & Green 2002:3). These interview sessions were allocated one hour to be conducted. The first 45 minutes were dedicated to the interview itself and the remaining 15 minutes were for checking if the participant had any follow-up questions or comments or if any further clarity was required. Before all this could take place, a 10-minute session was dedicated to explain to the participants the procedure of the interview, as well as what it means to agree to do the interview and the freedom to withdraw from the interview.

More essentially, an interview schedule sheet was used by the researcher to ensure that key ICT policy issues or themes which the researcher is interested in were unpacked, as well as critiqued where applicable (Matthews & Ross 2010:221). This interview schedule received the prior approval of the researcher's supervisor, who is an expert in the field of conducting research interviews with ICT policy government officials (Chisango 2014). The interviews at DTPS were purposefully aimed at addressing key ICT policy initiatives or themes, namely, ICT development, convergence and digital inclusion. As a result, these interviews and the issues covered in them were reflective of and geared towards critically addressing the research problem with the aim of yielding plausible findings.

It is critical to note that the researcher did not rely on his own memory when conducting interviews at the DTPS (Bricki & Green 2002). In this regard, the researcher made use of their mobile phone and digital voice recorder to record the interviews. The interviews were later on transcribed by the researcher with the assistance of an additional transcriber (ibid.). The researcher assisted in the transcription of the interviews in order to stay close to the data as a key interpreter of the data collected (Jensen 2012:266). Prior consent was sought after and obtained from the participants to use a digital voice

recorder and the reasons for the use of a recorder were explained in a clear and adjustable manner.

3.6 DATA PRESENTATION AND ANALYSIS

This part of the chapter explicates the data presentation and analysis procedure and method that was employed in the study in order to make sense of the collected data, namely, documents and interviews (cf. Chapter 1). Qualitative data analysis is a "rigorous and complex process that requires a considerable investment of time and persistence, and that entails several approaches" (Beaudry & Miller 2016:45). In this study, the process of qualitative data analysis was recursive and iterative in the sense that the researcher revisited the collected data numerous times until common themes and patterns emerged from the data (ibid.).

In this aspect, Kawulich (2004) asserts that the role of the qualitative researcher in the process of data analysis is that of being an important instrument for data collection and analysis (Carter & Thomas 1997:46). Hence, the aim of data analysis is to reduce the data into practicable units in order for the researcher to "make sense of it and provide a cohesive summary and interpretation of findings" (Beaudry & Miller 2016:45). In the study data was presented and analysed using a thematic code of analysis in order to make sense of the data, as well as contextualise the content (thematic content analysis) of the 2016 national ICT policy that deals with the initiatives of this ICT policy that the researcher is interested in.

In addition, the researcher employed a three-phase process that occurs in qualitative data analysis. Kawulich (2004:96) unpacks this process as follows:
  (a) Data are organised.
  (b) Data are reduced through summarisation and categorisation.
  (c) Patterns and themes in the data are identified and linked.

In this study, data (words) were organised and categorised into meaningful themes and sub-themes in order to systematically present the findings of the 2016 national ICT policy. These themes were carefully identified and linked to the research questions and the overall purpose of the study. The researcher revealed the interrelationship that occurs between these themes and how aspects of one theme touches on the aspects of another (cf. Chapter 4). The qualitative data analysis process was

approached and conducted in a rigorous and purposeful manner so that readers or reviewers of this dissertation are clear on the meaning, context and implementation of the initiatives of the 2016 national ICT policy.

3.6.1 Thematic content analysis

The researcher employed thematic content analysis as a preferred and suitable qualitative data presentation and analysis method (Bowen 2009:32). This method assisted the researcher in exploring and describing the meaning of key ICT policy themes, namely, ICT development, convergence and digital inclusion (cf. Chapter 1). In this sense, the study examined the content of this ICT policy but the researcher's interest, and therefore the study's, was equally piqued by the themes (initiatives) promoted in the 2016 national ICT policy towards the creation of an inclusive digital society (cf. Chapter 1). Consequentially, the analysis of themes was aligned with the analysis of the content when the researcher reached the stage of data analysis.

Thematic content analysis is regarded as a procedure that includes singling out consistent and re-surfaced concepts or themes within the collected data, which are then used for critical analysis or exploration (Bowen 2009:32). This type of analysis involves a systematic and intensified re-reading and reviewing of the data until no new information is retrieved or until a point of data saturation is reached (ibid.). In addition, Braun and Clarke (2006:6) are of the view that thematic analysis can be used by researchers to interpret various aspects of a research topic. In this sense, thematic analysis is defined as a method for "identifying, analysing, and reporting patterns (themes) within data" (ibid.).

Furthermore, a theme is regarded as that which arrests a crucial element or characteristic in the collected data which will assist the researcher to critically explore a research problem (Braun & Clarke 2006:7). As a consequence, the themes in this study were used to decode the underlying meaning and significance of the 2016 national ICT policy, its initiatives and role of government entities (cf. Chapter 1). Thus, thematic analysis in this study was primarily conducted at a latent level because the researcher sought to examine the hidden meaning of key ICT policy themes as envisaged in the 2016 national ICT policy (Bowen 2009).

Braun and Clarke (2006:15) propose that thematic analysis should be conducted using six primary steps:

- (a) Familiarise yourself with the data.
- (b) Generate initial codes.
- (c) Search for themes.
- (d) Review themes.
- (e) Define and name themes.
- (f) Produce the report.

The researcher collected all the necessary data that was in the 2016 national ICT policy and interview transcripts and familiarised himself with this data by reading it actively and carefully. The researcher read this data in a critical and analytical manner with the aim of producing a balanced analysis of the 2016 national ICT policy. In this process, the researcher searched for themes that were promoted in the data. Thereafter, these themes were grouped into sub-themes and sub-themes were systematically and skilfully categorised into main themes (cf. Chapter 4). In following the above steps, the researcher ensured that they guard against any potential pitfall that might threaten the content analysis of themes. These pitfalls include (Braun & Clarke 2006:15):

- (a) Failure to analyse the data at all.
- (b) Use of the data collection questions (such as from an interview schedule) as 'themes' that are reported.
- (c) Weak or unconvincing analysis.
- (d) Mismatch between the data and the analytic claims that are made about it.
- (e) Mismatch between theory and analytic claims, or between the research question and the form of thematic analysis used.

3.7 VALIDITY AND RELIABILITY

It is crucial to note that the researcher ensured that the analysis of the 2016 national ICT policy is valid and reliable. Maintaining validity is regarded as a fundamental requirement in qualitative research and this also contributes immensely towards trustworthy research results (Naidoo 2015). In this sense, qualitative validity is defined as a rigorous process whereby a researcher determines the preciseness and correctness of the research results, through employing rigorous measures in order to test the trustworthiness of these results (Creswell 2014:201). In addition, Johnson and

Christensen (2014:298) argue that qualitative researchers equate research validity with research that is plausible, credible, defensible and trustworthy.

To ensure validity, the researcher ensured that the 2016 national ICT policy, its initiatives (themes) and role of government entities remained a primary point of departure throughout this study. In so doing, the researcher ensured that this ICT policy also remained the object of analysis from which the study's primary data were extracted. Furthermore, a rigorous scanning process was embarked on to ensure that related documents for the study addressed specifically the 2016 national ICT policy initiatives, as well as the role of government entities as outlined in Chapter 1 of this dissertation. During interviews, a digital voice recorder was used to ensure the validity and preciseness of the data collected. The voice recorder was only made use of after informed consent had been obtained from the participants (Chisango 2014). These interviews were further transcribed in order to ensure the accuracy and trustworthiness of the data collected in order to arrive at unbiased, defensible and reliable findings (Johnson & Christensen 2014).

It is critical to note that research results should be reliable, dependable and well founded (Naidoo 2015). Thus, qualitative reliability means that a researcher's design remains the same throughout their own research project and that of other researchers with the aim towards producing consistent results (Creswell 2014:201). Furthermore, Jensen (2012:295) also concurs with this definition and regards qualitative reliability as "the consistency of descriptions and interpretations overtime". In this regard, Chisango (2014) argues that in qualitative research the data collection instruments and procedures should be reliable in order to ensure the consistency of results regardless of the times these instruments and procedures were employed.

The researcher ensured the reliability of the findings by using multiple methods for data collection, namely, documents and interviews. Though these data collection instruments were employed on different dates and times, they produced reliable, consistent and trustworthy results. Within documents, primary (the 2016 national ICT policy) and secondary (newspaper reports, government talks and press releases) documents were employed (cf. Chapter 4). Furthermore, the researcher conducted semi-structured interviews in order to produce a critical and reliable analysis of the

2016 national ICT policy. The above processes were followed to ensure the validity and reliability of the entire research methodology so that it is consistent with the research problem and theoretical foundations of this study (Chisango 2014:86; Johnson & Christensen 2014:305).

3.8 LIMITATIONS OF THE STUDY

A qualitative research approach is regarded as being limited in the sense that it sometimes has small samples which result in the sample not being representative of the larger population (Naidoo 2015). A noteworthy limitation of the study was that the researcher could only conduct a critical analysis of one policy, namely, the 2016 national ICT policy. To counteract this limitation, the researcher made it a point that they refer to and consult other documents from which this ICT policy emanates (cf. Chapter 2). The other limitation is that the researcher could only conduct five face-to-face semi-structured interviews as a result of the Covid-19 pandemic and restrictions; however, from these five interviews the researcher was able to acquire sufficient information on the 2016 national ICT policy.

3.9 ETHICAL CONSIDERATIONS

A fundamental request made to social science researchers is that they should behave in a manner that is ethically responsible and sensitive (Neuman 2012:153). For this reason, research ethics include important propositions developed to guide and propel researchers towards the production of ethical research projects (Johnson & Christensen 2014:127). Ethical studies, Naidoo (2015) asserts, are those that adhere to ethical norms prevalent in research and society. Furthermore, Du Plooy (2009) maintains that research ethics are chiefly concerned with issues such as privacy, confidentiality and professional control (Chisango 2014).

The researcher of this study treated the ICT policy documents retrieved via internet or online research with the utmost of confidentiality and sensitivity, save the fact that these are openly accessible to the public via the DTPS Web site (Johnson & Christensen 2014:148). Matters of privacy, confidentiality and sensitivity should be adhered to even when conducting research over the internet. Failure to do so may result in the irregular transmission and storage of data which can be used to harm the

creators of this data, or as is the case in this study, the creators of the 2016 national ICT policy and related documents (ibid.).

The DTPS interviews were conducted in an ethically responsible and rigorous manner (Lesame 2009; Turner 2010; Chisango 2014; Naidoo 2015). In addition, a letter of request was written to the DTPS in order to obtain prior consent to go there and conduct interviews. These interviews, which included officials who deal with ICT policy development and implementation, were explained to the purpose, duration and structure of each interview (Turner 2010). Furthermore, the participants were assured of their confidentiality and of their freedom and sole discretion to withdraw from the interviews should they feel they are being harmed or coerced in any way (Chisango 2014).

To maintain ethical and transparent conduct, the researcher explained the purpose of the study to the participants as well as how this purpose is linked to the issues covered in the interviews (Wagner et al. 2012). This was accompanied by UNISA's ethical clearance certificate which was produced by the researcher at the DTPS. This certificate was also attached with the letter of request to conduct the interviews. More essentially, the researcher assured the participants that their responses would remain anonymous and would be used only for study purposes (Leedy & Ormrod 2005). Equally important, the researcher made sure that the participants were aware that a voice recorder would be used during the interviews and only when the participants gave their informed consent was the voice recorder made use of.

3.10 SUMMARY AND OUTLINE OF CHAPTER 4

This chapter purposed to outline and unpack the research methodology that was used for addressing the research problem. Hence, the aim of this chapter was to explicitly unpack the methods and techniques that the researcher employed to explore and describe the 2016 national ICT policy. Furthermore, this chapter acknowledged the importance of a rigorous research methodology that can be matched to the purpose and objectives of this study (Berg 1998; Babbie 2013). The intrinsic role of the researcher in qualitative research was explicated while also noting the pitfalls subsumed into this role and how the researcher of this study sought to minimise these (Creswell 2014). Fundamentally, the discussions in this chapter were all aimed at

expounding on the relevance and application of the researcher's chosen research methodology and this methodology's fitness in addressing the research problem (cf. Chapter 1).

This chapter discussed the research aim and questions, the research approach or design, data collection and analysis instruments, population and sampling, limitations of the study, validity and reliability, and it discussed ethical considerations. This chapter discussed these issues because they are crucial whenever a study's research methodology is outlined or critiqued. The next chapter, Chapter 4, deals with the presentation and discussion of the findings (analysis) from the data collection and analysis process respectively.

CHAPTER 4: FINDINGS AND DATA ANALYSIS

4.1 INTRODUCTION

This chapter presents the findings of the study and provides a rich descriptive, exploratory and thematic analysis aimed at addressing the research problem (cf. Chapter 1). The previous chapter, Chapter 3 (see sub-sections 3.4.1 and 3.4.2), outlined as well as defended the data collection instruments that were used to address the research problem. In this chapter, Chapter 4, the 2016 national ICT policy, which underpins a crucial part of the research problem is explored and described. In this sense, Chapter 4 underscores the accumulative and progressive efforts by the researcher towards a sound and critical analysis of the 2016 national ICT policy. Hence, this chapter reveals the results of this study and brings home the phenomenon of this entire investigation as introduced and discussed in Chapter 1, theorised and conceptualised in Chapter 2 and methodologically founded in Chapter 3.

In this chapter, the data gathered through qualitative document analysis and interviews is presented in a systematic, logical and credible manner. To maintain a logical, detailed and concise presentation and analysis of data, this chapter is divided and discussed in two parts. Part one presents a thematic analysis of the 2016 national ICT policy and interviews, and also discusses issues and themes that characterised this entire investigation or study. Furthermore, this part reveals how the themes of the study, namely, ICT development, convergence and digital inclusion are interconnected. Hence, both the interview data and the documents analysis data are observed on both part 1 and 2. These themes are then broken down into sub-themes in order to further illustrate their interconnectedness and relevance to the 2016 national ICT policy. However, these themes are discussed separately purely for analysis purposes. Moreover, tables 2, 3 and 4 illustrate how these themes emerged from the analysis of the 2016 national ICT policy as well as from the interviews. These tables illustrate how thematic analysis was conducted in Chapters 5 and 10 of the 2016 national ICT policy as well as in the interview transcripts. Therefore, this part is the heart of this study and outlines pertinent issues that warranted this study being conducted.

Part two outlines the initiatives of this ICT policy and how these are linked to the main themes of the study. The role of government entities, namely, DoC, DTPS, ICASA,

USAASA and SAPO in the implementation of the 2016 national ICT policy are discussed and contextualised. Issues of implementation that relate to the laws and strategies that govern the national ICT sector are also discussed. Part two also outlines the objectives as well as the rationale behind the 2016 national ICT policy as stated in the policy. In addition, the context of this study, namely, the 4IR is discussed and linked to the existence and objective of the 2016 national ICT policy. In this regard, the 2016 national ICT policy is viewed as a roadmap that aims to take South Africa to the 4IR; and how this can be used to benefit citizens through the creation of an inclusive digital society. Essentially, this part of the chapter gets into the essence of what the 2016 national ICT policy aims to achieve in the era of the 4IR which is characterised by technological and sectoral convergence.

4.2 PART ONE: THEMATIC ANALYSIS OF THE 2016 NATIONAL ICT POLICY
4.2.1 INTRODUCTION

This part of the chapter, part one deals with the policy itself. It presents and outlines a report of the results that emerged after the researcher had conducted a thematic analysis of the data, that is, the 2016 national ICT policy as well as the interviews. Thematic analysis is defined as a systematic investigation of themes that are consistent and overt throughout the entire data set (cf. Chapter 3). These themes may not be constantly repeated in the data but their existence adds an immense understanding to the context of the collected data. In this sense, the themes of this study, which are, ICT development, convergence and digital inclusion, provide a rich understanding and context of the objective and overall purpose of the 2016 national ICT policy. These themes therefore provided a fundamental basis upon which the arguments of this study are based. Therefore, a thematic code analysis was embarked on to examine the meaning, relevance and application of these themes to the context of this ICT policy.

These themes are further and more strategically broken down to capture their essence and application to the initiatives of the 2016 national ICT policy (see sub-section 4.3.5). In this sense, the initiatives of this ICT policy reflect and are for the realisation of an inclusive, developed and converged ICT sector and society. The breaking down of themes is part of the thematic analysis research method (Braun & Clarke 2006). This was used to transform themes that are too broad into smaller and manageable units

which can be used for analysis or exploration. It is important to therefore note that these themes are not mutually exclusive, and they are in fact compounded and interrelated. However, the researcher has chosen to separate these themes purely for analytical purposes.

This was to provide clarity on what can be included under each theme and what cannot. Hence, ICT development, convergence and digital inclusion as overarching themes are systematically unpacked into sub-themes. In so doing, the researcher ensures that it is clear what each overarching theme represents and what story it tells about the entire set of data collected. More essentially, the unpacking of themes in this fashion reveals their relevance and application to the South African ICT policy issues of today. It is critical to note that the researcher conducted thematic analysis using the steps outlined by Braun and Clarke (2006). Thus, the results presented in this part are those which the researcher reached after a rigorous undertaking of thematic analysis as expounded by these authors. This is presented and discussed using words and graphs (cf. Chapter 1).

The researcher analysed Chapters 5 and 10 of the 2016 national ICT policy. These chapters were purposefully chosen because they outline how this ICT policy aims to achieve an inclusive digital society. More essentially, these chapters address fundamental aspects that are key towards achieving this, namely, ICT development, convergence and digital inclusion. This part of the analysis outlines texts that have been purposefully extracted to demonstrate how each theme has been addressed in these chapters. Two extracts per chapter were selected for each of the themes (as exemplary evidence). These texts are coded using the coding system discussed in Braun and Clarke (2006).

Furthermore, the researcher analysed interview transcripts from the five interviews conducted for this study. This was done in order to determine key themes that emerged from the interviews. These themes are then linked to the purpose of the study as well as the main objective of the 2016 national ICT policy. These themes, namely, ICT development, convergence and digital inclusion were regarded as key indicators of the 2016 national ICT policy. These themes also underpin key determinants for the creation of an inclusive digital society as well as illustrative of South Africa's readiness

to enter into the 4IR. Two extracts or quotations per theme were selected in this regard. These texts are also coded using the coding system discussed in Braun and Clarke (2006).

In addition, these codes are then juxtaposed with the sub-themes that they address and these sub-themes are linked to the relevant overarching or main theme. It is important to note that there is a significant amount of interconnectedness between the main themes of the study, namely, ICT development, convergence and digital inclusion. As a result, one theme can be linked to and address similar texts which have been extracted from the 2016 national ICT policy and from interview transcripts. Likewise, one extract can address a similar set of themes or sub-themes. It is therefore crucial to be mindful of this interconnectedness because this is how the researcher sought to prove the extent to which the themes of the study underscore pertinent issues of the 2016 national ICT policy.

4.2.2 DEFINED THEMES

4.2.2.1 Information and communication technology development

Information and communication technologies are moving and advancing at an unprecedented level, one that has never been imagined before (cf. Chapter 2). Therefore, it is critical for South Africa to catch the first fruits of these technological developments and align the national ICT sector to receive and exploit the innovations of the digital age. Hence, the theme *ICT development* involves the advancement of the South African ICT sector so that it is responsive to the needs of society and ICT institutions in as far as the usage, skills, dissemination and exploitation of ICT is concerned. In this sense, the 2016 national ICT policy aims to respond to issues of ICT development by creating an inclusive digital society "where all citizens can benefit from the opportunities offered by digital and mobile technologies to improve their quality of life". (South African Department of Telecommunications and Postal Services 2016: s 10.2).

Moreover, ICT development includes the effective use of faster and more advanced technologies as a result of the 4IR. On the interview, participant 5 stated that the era of the 4IR necessitates the use and adaptation to "rapid technological changes and innovations". Participant 5 further maintained that in the era of the 4IR, ICT policies

should be judged on "how effective are they to enable ICT sectors to respond to latest technologies". In addition, the effective use of the latest technologies also requires well-developed and up-to-date ICT infrastructure. Such infrastructure should be able to support the latest technologies as well as address issues of network connectivity and interoperability. Therefore, the 2016 national ICT policy regards ICT infrastructure and technology as tools to "enable all citizens to engage with, create and access information and services from a range of sources anywhere and at any time" (South African Department of Telecommunications and Postal Services 2016: 10.1). Essentially, ICT development as a theme assumes a technological deterministic stance. As a result, technology as well as developments in technology are seen as a primary agent that can bring about change as well as achieve an inclusive digital society.

Furthermore, ICT development calls for the development and well-positioning of the national ICT sector. Through proper and robust development of the ICT sector, the impeding effects of the digital divide can be minimised. To achieve this, the 2016 national ICT policy states that strategies need to be put in place to "address both supply and demand side obstacles to achieving universal service and access" (South African Department of Telecommunications and Postal Services 2016: s 5.3). Therefore, achieving universal access and service on the latest technologies should remain a prime objective of the 2016 national ICT policy as well as national ICT sector. In fact, this should be taken as a matter of urgency so that digital exclusion (from the technology) is done away with and overall digital inclusion can be achieved.

4.2.2.2 Digital inclusion

The theme of digital inclusion involves the strategic use of ICT sector institutions and resources to achieve universal service and access to ICT for South African citizens. The 2016 national ICT policy defines universal service as "direct provision to individuals and households" (South African Department of Telecommunications and Postal Services 2016: s 5.1). Universal access, on the other hand, is aimed at "increasing access to communication services on a shared basis, such as on a community or village-wide level" (ibid.). Universal service and access is therefore key in ensuring that citizens are digitally enabled to participate in the 4IR. On the interview, participant 3 maintained that "so that's the revolution that has been happening; so if

you do not digitise, you will be left behind". Therefore, the 2016 national ICT policy should, in all its strategies and initiatives, prioritise issues of universal service and access as well as inclusive digitalisation. If such issues are left unaddressed, there is real potential for a greater widening of the digital divide.

Furthermore, digital inclusion advocates for ICT policy initiatives that are geared towards making ICT more available, accessible and affordable to citizens, especially those in rural and peri-urban areas (cf. Chapter 2). However, participant 3 stated that "the issue of affordability is questionable because it's not always affordable, it's not always accessible". Therefore, unaffordable ICT services present a major hindrance in making such services universally available and accessible. Accordingly, the 2016 national ICT policy initiatives should first address the issue of the high cost of communication as it is key in achieving overall digital inclusion. Strategic public-private partnerships should therefore be established in this regard; and solutions that emerge from such partnerships should be incorporated in implementable ICT policies.

Moreover, digital inclusion addresses ICT policy initiatives that are aimed at increasing awareness on the potential benefits of ICT to transform the lives of people. Inclusion of this kind should ensure that every South African is afforded the opportunity to take part in the digital space as well as carve their own path in this space. Therefore, the 2016 national ICT policy initiatives aimed at achieving digital inclusion are based on the following principles (South African Department of Telecommunications and Postal Services 2016: 5.4):

    (a) Availability
    (b) Affordability
    (c) Accessibility
    (d) Awareness
    (e) Ability

These principles are also key in addressing the digital divide as well as closing the gap between the haves and the have-nots (cf. Chapter 2). In this regard, participant 2 stated that "on the demand side, we are looking at the 5As, they are in chapter 5 of the White Paper; affordability, awareness, ability, accessibility and availability". Hence, these principles should be at the forefront in the implementation of the 2016 national

ICT policy; especially since this policy emerged during a time of immense inequalities in terms of the universality of ICT services.

Digital inclusion can go a long way towards making people less anxious or sceptical in exploring ICT and incorporating them into their lives. People should be able to trust ICT in delivering essential services and applications. In addition, the 2016 national ICT policy states that people should be able to "trust that they will be protected online or when using communications technologies (including cell-phones)" (South African Department of Telecommunications and Postal Services 2016: s 10.5). To achieve this, participant 5 stated that there is need for an increased level of "digital literature awareness". Such awareness will in turn ensure that there is an increased knowledge base of what ICT can do in the lives of citizens.

Digital inclusion furthermore means that ICT should be made relevant and applicable to citizens and be presented in and reflect local languages, talents and content. The 2016 national ICT policy also regards this as pivotal in the creation of an inclusive digital society. In this regard, the policy states that this society is one in which citizens "can safely access and create affordable and relevant digital content and services in their language/s of choice" (South African Department of Telecommunications and Postal Services 2016: s 10.1). These services can therefore assist in making people to be digitally connected. More importantly, these services ought to be well-developed and converged so that they can assist in realising the objective of overall digital inclusion.

4.2.2.3 Convergence

Convergence refers to the coming together of advanced technologies, ICT services, and applications so that these can be offered using a single communication channel, tool or device. According to the 2016 national ICT policy, these technologies include computing and information technology, telecommunications technology, audio and audio-visual content, the internet as well as postal services (South African Department of Telecommunications and Postal Services 2016: s 1.1). Moreover, the policy states that convergence means that "these technologies do not operate in isolation from each other" (ibid.). Participant 1, on the interview, further maintained that "government has always acknowledged that it happens at a technical and service level – convergence".

Therefore, technological convergence and the proper bundling of ICT services underscores an important element towards a reformed ICT sector. More essentially, this is also pertinent in the creation of an inclusive digital society that seeks to make optimal use of the 4IR.

This theme also emphasises the need for a converged approach to ICT policy initiatives. A converged approach is important in order to ensure that policy initiatives are effectively implemented. This approach is also necessary in making sure that converged technologies are easily accessible and affordable to citizens or users. In this regard, the 2016 national ICT policy states that "convergence is therefore at the heart of this White Paper" (South African Department of Telecommunications and Postal Services 2016: 1.1). Participant 1 stated that as a result of converged technologies "all the policy makers in government will be moving towards one integrated policy". Participant 3 further explained that "convergence of technologies actually is one of the reasons why now we needed an integrated ICT policy bill". In this sense, there is an interplay and interdependence of roles between technological convergence and the initiatives of the 2016 national ICT policy. Hence, it is important for the 2016 national ICT policy to be well converged and to adequately cover the entire ICT sector; an integrated ICT policy is therefore key in addressing issues of an unconverged and non-inclusive ICT sector. For this reason, strides should continuously be made to properly converge the ICT sector through advanced technological developments as well as up-to-date policy frameworks.

Table 1: 2016 national ICT policy themes and sub-themes

Main theme	Sub-themes
ICT development	(a) Technological development (b) ICT policy development (c) ICT sector development (d) ICT infrastructure development (e) ICT skills development
Digital inclusion	(a) Universal access to ICT (b) Universal service to ICT (c) Availability, affordability and accessibility of ICT (d) Inclusive digital society (e) Digital divide
Convergence	(a) Integrated ICT policy (and regulation) approach (b) Converged ICT services (c) Technological convergence (d) Converged ICT sector

4.2.3 CHAPTERS OF THE 2016 NATIONAL ICT POLICY

4.2.3.1 Chapter 5

The following tables presents analysed extracts as well as the how these can be linked to the main themes of the study. These extracts have been taken from Chapters 5 and 10 of the 2016 national ICT policy.

Table 2: Chapter 5 extracts and themes

Extracts	Sub-themes	Main theme
1 "To introduce a flexible evidence-based framework to respond to changes in technology and ensure new digital divides do not emerge"	1 ICT policy development 2 ICT infrastructure development 3 Digital divide	ICT development
2 "The ICT policy review panel recommended that the Universal Service and Access Agency of South Africa (USAASA) be dissolved and the existing Universal Access and Service Fund be transformed into a stand-alone funding agency to support universal access and service"	1 ICT sector development 2 ICT policy development 3 Universal service to ICT	ICT development
3 "The primary focus of the fund will be universal access projects. However, the Digital-DF will also provide universal service subsidies for members of identified segments of society"	1 Digital divide 2 Universal access to ICT 3 ICT skills development	ICT development

1 "It also includes sections on facilitating quality of service for all users and the approach to effective consumer protection, as these are interlinked with meaningful universal service and access"	1 Universal access to ICT 2 Universal service to ICT 3 Availability, accessibility and affordability of ICT	Digital inclusion
2 "While universal service is the ultimate objective in South Africa, universal access strategies will be put in place to achieve communications for all communities, and categories of persons in need of demand-side subsidies, in the medium term."	1 Universal access to ICT 2 Universal service to ICT 3 ICT skills development	Digital inclusion
3 "To put in place targeted and effective interventions to address market failure and ensure access by everyone across the country to a range of communication platforms, networks, services and content"	1 ICT policy development 2 Universal access to ICT 3 Universal service to ICT	Digital inclusion
1 "One of the core challenges of the existing universal service and access framework is that it has not adopted sufficiently to convergence and technological changes"	1 Converged ICT services 2 Integrated ICT policy approach 3 Technological convergence	Convergence
2 "To outline clear and distinct roles for all stakeholders in achieving targets including the role of government, the ministry, sector regulator, development funding agency and operators in extending access for all."	1 Converged ICT sector 2 Integrated ICT policy approach 3 Universal access to ICT	Convergence
3 "In line with South Africa Connect, any mechanisms or systems put in place to provide support for universal service and access will also address the 'people-side' (i.e. demand-side) and will thus promote access to and the use of ICTs by all potential end users."	1 ICT policy development 2 Integrated ICT policy approach 3 Universal service to ICT	Convergence

4.2.3.2 Chapter 10

Table 3: Chapter 10 extracts and themes

Extracts	Sub-themes	Main theme
1 "In this regard, government must in developing the ICT policy, keep this principle of convergence in order to ensure that the policy environment is in line with industry trends and responsive to technological developments."	1 ICT policy development 2 ICT sector development 3 Technological development	ICT development
2 "Digital and mobile infrastructure and technologies are tools to enable all citizens to engage with, create and access information and services from a range of sources anywhere and at any time."	1 ICT infrastructure development 2 ICT skills development 3 Universal access to ICT	ICT development

3 "Digital astuteness includes the skills necessary to access ICT services and to create content as well as the capacity to continually adapt and apply new technological applications to personal and local benefit."	1 ICT skills development 2 Universal access to ICT 3 Technological development	ICT development
1 "Focusing on ensuring all citizens have the capacity to actively participate in the digital society and realise the potential of ICTs their quality of life."	1 Inclusive digital society 2 ICT skills development 3 Universal service to ICT	Digital inclusion
2 "Develop a national framework to transform South Africa into an inclusive digital society where all citizens can benefit from the opportunities offered by digital and mobile technologies to improve their quality of life."	1 Universal service to ICT 2 Inclusive digital society 3 Availability, accessibility and affordability of ICT 4 ICT policy development	Digital inclusion
3 "To ensure that no South African citizen is excluded from the benefits of a digital economy and knowledge society"	1 Digital divide 2 Universal service to ICT 3 Universal access to ICT 4 Inclusive digital society	Digital inclusion
1 "As indicated during the consultative stages of development of this policy, government notes that the communications sector is underpinned by convergence of networks and services that impact on how people and digital equipment communicate, interact and work."	1 Integrated ICT policy approach 2 Converged ICT services 3 ICT sector development	Convergence
2 "Convergence requires an increasingly integrated approach in areas like network regulation and spectrum licensing to achieve the objectives of fair competition."	1 Integrated ICT policy approach 2 Converged ICT sector 3 Converged ICT services	Convergence
3 "Overcoming these challenges requires a holistic, coordinated government policy and strategy for digital transformation across all spheres of government and public services."	1 Integrated ICT policy 2 Technological convergence 3 Integrated ICT services	Convergence

4.2.4 INTERVIEWS ON THE 2016 NATIONAL ICT POLICY

The following table presents analysed texts from the face-to-face semi-structured interviews in order to illustrate the themes that emerged and how these are linked to the main themes of the study. These texts have been taken from interview transcripts following interviews which were conducted to unpack the 2016 national ICT policy.

Table 4: Interview extracts and themes

Extracts	Sub-themes	Main theme
1 "The digital development fund will be funding all the deficits of universal access; they will be dealing with that to close the digital divide."	1 ICT sector development 2 Universal access to ICT 3 Digital divide	ICT development

2 "Policies are supposed to be driven and focused, we need to look at the impact it does firstly to citizens, how effective are they to enable the ICT sectors to respond to latest technologies"	1 ICT policy development 2 ICT sector development 3 Technological development 4 ICT skills development	ICT development
3 "Secondly, is to acknowledge that we are talking about rapid technological changes and innovations; to what extent are our legislation keeping up with the latest developments?"	1 Technological development 2 ICT policy development 3 ICT skills development	ICT development
1 "The main purpose is to make, of that whole White Paper is to make sure that there is universal accessible affordable ICTs. That's the crux of it"	1 Universal access to ICT 2 Availability, accessibility and affordability of ICT 3 Universal service to ICT	Digital inclusion
2 "Universal service meaning there is ICT infrastructure in all communities. Universal access that all people are accessing that ICT infrastructure to better their lives"	1 Universal access to ICT 2 Universal service to ICT 3 Inclusive digital society	Digital inclusion
3 "Universal access – affordable universal access to ICTs. The issue of affordability is questionable because it is not always affordable, it is not always accessible"	1 Universal access to ICT 2 Availability, accessibility and affordability of ICT 3 Inclusive digital society	Digital inclusion
1 "Government has always acknowledged that it happens at a technical and service level – convergence."	1 Converged ICT services 2 Technological convergence 3 Integrated ICT policy approach	Convergence
2 "That convergence of technologies actually it is one of the reasons why now we needed to have an integrated ICT policy bill"	1 Integrated ICT policy approach 2 Technological convergence 3 Converged ICT services	Convergence
3 "Especially because of technological developments as well as convergence, it was necessary for us to undertake this policy review process"	1 Technological development 2 Technological convergence 3 Integrated ICT policy approach	Convergence

4.3 PART TWO: THE 2016 NATIONAL ICT POLICY

This part of the chapter, part two, focuses on the planning phase of the policy. Hence, it discusses the objectives, context, approaches, initiatives as well as the implementation of the 2016 national ICT policy. This section also provides reasons for developing this ICT policy. Similar to previous sub-sections, discussions in this part of the chapter are also linked to the main themes of the study, namely, ICT development, convergence and digital inclusion.

4.3.1 Objectives of the 2016 national ICT policy

As indicated in Figure 1 below, the 2016 national ICT policy seeks to work towards proper technological development, while ensuring the universal service and access to ICT and the proper convergence of the ICT sector in the 4IR. Initiatives of how this policy plans to achieve this as well as the role of government agencies is discussed and unpacked in the sections that follow. In this sense, the policy states that a converged approach has been adopted that is aimed at "dealing, for example, with both supply and demand-side issues to facilitate universal access to ICTs, as well as postal sector transformation and industry growth" (Department of Telecommunications and Postal Services 2016: s 1.3).

Figure 1: Structure of the 2016 national ICT policy
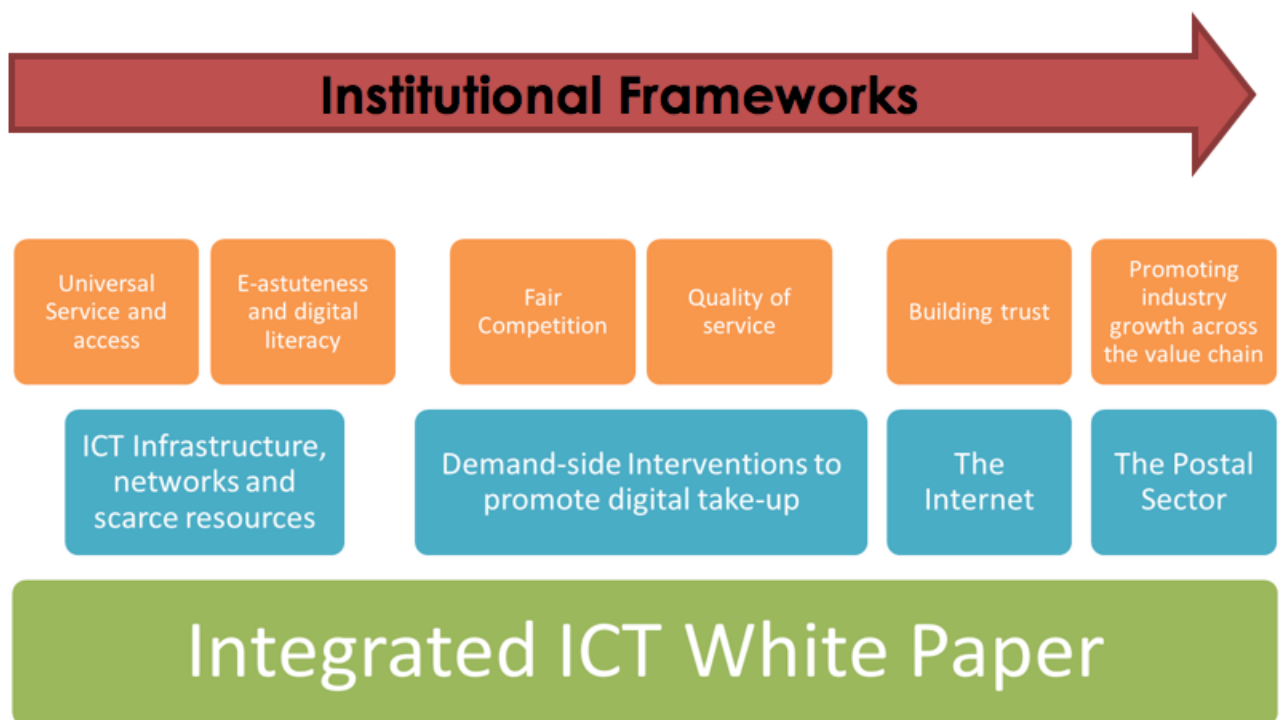
Source: National Integrated ICT Policy White Paper, Department of Telecommunications and Postal Services (2016).

The 2016 national ICT policy was approved by the national government Cabinet on 28 September 2016 and released on 3 October 2017. The 2016 national ICT policy required the approval of Cabinet because this policy argues for and promotes an integrated approach to ICT usage that would call for the participation of all government

departments. In this regard, the 2016 national ICT policy gives a mandate to the Department of Telecommunications and Postal Services to work closely with other government departments in order for South Africa to "realise the potential of the ICT and postal sectors to promote growth and employment and reduce poverty and inequality" (South African Department of Telecommunications and Postal Services 2016: s 1.4). It is crucial to note that the 2016 national ICT policy outlines the current position or stance of government in the matters related to ICT development, convergence and the 4IR.

Furthermore, the 2016 national ICT policy is regarded as an ICT strategy that builds on as well as promote the initiatives of the 2013 national broadband policy South African Connect or SA Connect (Department of Telecommunications and Postal Services 2016: s 1.2). The ICT sector is dynamic and there are new developments and innovations that surface almost on a daily basis. Therefore, the 2016 national ICT policy underpins a position and approach that is responsive to the changing environment because ICT are always evolving, and they meet different needs and purposes and will continue to do so. Thus, the policy states that it is based on the principle of "openness – open access, open Internet and open government" (Department of Telecommunications and Postal Services 2016: s 1.2).

Thus, the 2016 national ICT policy underpins a recently adopted and improved government strategy in the quest towards unlocking and exploiting the potential of ICT. This can be achieved when ICTs are effectually used towards ICT infrastructural convergence and development, this being a key function of government through the responsible ministry, that is, the DTPS (South African Department of Telecommunications and Postal Services 2016: s 1.4). The specific role of the DTPS in the development and implementation of the 2016 national ICT policy is explored and contextualised in this part of the chapter.

In an address at a media briefing following the approval of the national ICT policy in 2016, the then Minister of Telecommunications and Postal Services, Siyabonga Cwele explained that the 2016 national ICT policy is an integrated and holistic policy that covers the ICT and postal services. Minister Cwele declared that this ICT policy outlines a national ICT strategy that seeks to provide access to modern

communications infrastructure and services, and to facilitate the entry of new players and meaningful participation of all citizens, including those in rural areas (Cwele 2016).

Principally, the 2016 national ICT policy still promotes the policy ideals and objectives of the three previous White Papers for the communications sector. However, the 2016 national ICT policy proposes different solutions from those of its predecessors. Hence, the 2016 national ICT policy adjusts and replaces the White Papers on Telecommunications (1996) and Postal Services (1998) (South African Department of Telecommunications and Postal Services 2016: s 1.3). In this regard, the former DTPS Minister Cwele highlighted that the 2016 national ICT policy is a result of the first comprehensive review of all ICT policies since 1994 (ibid.). Thus, this policy was set to guide the national ICT sector and society for up to 10 years (Cwele 2016). A number of changes can occur during these 10 years because the ICT sector is dynamic and fluid in terms of the approach to current ways of communication.

The overriding objective of the 2016 national ICT policy is to promote, create and sustain, through the initiatives stated therein, a "people-centred, development-oriented and inclusive digital society" (Department of Telecommunications and Postal Services 2016: s 2.1). In this sense, this policy seeks to address the unequal access, opportunities and exposure to ICT brought about by the digital divide or gap. This digital divide still presents a pronounced hurdle in a developing country like South Africa, which has a unique history of unequal access to communication services.

Consequently, this objective seeks to ensure that no further information or communication divides occur and that ICT can be made into a commodity that is accessible, available and affordable to all citizens, regardless of where they live or the language they speak. Following the outcome of the ICT policy review process, the 2016 national ICT policy outlines the following factors as an important basis "on what the objectives of government's policy for the ICT sector should be" (South African Department of Telecommunications and Postal Services 2016: s 2.1):
    (a) Equality
    (b) Accessibility
    (c) Social development
    (d) Economic growth

(e) Investment

(f) User protection

(g) Privacy and security

(h) Innovation and competition

(i) Transparency and accountability

(j) Environmental protection

(k) Technology neutrality

(l) Open access

Through the realisation of these objectives, South Africa can achieve an effectual reform of the ICT sector and realise the goal of an inclusive digital society. In this regard, the policy themes and initiatives linked to ICT development and convergence can be used to address, as best as possible, the issues of the 4IR. The provision of equal access to and increased investment in the ICT sector, for example, can contribute in bridging the digital divide. Moreover, the promotion of user fairness and protection as well as ensuring innovation and fair competition in the ICT sector can benefit citizens and allow them to access and use ICT at affordable rates. These objectives, when properly addressed, can have the desired impact which has the potential to effectively grow and integrate the ICT sector.

4.3.2 Rationale behind developing the 2016 national ICT policy

4.3.2.1 Technology changes the way people communicate

The 2016 national ICT policy states that the advent and proliferation of the use of ICT, especially communication technologies (CT), warranted the review of all ICT policies towards developing an integrated ICT policy built on the principle of convergence (South African Department of Telecommunications and Postal Services 2016: s 1.3). The mobile phone, for example, is widely used by the majority of people in order to communicate and to perform certain functions and transactions. In this regard, the policy maintains that nowadays a mobile phone "can be used to access the internet, read email, make calls, and listen to music or the radio" (South African Department of Telecommunications and Postal Services 2016: s 1.1). These crucial communication and information changes should be reflected in a progressive ICT strategy or policy that covers the whole terrain or context upon which these changes occur.

The 2016 national ICT policy, as indicated in the above sections, predominantly argues for an inclusive digital society. The reason for this is that this policy avows that citizens nowadays require electronic (online) and digitised tools, applications and services to adapt to new and evolving realities of information gathering and processing. In addition, citizens nowadays require both an electronic and physical address, access to broadband connectivity and much-needed electronic skills or e-skills, as well as the awareness and knowledge to use ICT (South African Department of Telecommunications and Postal Services 2016: s 1.3). More to the point, these skills are pertinent in the era of increased convergence and technological development. Essentially, these are vital aspects of an inclusive digital society and they also underpin the reason why an all-encompassing national ICT policy had to be developed.

4.3.2.2 ICT development strategies have changed ICT to facilitate the NDP

The ICT policy review panel resolved that the 2016 national ICT policy should be in line with the ideals of the NDP concerning the ICT sector (South African Department of Telecommunications and Postal Services 2015: s 1.1). Hence, the goal of the NDP of a fully connected and robust ICT sector and infrastructure can be realised through a progressive and ICT development-driven policy. This necessitated the development of the 2016 national ICT policy which can be aligned to "particular programmes to stimulate the economy, including through boosting ICT infrastructure and broadband rollout" (South African Department of Telecommunications and Postal Services 2016: s 1.3). It is important to note that the ICT development approach outlined in the NDP is also reflected in the 2016 national ICT policy. In this regard, the policy states that ICT can play a crucial role in "facilitating all the objectives of the NDP and this White Paper sets out how government will realise this potential" (South African Department of Telecommunications and Postal Services 2016: 1.1). These two documents or strategies are therefore crucial in utilising ICT for development as well as achieve proper integration of the ICT sector.

4.3.2.3 Extending gains made and addressing challenges of prior policies

To address the challenges of the previous policies and laws in the ICT sector, the 2016 national ICT policy aims to be a forward-looking and development-driven ICT policy (South African Department of Telecommunications and Postal Services 2016: s 1.3).

The 2016 national ICT policy envisions an ICT sector that is no longer stagnant and disintegrated, but one that is unified in its approach towards a fully-fledged digital society and economy (ibid. s 10.3). To address this, the policy argues that "ongoing honest and critical review is essential to forward-looking and effective policy development" (South African Department of Telecommunications and Postal Services 2016: s 1.3). This should be done in a manner that does not lose sight of the bigger picture or intended goal. This goal is one that envisages a South Africa in which ICT are well developed and accessible to people.

4.3.3 Approaches of the 2016 national ICT policy

4.3.3.1 A rights-based policy

The 2016 national ICT policy is a rights-based policy because it promotes the freedom of expression that is enshrined in the South African Constitution (RSA, 1996). In this regard, freedom of expression is put forward by the ICT policy review panel as one of the founding objectives towards a fully integrated ICT policy (South African Department of Telecommunications and Postal Services 2015:1.5). The 2016 national ICT policy advocates for the constitutional right of equality and non-discriminatory access and service to communication services. The initiatives of the 2016 national ICT policy will therefore be used to "address unfair discrimination to promote meaningful equality" (South African Department of Telecommunications and Postal Services 2016: s 1.4).

The rationale behind this is that there should be equal access and availability of ICT in order for citizens to express and empower themselves through newer, faster and converged tools of communication. The bill of rights is an important part of the constitution that outlines the privileges and civil-society liberties that all citizens should enjoy and respect. Therefore, the 2016 national ICT policy adopts a rights-based approach with the aim to ensure that all South Africans can "improve the quality of their lives through accessing the benefits of participating in the digital society" (South African Department of Telecommunications and Postal Services 2016: s 1.1). In this sense, digital inclusion is regarded as both an important policy objective and as a basic human right.

4.3.3.2 A holistic policy

A holistic and converged approach is adopted in the 2016 ICT national policy. In this regard, the policy maintains that "convergence is therefore at the heart of this White Paper" (South African Department of Telecommunications and Postal Services 2016: s 1.1). This approach is aimed at addressing the challenges presented by the separation and duplication of roles and entities that existed in the previous unconverged ICT sector and policy. In addition, the policy states that adopting such an approach will assist in addressing some of the challenges related to "supply and demand-side issues to facilitate universal access to ICT, as well as postal sector transformation and industry growth" (South African Department of Telecommunications and Postal Services 2016: s 1.1). However, a converged approach to ICT usage can also pose serious threats to individual privacy and security. This means that certain policy measures such as cyber security and the protection of personal information would have to be put in place to minimise the unintended consequences that this might cause.

In addition, a converged approach aims to address four essential issues that need urgent attention in the South African ICT sector of today. These issues include (South African Presidency 2016: s 1.1):

    (a) Universal access gap;

    (b) Lack of coherent universal service and access obligations (USAOs) framework;

    (c) Separate policy frameworks governing the sector (lack of convergence of policies); and

    (d) Outdated legislative framework.

Taking the cue from these sectoral issues, the 2016 national ICT policy maintains that it aims to achieve proper integration of the ICT sector through implementing "policies to address demand-side issues in order to facilitate inclusive digital transformation across South Africa" (South African Department of Telecommunications and Postal Services 2016: s 1.2). Moreover, the 2016 national ICT policy employs a holistic approach in the provision of crucial communication services related to "content, information, digital products, services and applications" (ibid.).

In essence, a holistic approach is to ensure that the 2016 national ICT policy is cognisant of and responsive to a myriad of changing dynamics in the national ICT

sector. These dynamics are due to converged and converging technology and communication tools that are not only experienced in South Africa but they mirror changes that are also taking place in the global ICT sector. The 2016 national ICT policy maintains that it is an integrated policy because it is a "holistic policy for the entire ICT sector – including the postal sector" (South African Department of Telecommunications and Postal Services 2016: s 1.4). In essence, only issues related to telecommunications and postal services are covered in the 2016 national ICT policy. Issues related to broadcasting are not properly addressed, and where they are addressed it is purely on a superficial level. This makes the 2016 national ICT policy not to be properly integrated as it does not sufficiently cover all three sub-sectors of the ICT sector, namely, telecommunications, broadcasting and postal services. In this regard, the policy states that a separate policy process will be undertaken by the "Ministry of Communications to review those existing policies that remain very specific to the broadcasting sector" (South African Department of Telecommunications and Postal Services 2016: s 1.1).

Consequently, a converged approach has not been properly employed in the 2016 national ICT policy. The policy is criticised on the basis that it does not include the broadcasting sector due to the fact that there is increasing amounts of broadcasting and broadcasting-like content that is offered using ICT devices, applications and services. For this reason, the 2016 national ICT policy should be revised because separating broadcasting from telecommunications and postal services is no longer viable in the current ICT sector. More importantly, the 2016 national ICT policy, in its current state, will prove inadequate in dealing with the rapidly changing ICT environment brought about by the advent of the 4IR. Therefore, the 2016 national ICT policy needs to undergo continuous review and refinement in order to make it truly holistic as well as reflective of the current 4IR context.

A holistic approach was also evidenced by the November 2018 cabinet reshuffle, which saw the DTPS and DoC being merged under the leadership of one minister (McLeod 2018). The two departments were fully merged after the 2019 elections. This represented a good stepping stone towards a fully-fledged and converged communications sector and rectifies the decision taken in May 2014 by former President Jacob Zuma to separate the already merged Department of

Communications. Therefore, ICT policies, strategies and laws should reflect these critical changes and position them towards expediting and enabling proper convergence of the ICT sector. Though this process might take a while, it nevertheless should be implemented to ensure that these changes take effect. Information and communication technology policies and laws can therefore play a critical role towards making a lasting and effectual imprint for the newly converged Department of Communications. These matters are also expanded on in the following sections that deal with implementation issues related to the 2016 national ICT policy.

4.3.3.3 A whole-of-government approach

Expanding on the preceding discussion of a holistic and converged approach, the 2016 national ICT policy further requires this approach to be achieved by the coming together and cooperation of all government departments towards implementing this policy. The 2016 national ICT policy notes that there is a sizeable number of government departments that have an important role to play in the proper integration of the ICT sector. To achieve this, the policy emphasizes "the need for coherent collaborative service delivery across all spheres of government" (South African Department of Telecommunications and Postal Services 2016: s 1.4). The effective involvement of these government departments is essential in ensuring convergence of regulation in the ICT sector.

These departments include the DTPS, Department of Science and Technology (DST), Department of Trade and Industry (DTI), Department of Economic Development (DED), Department of Basic Education (DBE), Department of Higher Education and Training (DHET) and the Department of Small Business Development (DSBD) (South African Department of Telecommunications and Postal Services 2016:12.1). Due to the blurring of lines between ICT and broadcasting, the Department of Communications (DoC) is also a key government entity that can play an instrumental role in the vision and objective of an inclusive and digitally connected society.

Therefore, the inclusion of the DoC in ICT policy related matters is crucial and can contribute towards a converged and reformed communications sector. The specific role of the DoC towards implementing the 2016 national ICT policy is discussed and

contextualised in the sections that follow. The 2016 national ICT policy therefore places the responsibility of an effectual, inclusive and converged ICT sector on these departments (South African Department of Telecommunications and Postal Services 2016: s 7.2.2). The DTPS is the principal custodian and developer of national ICT policies; hence, it should work closely with these government departments towards the success and effectiveness of the ICT sector (cf. Chapter 1).

Moreover, the DTPS should partner with key regulators in the ICT sector, namely, the ICASA to ensure an ICT sector that is responsive to the needs of the citizens, industry as well as those presented by the advent of the 4IR. The most pressing of these needs is the widening and prevailing digital divide that is further exacerbated by the excessive cost of communication. For this to be addressed, it requires the involvement of the whole of government as well as local government and the ICT sector regulators. This should be done to ensure the existence of robust and implementable policies and laws to help minimise the effects of this situation. These policies should therefore be implemented by those meant to implement them, that is, the whole of government.

4.3.3.4 Multi-stakeholder involvement

As much as it is the responsibility of government to achieve an effective and converged ICT sector, it also requires the participation of the private sector and non-governmental entities to ensure that this is achieved. Speaking at a consultation forum for the ICT sector in February 2017, former Minister of Telecommunications and Postal Services, Siyabonga Cwele, maintained that the successful implementation of the 2016 national ICT policy lies with government, people with disabilities, ICT business leaders, ICT small, medium and micro-enterprises (SMMEs), industry associates, the national consumer commission (NCC) and labour. Each one of these stakeholders can therefore play a pivotal role towards a robust policy implementation process.

The DTPS Director-General (DG), Robert Nkuna, at another ICT sector consultation forum in May 2017, echoed these same sentiments and stressed the importance of a multi-stakeholder participation towards the advancement and integration of the ICT sector (Odendaal 2017). To encourage multi-stakeholder involvement, the DTPS released three crucial strategies to implement the 2016 national ICT policy. These strategies, the national e-strategy, national e-government strategy and the ICT SMME,

support strategy. These strategies are examined in the following sections that deal with implementation issues associated with the 2016 national ICT policy.

The 2016 national ICT policy maintains that to achieve the NDP goal of a seamless information infrastructure and society, relevant stakeholders should come on board and work together towards a converged and people-centred ICT sector (South African Department of Telecommunications and Postal Services 2016: s 1.4). These stakeholders, according to the policy, include "citizens, civil society, community organisations, the private sector, academic and research institutions and entities within the ICT sector" (ibid.). Participant 2, on the interviews, further stated that the 2016 national ICT policy is "only underpinned by multi-stakeholder approach in its implementation and also strong intergovernmental relations". This approach is therefore of importance in ultimately ensuring that ICT services are accessible and affordable for all citizens.

4.3.3.5 Promoting flexibility and certainty in ICT development

The development and implementation of the 2016 national ICT policy takes into consideration the evolving and converging nature of technology and how this technology is effectively used for communication. In response to this, the policy states that the "framework needs to respond to the changing environment, while ensuring regulatory certainty to promote investment and growth" (South African Department of Telecommunications and Postal Services 2016: s 1.4). This approach is built on the premise which argues that, for effective technological and infrastructure development to take place, policies within the ICT sector should be flexible and responsive.

In this regard, participant 5 maintained that "policies are supposed to be driven and focused". Participant 5 further added that the ICT policies need to be flexible and be monitored in terms of the "impact it does firstly to citizens, how effective are they to enable the ICT sectors to respond to latest technologies". For this reason, ICT policies should not be developed or implemented to suit political changes or agendas, but should be driven towards technological and socioeconomic development. In this sense, technological changes and socioeconomic realities should underpin the prime reason or motivation for any changes in or replacement of policy. To achieve this, issues of control and ownership of the ICT sector should be carefully considered as

government has a 13% stake in, for example, Vodacom through the Public Investment Corporation (PIC) (Mzekandaba 2018). This, however, creates a complexity and this complexity emerges not necessarily from political agendas, but from balancing the socioeconomic interests of government employees whose pensions sit with the PIC and the larger citizenship of South Africa who need affordable connectivity.

To address this approach, Chapter 12 of the 2016 national ICT policy defines and delineates the South African ICT sector. In this regard, the policy views the ICT sector as a sector primarily confined to the regulated sector, that is, supply-side services offered to provide "voice, data, visual, broadcasting and broadcasting-like content and services by licensed service providers" (South African Department of Telecommunications and Postal Services 2016: s 12.3). It is therefore essential for these services to be provided in a flexible manner that caters for and reflects current socio-technological changes as these relate to ICT development, convergence and digital inclusion.

In addition, the NDP advocates for regulatory certainty in the ICT sector and views this as instrumental to robust technological and infrastructural convergence geared towards the benefit of citizens or consumers (South African Presidency 2012: s 4.1). These are salient ICT development-driven issues that should be addressed in relevant, reformed and implementable ICT policies. The 2016 national ICT policy posits to be such a policy and the initiatives therein are said to be driven towards proper integration of the ICT sector. This integration ought to be implemented in a manner that addresses issues of the digital divide that have emerged as a result of South Africa's unfavourable history of inequality in the use of and access to communication services.

4.3.3.6 Government has a responsibility to ensure digital inclusion
As highlighted in the earlier sections of this chapter, the 2016 national ICT is fundamentally a development- and investment-driven policy or strategy. More essentially, this policy underscores the position and commitment of government towards developing and advancing the ICT sector in a manner that is inclusive and also benefits citizens or consumers. In this regard, the policy states that it envisions to create an enabling environment in which "all South Africans have access to digital

networks and services and the means to actively participate in the digital society"
South African Department of Telecommunications and Postal Services 2016: s 1.4).
Thus, this approach is key in placing the 2016 national policy at the centre of initiatives
or strategies aimed at ensuring digital inclusion, whilst also ensuring that no one is left
behind or excluded in effectively accessing and utilising digital communication
technologies in the era of the 4IR.

Furthermore, this approach addresses issues of inequality, limited access and service
to ICT as well as the expensiveness of ICT which makes the participation of
disadvantaged rural communities in the digital society unrealistic. For this reason,
government, through the responsible department, namely, the DTPS and other related
entities and regulators, has the responsibility of ensuring that policies in the ICT sector
respond to the need for socioeconomic development. In this sense, socioeconomic
development is a vital tool through which digital inclusion in the 4IR society can be
achieved and maintained. More importantly, digital inclusion is a fundamental human
right which should be reflected through ICT policy initiatives that seek to make ICT
services more accessible and affordable to all citizens.

4.3.4 Context

4.3.4.1 Fourth industrial revolution

The 2016 national ICT policy is located and analysed within the context of the 4IR.
Although not plainly stated in the 2016 national ICT policy, the 4IR underscores an
important context for the development of this policy. In this regard, the 2016 national
ICT policy gives a great deal of attention to and insists on the convergence and
universal access to ICT, and how this can be driven towards socioeconomic
advancement. As a result, the policy states that the ICT sector is "underpinned by
convergence of networks and services that impact on how people and digital
equipment communicate, interact and work together" (South African Department of
Telecommunications and Postal Services 2016: s 7.1). This interaction of people with
digital technology is a key characteristic of the 4IR, and is reflective of the manner in
which communication is carried out in the current era. Therefore, policies within the
ICT sector should not be vague with regards to these issues and should also include
clear strategies to deal with them effectively.

Moreover, participant 1 stated that "currently the 4th industrial revolution is happening and you should locate the White Paper within the 4th industrial revolution". Participant 2 stated that "the fourth industrial revolution requires agility on behalf of entities to make sure that people are not left behind, widening the digital divide". Accordingly, the 4IR is regarded as an important context and phenomenon in which the establishment of an inclusive digital society can be achieved and maintained. It is therefore in the best interest of national ICT policy makers to incorporate the 4IR into policy strategies, as well as to outline how these can be used to properly integrate the ICT sector and be beneficial to citizens.

Additionally, in an address at the ITU Telecom World 2018, President Cyril Ramaphosa stated that the 4IR is pivotal towards the socio-technological needs of the developing world being met. Furthermore, the 4IR should be used to accelerate robust growth and investment in the ICT sector and this should be evidenced by implementing strategies geared to address the digital divide and not widen it (Ramaphosa 2018). In addition, the decision to consolidate the previously divided DoC and DTPS into one department is regarded as a fundamental move towards effectively exploiting and addressing the complexities of the 4IR. This can also contribute in properly integrating the South African ICT sector as well as the policies that govern this sector in a manner that conforms to locally and internationally acceptable standards.

President Cyril Ramaphosa maintained that this decision will have a positive effect and make more apparent the efforts made towards achieving better and robust alignment and coordination of the communication ministry (ibid.). This alignment will also rectify the erroneous and counter-intuitive decision to separate the department of communications into two entities, namely, the DoC and DTPS. In reference to the 4IR, President Ramaphosa envisages that the integrated Department of Communications will effectively tackle issues that are critical to the future of the economy in the context of the fourth industrial revolution (Ramaphosa 2018).

In light of these forward-looking developments in the ICT government ministries, the national 2016 ICT policy has a better chance of exploiting the intricacies of the 4IR and ensuring that these are for addressing the digital divide as well as other information and universal access and service gaps. It is therefore mandatory to start

cleaning house at the DoC. This can ensure that this department correctly reflects the attributes of an effectual and converged department that is equipped to properly integrate the South African ICT sector. This would mean that proper funding and resources be set aside to ensure the realisation of this very important task. In addition, the whole-of-government and multi-stakeholder approaches would have to form the backbone of this process and be implemented in more strategic ways.

As discussed in the sections that follow, the national e-strategy lays a good foundation on how the benefits of the 4IR can be maximised in the South African context. This strategy is aimed at exploiting and maximising the benefits and new development-driven realities that accompany the 4IR. For this to take place, impediments such as digital exclusion, the high cost of communication and the lack of universal access and service to ICT should be robustly and consistently confronted. Moreover, it is only when real and lasting digital inclusion takes place that initiatives and objectives of the 2016 national ICT policy can be successful in fast-tracking the integration of the ICT sector and achieving universal service to ICT (cf. Chapter 2). The 2016 national ICT policy should play a foremost role in the quest to accomplish this important task because it is pertinent towards realising an inclusive 4IR society.

Figure 2: Strategies towards a South African 4IR society

Source: National Integrated ICT Policy White Paper, Department of Telecommunications and Postal Services (2016).

The 2016 national ICT policy seeks to achieve its objectives by proposing and also implementing certain initiatives as discussed below.

4.3.5 Initiatives

This section discusses the initiatives of the 2016 national ICT policy. In other words, this section outlines strategies or interventions that this ICT policy seeks to implement with regards to ICT development, convergence and digital inclusion. Initiatives discussed include the wireless open access network (WOAN), rapid deployment of ICT, economic and content regulators, and digital development fund (digital-DF).

4.3.5.1 Wireless open access network

The 2016 national ICT policy proposes to create and effectually sustain a wireless or wholesale open access network (WOAN) that will ensure that equal and non-discriminatory usage of spectrum among licensed service providers of communication services. This initiative is based on the ideals of openness and transparency which aim to ensure that there is universal access and service to ICT in under-serviced and rural communities (South African Presidency 2016: s 1.1). In this regard, the 2016 national ICT policy states that the establishment of the WOAN is aimed at addressing "the supply-side challenges to transforming South Africa into an inclusive, people-centred and developmental digital society" (South African Department of Telecommunications and Postal Services 2016: s 9.1). Hence, this initiative is linked to the policy objective of open access to and provision of ICT services to developed and developing communities so that overall digital inclusion is achieved.

Chapter 9 of the 2016 national ICT policy contextualises the open access objective and gives reasons why South Africa needs to move towards an open access method in terms of spectrum allocation, infrastructure and broadband. The policy maintains that this is meant to "transform society and the economy, encourage broadband deployment, and preserve and promote the open and interconnected nature of the internet" (South African Department of Telecommunications and Postal Services 2016: s 9.1). Therefore, an open access network refers to the opening up and sharing of frequency spectrum and infrastructure so that the provision of ICT services is rendered by an inclusive and fair number of electronic communication network services (ECNS) licensees (South African Presidency 2016: s 1.1). In this sense, interested ECNS licensees are encouraged to converge in an open network to provide communication services to under-serviced areas at affordable cost.

The rationale behind an open access network is that there should not be a monopolised or centralised ownership and utilisation of mobile and radio frequency spectrum by a few ICT service providers or licensees. Thus, the implementation of this initiative will result in the current radio and mobile frequency spectrum licensees losing their exclusive rights to spectrum (South African Presidency 2016). This will ensure that spectrum is equally shared among ECNS licensees and that the market is open for new licensees to participate and have a stake in the allocation and usage of spectrum. This will then ensure a greater pool of ECNS licensees who are able to provide a wide range of ICT services to citizens at affordable cost. Provision of ICT services in this manner can assist in bridging the digital divide and also ensure universal access to digital communication technologies that are needed to actively participate in the 4IR society.

The 2016 national ICT policy regards radio frequency spectrum as an essential, complex and development-driven national resource. Therefore, spectrum should be universally shared by all interested service providers and the exclusive rights to spectrum by a few licensees should be done away with. The 2016 national ICT policy states that the reason for this is to ensure that spectrum is "accessed by all who need it to meet their communication needs" (South African Department of Telecommunications and Postal Services 2016: s 9.2.5). It is critical to note that current ECNS licensees will still retain their participation and involvement in the allocation and usage of spectrum but they will now have to share with others in this spectrum. The 2016 national ICT policy regards the principle of spectrum sharing as crucial and should be implemented "without compromising the quality of services, while at the same time preventing harmful interference" (ibid.). This quality of services should therefore be in the best interest of citizens and should aid better communication between citizens and those around them.

Moreover, the sharing of spectrum and the infrastructure needed to maintain it can ensure that there is increased competition towards providing communication services at a reasonable low cost. In this regard, a WOAN network can assist in lowering the high-level costs of voice, data and internet communication and this will mostly benefit citizens in rural and marginalised areas. The lowered costs of communication can provide a good starting point towards achieving universal service and digital inclusion

as these are essential characteristics of an inclusive digital society. These characteristics also underscore pertinent issues towards a transformed and integrated ICT sector.

In this regard, the 2016 national ICT policy seeks to implement the following three key initiatives as part of the WOAN (South African Department of Telecommunications and Postal Services 2016: s 9.1):

(a) Core networks will support, at a minimum, traditional open access principles of fairness, transparency and non-discrimination.

(b) Last mile infrastructure will be built on open access core networks and will be made available in a manner that will enable many users to coexist on the same infrastructure or in the same spectrum.

(c) Digital services and applications will be provided over open access core networks and will be governed by the open internet and net-neutrality regime.

In an address at the MyBroadband conference in 2016, Telkom Chief Commercial Officer Brian Armstrong indicated that Telkom welcomed the proposed policy initiative of a wireless open access network. In this sense, the WOAN is regarded as a much-needed initiative because it has the potential to promote and encourage fair competition and investment, as well as contribute towards the universal service to ICT (Van Zyl 2016). Indeed, the excessive cost of communication is a critical impediment towards accomplishing digital inclusion and therefore should be tackled without any further postponement. This was also gravely expressed in the 2017 social media movement of 'hashtag data must fall' or #datamustfall (Gilbert 2017). A number of consumers and civil society groups participated in this movement to express their deep concern and dissatisfaction at the excessive cost of voice and data communication. In this sense, ICT policies should be mindful of and reflect these public outcries as well as outline implementable strategies to address them. The excessive cost of communication remains a hotly contested issue in South Africa and, if left unaddressed, will render ineffective all efforts to reduce the persistent digital divide.

The 2016 national ICT policy is not oblivious to the issues related to exorbitant and at times unreasonable costs of communication. In this regard, the policy cites three main

challenges to the WOAN policy initiative (South African Department of Telecommunications and Postal Services 2016: s 9.1.1.1)

(a) Ineffective regulatory regime

(b) Concentrated broadband infrastructure market

(c) High cost of communication

The proper and effective tackling of these challenges can ensure that traditional and electronic communication services are provided in a reasonable, affordable and inclusive manner. Hence, a WOAN network can play an instrumental role towards achieving this. However, this network should be structured and implemented in a manner that reflects all the inputs from ICT industry players. In this sense, the WOAN should not be implemented in a manner that encourages government overreach with issues related to ICT infrastructure, services and access. These matters are further discussed in the following sections that deal with the challenges and implementation of the 2016 national ICT policy.

4.3.5.2 Rapid deployment of ICT

Essentially, the 2016 national ICT policy seeks to put mechanisms in place to guarantee that South Africans have reliable and affordable access to communication infrastructure and services. Access to communication services is paramount to achieving and sustaining an inclusive digital society that is empowered by the use of and access to ICT. To achieve this, the 2016 national ICT policy proposes the establishment of a "simplified, streamlined and coordinated framework, supported by clear strategies and measures, to accelerate the infrastructure deployment process as far as possible" (South African Department of Telecommunications and Postal Services 2016: s 9.3).

Thus, the infrastructure deployment process seeks to ensure the universal service and access to ICT. In this regard, participant 2 stated that "universal service meaning there is ICT infrastructure in all communities. Universal access means that all people are accessing that ICT infrastructure to better their lives". As a result, the infrastructure deployment policy initiative aims to ensure that issues of ICT infrastructure development and usage are properly addressed. More importantly, the 2016 national ICT policy aims to create an enabling environment in which ICT infrastructure is efficiently used for the betterment of society. To achieve this, initiatives should also be

put in place to ensure that people are equipped with the necessary skills and capabilities to use this ICT infrastructure. This will ensure that such infrastructure is not used in ways that are counter-productive, malicious or criminal.

Universal service and access to ICT also underpins a fundamental development aspect and was advocated by the ICT policy review panel. Moreover, the 2016 national ICT policy predominately views the right to communicate as pivotal in a society that is self-sufficient and empowered. It therefore calls for the participation and involvement of government and relevant stakeholders to ensure that ICT infrastructure is well developed, user-friendly and enables people to connect with themselves and those around them. In this regard, participant 3 maintained that "you need to connect, as much as we connect with each other as a country, we need to be globally connected as well".

Furthermore, it is an undeniable fact that the world is changing and this change is, more often than not, undergirded by numerous socio-technological factors, in the form of ICT. These factors are inspired and driven by processes of globalisation which have completely altered the manner in which people communicate as well as the flow of information that exists in this communication. Hence, in such a changing world the right to communicate and the essential infrastructure and tools to do so have never been as critical as they are now.

To address this, the 2016 national ICT policy puts forward the rapid and robust deployment of ICT and this should be purposed towards achieving universal access and service to ICT. This policy initiative advocates for the access to and utilisation of "buildings, roads, railways, footpaths and tunnels to deploy electronic communication networks" (South African Department of Telecommunications and Postal Services 2016: s 9.3). Through the ICT deployment initiative ECNS licensees are granted the permission to use any property or site to install infrastructure and networks to provide ICT services at reasonable tariffs. However, the 2016 national ICT policy states that this should not result in the duplication of infrastructure that may involve "repeatedly conducting processes with potential negative environmental impacts, such as digging and trenching" (South African Department of Telecommunications and Postal Services 2016: s 9.3.1). Digging and trenching are regarded as harmful or damaging to the

environment as both these processes involve ploughing deep and wide holes or ditches on the ground (ibid.).

The access to land or property to provide ICT services should not infringe on the rights of property owners whose land is used to install optic wires, cables and networks to provide communication services. Therefore, ECNS licensees and property owners should engage in an open and transparent process or negotiation and the rules of engagement should be clearly spelt out and adhered to. Moreover, this process should be free from corruption or any self-serving agenda that seeks to achieve a different arrangement from that which was initially agreed upon. Hence, the 2016 national ICT policy stresses that the partnership between ECNS licensees and property owners should be approached with "reasonableness and due care" (South African Department of Telecommunications and Postal Services 2016: s 9.3).

This initiative also has a fundamental link to other ICT policy initiatives, namely, the WOAN network and radio frequency spectrum. To have an efficient and development-driven deployment of ICT, the principles of open access and adequate spectrum should be adhered to. Accordingly, rapid deployment of ICT seeks to expedite the roll-out of broadband infrastructure aimed at accomplishing universal service and access to ICT. This is an important objective that is outlined in the national broadband policy (2013). In this sense, broadband infrastructure is key towards addressing the issue of connectivity.

To accomplish the rapid deployment of ICT services, the 2016 national ICT policy proposes that five forms of infrastructure should be made available and dispersed (South African Department of Telecommunications and Postal Services 2016: s 9.3.1.1):
  (a) Underground fibre and ducts
  (b) Premises fibre and ducts, including in business parks and on private land
  (c) Aerial fibre, deployed on poles
  (d) High sites, including rooftops for wireless sites
  (e) Masts, towers and land or other property for such towers.
This infrastructure or sites should be effectively used to deploy much-needed ICT services in a manner that is fair and consistent. This should not be done in a manner

that exacerbates the inequalities that currently exist in terms of these services. This should rather be aimed at reducing the gap between the haves and the have-nots. The rapid deployment of ICT policy initiative would have achieved its mandate if such issues are properly addressed.

The 2016 national ICT policy furthermore cites three principal barriers and regards these as having the potential to counteract the deployment of ICT, as well as slow down progress towards implementing this initiative (South African Department of Telecommunications and Postal Services 2016: s 9.3.1.2):

(a) Balancing the rights of ECNS licensees and public and private landowners.

(b) Negative impacts on the environment.

(c) Lack of coordination between stakeholders.

Notwithstanding these barriers, the deployment of ICT can be achieved and made to take effect through the following two interventions (South African Department of Telecommunications and Postal Services 2016: s 9.3.3):

(a) Provide a framework for ECNS licensees and landowners to work together.

(b) Enable a sustainable and effective deployment of broadband infrastructure.

On the whole, these interventions serve a purpose that is two-fold, that is, to provide universal access and service to ICT and to ensure that the right to communicate is upheld and available to all. These are vital aspects towards a reformed ICT sector that is wholly dedicated and responsive to the communication and digital needs of citizens. These needs should be robustly addressed if South Africa is to make any progress towards surviving in the knowledge economy driven by the 4IR.

4.3.5.3 Two forms of regulation

(a) Economic regulation

The efficient and converged regulation of the national ICT sector has always been a primary objective since the era of the 1990s. In this regard, participant 1 stated that "So, from a policy side I think government has always been acknowledging convergence is happening and it has been thinking about it". Owing to the intense and fast-paced changes in technology and methods of communication, the South African ICT sector experienced significant changes that have had an impact on how people communicate with each other and those around them. Moreover, these changes were

driven by ICT policies and laws that sought to effectively converge the ICT sector in a manner that is responsive to the current era.

In the current ICT and economic environment of the 21st century, more advanced and dramatic changes have taken place and these are rapidly changing the traditional ways of communication. The advent of the 4IR, for example, has drastically revolutionised the manner in which people communicate. Consequentially, people require new and much-needed skills and abilities to interact with ICT infrastructure, services and content, that has emerged as a result of the 4IR. The latter has therefore called on for a more converged approach and regulation of the ICT sector. More importantly, the 4IR has forced this sector to think of more creative ways in which to achieve this speedily and effectively.

In this regard, ICT policies and laws should thus outline pragmatic strategies that can be used to usher South Africans into the most advanced stage of the information society, namely, the 4IR. More essentially, ICT policies should create an enabling environment in which effective and converged regulation can take place. As an attempt towards establishing such regulation, the 2016 national ICT policy proposes to create an economic regulator that will regulate the ICT sector according to the realities inspired by the 4IR while keeping the interests of society at the forefront of such regulation. Therefore, the policy states that the economic regulator will ensure "effective regulation, administration and governance of the ICT sector and all internet resources" (South African Department of Telecommunications and Postal Services 2016: s 13.4). The policy also states that this regulation must be holistic and must be "in the public interest and advance digital transformation of the public sector, economy and society" (ibid.).

The responsibility of regulating the ICT sector currently resides with the ICASA, as mandated by the Electronic Communications Act (No 36 of 2005). However, the type of regulation that ICASA provides has become irrelevant, outdated and not properly aligned with the realities and advanced technologies of the 4IR. In this regard, participant 2 maintained that "so, we need a different type of regulator, taking the good aspects of ICASA, but we need a single integrated regulator who will deal the future and it's not ICASA". This is where the new economic regulator comes in, that is, to

replace ICASA and to regulate the national ICT sector using a futuristic approach that is responsive to the needs of the 4IR.

Moreover, the 2016 national ICT policy states that the economic regulator will be responsible for "licencing and regulation of networks and services" (South African Department of Telecommunications and Postal Services 2016: s 13.4). This includes granting licences to ECNS licensees to provide ICT services and monitoring the distribution of ICT networks and infrastructure. However, policymaking and other related functions will be transferred to the DTPS and not to the new ICT regulator (South African Department of Telecommunications and Postal Services 2016: s 5.5.1). This is to ensure that the different roles are clearly divided and established as they are outlined in section 85 of the constitution. In this sense, government, through the DTPS, develops and makes lawful the national policy for the ICT sector and government ICT entities are there to supervise and regulate the careful implementation of this policy for the benefit of citizens.

Furthermore, the economic regulator will be responsible for the "licensing and regulation of the postal sector" (South African Department of Telecommunications and Postal Services 2016: s 13.4). This will be done as per the new regulatory strategy outlined in the Postal Services Amendment Bill (2018). This regulatory strategy allows the new regulator to regulate privately owned postal services companies, namely, Postal Numeric Encoding Technique (Post Net) and Dalsey, Hillblom and Lynn (DHL). Essentially, the new regulator is proposed to expand on and unbundle the current role and structure of the ICASA towards accomplishing a more efficient and up-to-date regulation of the ICT sector.

More importantly, the new regulator is aimed at ensuring the existence of digital inclusion. In this regard, the policy states that the economic regulator must operate in a manner that will "ensure affordable universal service and access in line with this White Paper" (South African Department of Telecommunications and Postal Services 2016: s 13.4). In addition, the economic regulator should function in a manner that is conducive towards creating and sustaining a knowledge economy (South African Presidency 2016: s 4.3). In this sense, the economic regulator should make it a point that it regulates the national ICT sector in a manner that fundamentally contributes to

the gross domestic product (GDP). Regulation of this kind should therefore be mindful of the fact that the ICT sector is a crucial enabler and driver of other sectors, namely, education, health, transport, energy and tourism (South African Department of Communications 2012: s 12.4).

Thus, these sectors cannot fully carry out their functions and survive in the digital knowledge era without the use of and access to ICT. As much as it is an enabler for other sectors, the ICT sector is also a standalone sector that has regulators, policies and laws that are unique to it. Hence, it is important for policies and regulations in the ICT sector to be well coordinated and integrated. This presents a monumental task, but one that should be embarked on if South Africa is to make any progress in effectively utilising the innovations and technologies of the 4IR.

Although the economic regulator underpins a restructuring of the ICT sector regulation and management, the ICT industry is not welcoming of this new regulator and is wary of the feasibility and intended purpose thereof. Chief among the criticisms levelled against the establishment of the new ICT regulator is that it threatens the future and constitutional independence of the ICASA (Gilbert 2017). As a Chapter 9 institution, the ICASA should be independent and the powers and authority assigned to it should not be tampered with. In this regard, participant 2 stated that "ICASA must be unbundled so that you can create a proper ICT regulator. No ICT regulator in the world is a Chapter Nine institution, no other, nowhere in the world". For this reason, the economic regulator will not be a Chapter 9 institution.

However, the proposal to strip the ICASA of certain powers and autonomy is viewed as being inconsistent with the status awarded to an independent ICT regulator (Gilbert 2018). The reasons for this is that entities like ICASA, USAASA and .zaDNA are considered to possess long-standing technical skills and expertise in the South African ICT sector (ibid.). These skills and knowledge can assist towards the exponential growth of the ICT sector as well as play a key role in the implementation of the 2016 national ICT policy. However, this knowledge needs to be expanded on and adjusted to make it conducive to the present needs of the ICT sector as determined by the 4IR society.

Therefore, the creation of an economic regulator underpins an adjusted and up-to-date entity that is envisioned to take the national ICT sector into the next phase in the evolution of ICT, that is, the 4IR. Hence, it proves necessary to implement new strategies and regulations that will aid the transition from traditional means of communication to more digitalised and knowledge-based ones. In so doing, South Africa can strategically position itself as a leading contributor of ICT innovation and advancement among other countries in Africa and abroad. This can furthermore add to the efforts made towards an inclusive digital society that realises the objectives of the 2016 national ICT policy.

Figure 3: The new ICT regulator
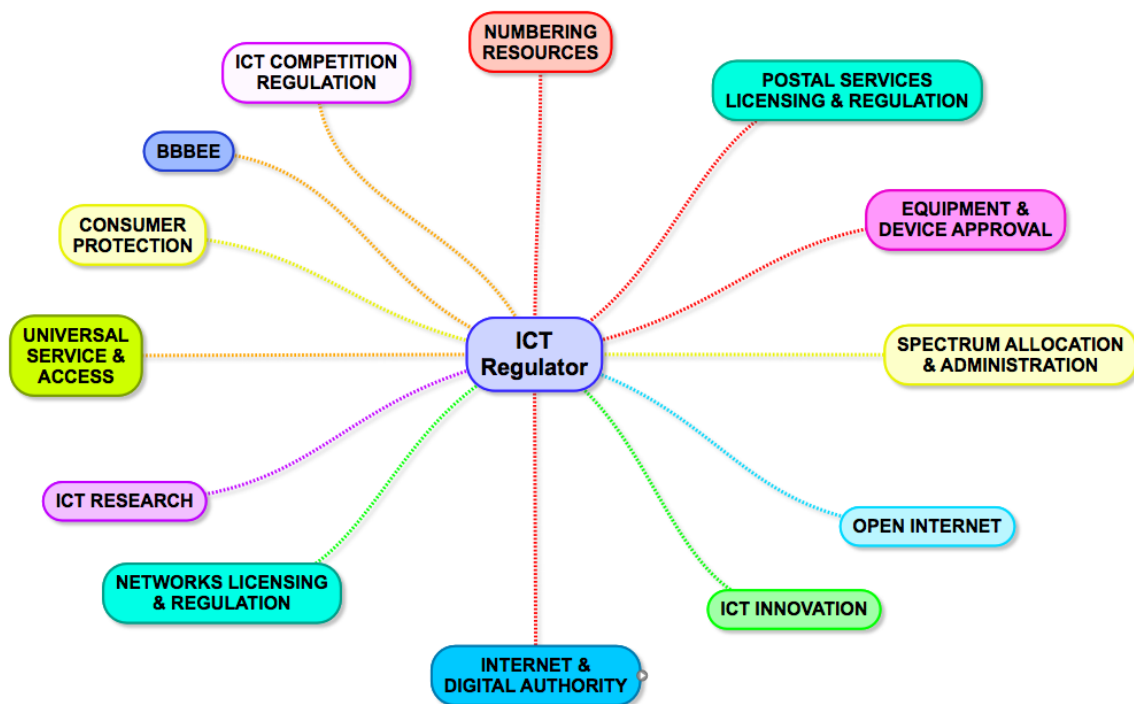
Source: National Integrated ICT Policy White Paper, Department of Telecommunications and Postal Services (2016).

(b) Content regulation

The 2016 national ICT policy was finalised and released during the era of divergence or separation between the DTPS and DoC. Consequentially, the policy refers to ICT and broadcasting regulation as separate practices that require different policy frameworks. In this regard, the policy states that "there are distinct policy imperatives and principles driving the regulatory approaches to broadcasting and

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telecommunications" (South African Department of Telecommunications and Postal Services 2016:7.2.2). This is in contravention to the principle of technological convergence that the policy is said to be built on. To adhere to proper integration and convergence of the ICT sector, the policy should cover the entire ICT sector, including broadcasting. Moreover, participant 3 maintained that "there are issues of broadcasting that need to be incorporated into the policy, the issue of the 4IR needs to be incorporated into the policy". Therefore, the scope of the 2016 national ICT policy should be widened to fully address the predominant context which it is located, that is, the 4IR.

Due to increased digitalisation and convergence of ICT, broadcasting assumes a different name and denotes a different meaning in the 2016 national ICT policy. Broadcasting is now referred to as *audio and audio-visual content* (South African Department of Telecommunications and Postal Services 2016: s 7.5). This is due to the increase in ICT applications and devices that has changed the space of broadcasting to new and unprecedented levels. Through these devices, people can record and disseminate audio and audio-visual content whenever and to whomever. On the whole, the lines between traditional broadcasting and telecommunications have become increasingly blurred as a result of convergence and regulation of the ICT sector.

For this reason, content regulation is required to ensure that the rights of individuals are not infringed through the publicising of content that might harm their dignity and sense of worth. This would go against the ideals of an inclusive digital society as envisaged in the 2016 national ICT policy. More importantly, ICT policy developers should embark on a review process of broadcasting activities and be able to decipher the meaning and practice of broadcasting in the era of technological and infrastructural convergence (South African Department of Telecommunications and Postal Services 2016: s 7.2.2).

After this process is completed, it should be clear that broadcasting and ICT constitute one and the same thing in an inclusive digital society. Accordingly, policies should therefore be merged so that ICT and broadcasting are viewed as one phenomenon which can no longer be separated as the world enters into the era of the 4IR. The

merged Department of Communications should ensure that policies, strategies and infrastructure services are adequately combined to cater for the multiplicity of needs that have surfaced as a result of the interoperability of ICT.

4.3.5.4 Digital development fund

A key indicator of the effective implementation of the 2016 national ICT policy is that this policy should bridge the digital divide and ensure the affordable universal service and access to basic communication services. In times past, basic communication services meant that people should have access to a fixed-line telephone and have the skills and ability to use a telephone (cf. Chapter 2). In the 4IR era, basic communication services have been extended to mean access to ICT and the internet. Proper and sufficient access to ICT and the internet is therefore indicative of a society that is well capacitated to tackle the challenges of the communication landscape of today. However, during this process the 2016 national ICT policy states that "there is danger that new digital divides could emerge" (South African Department of Telecommunications and Postal Services 2016: s 5.1).

Electronic skills or e-skills are a key requisite towards surviving and being socioeconomically active in the 4IR era that is characterised by cutting-edge convergence and technological advancements. For this reason, the 2016 ICT national policy underscores a national ICT strategy that is aimed at changing the structure of the ICT sector. The primary objective for this is therefore to make this sector more flexible and responsive to the evolving ICT environment caused by ICT infrastructure development and convergence. In this regard, the policy maintains that it aims to "introduce a flexible evidence-based framework to respond to changes in technology ensure new digital divides do not emerge" (South African Department of Telecommunications and Postal Services 2016: s 5.3).

To address these developments as well as deal with new digital divides that might emerge, the 2016 national ICT policy proposes that a new digital development fund (Digital-DF) be established. The fund will expand the current responsibilities of the USAASA and the Universal Service and Access Fund (USAF). In this sense, the digital-DF will run initiatives to address "market failure and ensure access by everyone across the country to a range of communication platforms, networks, services and

content" (South African Department of Telecommunications and Postal Services 2016: s 5.3). In essence, the digital-DF is an improved and immensely digitalised version of the USAF that is envisioned to expedite processes towards effectively closing the gap between the haves and the have-nots. Closing this gap also means making opportunities available for the want-nots to see the potential of ICT platforms and to actively use these platforms. More importantly, the digital-DF will ensure that universal service and access to ICT is realised as South Africa moves towards an inclusive knowledge society and economy.

Furthermore, this policy initiative affords exclusive powers to the DTPS ministry that include universal access and service policy development and implementation, setting objectives and deadlines and to oversee the review process of these objectives. In this sense, participant 2 stated that "historically there are policy aspects that ICASA and USAASA are dealing with and those policy acts have been taken back to the ministry because the minister is in charge of policy". Consequently, the DTPS will assume all policy-related responsibilities that are currently assigned to the USAASA (South African Department of Telecommunications and Postal Services 2016: s 5.5.1). The economic regulator will take over regulatory responsibilities that reside with the USAASA. The establishment of the digital-DF is therefore proposed to strengthen, empower and give effect to interventions aimed at the universal service to ICT in the quest to create an inclusive digital society.

The new structure of roles and functions as proposed by the formation of the digital-DF has been met with strong criticism and scepticism. Central to these criticisms is that the creation of a new development fund gives too much power to the DTPS (Gilbert 2018). In this sense, government through the DTPS is viewed as having an excessively big stake in terms of ICT policy and regulation. This has the potential to threaten the independence and autonomy of entities like ICASA and USAASA (ibid.). Additionally, there is a great sense of subliminal government overreach and monopolism that could jeopardise the institutional and operational freedom of agencies within the ICT sector. In response to these issues, participant 2 maintained that "any regulator must discharge its mandate without fear or favour. There must never be political interference. There must never be private sector capturing of any regulator".

To tackle these issues, more consultative sessions should take place between government and the ICT industry so that there is a common understanding and agreement on the present and future trajectory of the ICT sector. Although the ICASA and USAASA have not been successful in their ICT policy mandate, continued support and resources by government and the private sector should have been given to these entities. Once this is achieved and taken as a matter of urgency, there would not arise a need to spend more resources including human and infrastructure resources to develop new approaches to these issues.

More to the point, ICT policy entities that are set up, both in the present and future, should receive adequate support through public-private partnerships (PPPs). These entities should also be allowed the space to secure their own funding through creating partnerships with interested national and international donors or sponsors. In response to these concerns, the 2016 national ICT policy stresses the fact that a number of factors contributed to the proposed development of a digital-DF. These factors or challenges are not unique to the South African ICT sector and society, but the means to address them reflect distinctive aspects that are pertinent to the South African ICT environment. These factors include (South African Department of Telecommunications and Postal Services 2016: s 5.1.2):

(a) The digital divide persists; unequal access to ICT services

(b) Outdated definitions

(c) Overemphasis on subsiding network extension

(d) Duplication and lack of alignment in institutional framework and roles

Furthermore, the 2016 national ICT policy maintains that a rigorous process is embarked on that gives lasting effect to initiatives of universal access and service to ICT.

This process underscores the development and functioning of the digital-DF in the quest to address digital exclusion in the era of ICT convergence and development. Thus, six principles are used to track the progress of the digital-DF and to determine how impactful is the fund towards accomplishing universal service to ICT. These principles include (South African Department of Telecommunications and Postal Services 2016: s 5.4):

(a) Availability

(b) Affordability

(c) Accessibility

(d) Awareness

(e) Ability

(f) Quality of service

As discussed in Chapter 2, these principles are what is needed to strategically deal with the impeding effects of the digital divide. Therefore, the inclusion of these principles in the 2016 national ICT policy is a step in the right direction. What is required now is to put mechanisms and resources in place that will ensure that these principles continue to constitute a yardstick whenever initiatives to bridge the digital divide are implemented.

4.3.6 Implementation

4.3.6.1 The role of government entities

The implementation of the 2016 national ICT policy is critical in accomplishing an inclusive digital society that skilfully uses ICT for socioeconomic development. This implementation should be effectively spearheaded by those assigned the responsibility and mandate to implement this ICT policy. In this sense, the 2016 national ICT policy should not fall into the trap of being good only on paper but greatly lacking in implementation. In this regard, participant 3 maintained that "we are good with coming up with policies and strategies, but when it comes to implementation, I think we are, I think we still need to work hard on it". This underscores the predicament for most South African ICT policies and should not be the case with the 2016 national ICT policy. Hence, the implementation of this ICT policy should be afforded a great deal of attention so that it realises the objectives of the NDP in as far as the use and access to ICT is concerned.

This section addresses implementation issues that are pertinent to the 2016 national ICT policy. In this regard, this section unpacks the role of specific and purposefully sampled government entities towards the implementation of this ICT policy. These entities are implicated in the 2016 national ICT policy as having a key role towards the implementation of this policy. This is meant to address "government's commitment to streamline roles and responsibilities of different entities to increase efficiency and public value for public resources" (South African Department of Telecommunications

and Postal Services 2016: s 5.5.1). More crucially, the purpose of this section is to determine the role of government entities towards the implementation of the 2016 national ICT policy (cf. Chapter 1). The rationale for this objective stems from the fact that the researcher wanted to examine how the ICT sector will be restructured and integrated to be in line with the directives of the 2016 national ICT policy.

Thus, this section unpacks the role and mandate of the DTPS, DoC, ICASA, USAASA and SAPO. It is imperative to note that these are not the only entities that are responsible for the ICT sector. However, these implementation agencies were purposefully selected in order to determine their role in the integration of the ICT sector. This integration should fundamentally address issues that have emerged as a result of the 4IR. In this regard, participant 2 stated that "we are saying that the entities that were established in 1996, 1998 and 2000 no longer serve the purpose because of the advent of the 4IR". More essentially, these agencies should be used by government to ensure that the objectives ICT infrastructure development, convergence and digital inclusion are achieved in the South African ICT sector and society.

The researcher conducted five interviews to supplement data collected in the 2016 national ICT policy (cf. Chapter 3). The interviews were conducted with government officials from the DoC and DTPS who agreed to participate in the study. These officials were purposefully selected because of their role and responsibilities in issues pertaining to the implementation of the 2016 national ICT policy. Therefore, from these five interviews, the researcher was able to collect sufficient data on the role of the other entities, namely, the USAASA, SAPO, ICASA. These entities are regarded as implementation agencies which report to and are guided by the DoC and DTPS. In this regard, participant 3 stated that "because we are not implementers, we implement through state-owned entities". Participant 3 further stated that "we are looking at the mandates of those institutions when they were established, whether the mandate they are currently performing is still relevant for this integrated approach".

(a) Department of Telecommunications and Postal Services
The Department of Telecommunications and Postal Services (DTPS) is a national government department. The DTPS emerged from the decision taken in May 2014 to

divide the then Department of Communications (DoC) into two separate departments, namely, the DoC and DTPS. The role of the DTPS is therefore to oversee the advancement of the national ICT sector and to develop this sector so that it is on par with global standards and practices. In this regard, participant 3 stated that "we need to be globally competitive and if other countries are leaving you behind, the economy will not grow like we want it to grow". However, the decision taken in November 2018 overruled the previous one and the DTPS and DoC have been re-merged to accomplish a fully integrated and fully converged ICT sector. In this sense, participant 3 maintained that "but you know now that our department is no longer called the ministry, it is called the ministry of communications and digital technologies, the DCDT".

Furthermore, the role of the DTPS is to oversee, regulate and implement the rollout of communication services so that these are available, accessible and affordable to all citizens. The DTPS does this through entities that report to it, namely, the USAASA, ICASA and SAPO. In this regard, participant 3 stated that "we also oversee a number of state-owned entities like ICASA being one of them, South African post office and USAASA. These are some of the entities that the department exercises an oversight over". These entities are therefore assigned the key responsibility to ensure that ICT services are fairly disseminated and that consumers receive fair treatment and protection (South African Department of Telecommunications and Postal Services 2016: s 5.7). Essentially, government, through the DTPS, ensures that ICT services and infrastructure is well equipped to deal with the communication needs of society so that an inclusive ICT society is created and sustained.

One of the primary responsibilities of the DTPS is the development and implementation of national ICT policies that can be used to achieve this inclusive ICT society. In this regard, participant 3 stated that "so the role of our department, as the name says, it is responsible for developing national policies on communications issues, telecommunications and postal services". The 2016 national ICT policy is therefore the most recent of these policies and it outlines various initiatives that are envisaged to position South Africa towards reaping the benefits of the digital age, as well as to prepare citizens for the 4IR. Hence, the DTPS should ensure that the 2016 national ICT policy addresses all relevant communication issues that have emerged

as a result of the 4IR. This can be accomplished through proper research and innovation as well as effective benchmarking strategies that seek to ensure that the South African ICT sector remains up-to-date with the latest trends and technologies. In addition, the DTPS is tasked with the formulation of policy strategies and legislation that address universal access and service to ICT. The 2016 national ICT policy therefore states that going forward the DTPS will be "responsible for formulating policy approaches to universal service and access to communications, including defining this concept in policy and legislation" (South African Department of Telecommunications and Postal Services 2016: s 5.5.1). In this regard, the 2016 national ICT policy tasks the DTPS with overseeing the functioning of the digital-DF so that this initiative realises the objective of universal service to ICT for citizens. Accordingly, all policy-related functions of the USAASA and ICASA will be transferred to the DTPS. This is in line with Section 85 of the constitution, which affords to government the right to formulate and implement national ICT policies and strategies.

In this sense, the 2016 national ICT policy proposes and maintains that the role of the DTPS is to develop, implement and be the main custodian of all policy-related matters that address the national usage and access to ICT. In this regard, the realisation of digital inclusion should be the key focus of the DTPS and all policy initiatives and resources must be geared towards achieving this. This should be achieved if South Africa is to make any tangible progress towards becoming a fully-fledged 4IR society.

(b) Department of Communications

The Department of Communications (DoC) is the second department that emerged as a result of the separation of the then DoC in May 2014. In November 2018, the DoC and DTPS were merged and are now referred to as one entity under Minister Stella Ndabeni-Abrahams (Gilbert 2018). However, these departments are dealt with separately in this dissertation because this is how they are also dealt with in the 2016 national ICT policy. The reason for this is that this ICT policy was released during a time in which the DTPS and DoC were still divided. In this regard, the 2016 national ICT policy maintains that in order to effectively implement policy initiatives "the minister of Telecommunications and Postal Services and the minister of Communications will work closely together" (Department of Telecommunications and Postal Services 2016: s 7.3). The 2016 national ICT policy should therefore reflect the merged departments

and ensure that the ICT sector is converged to address any divides that might have occurred as a result of this undue separation of roles and responsibilities.

The DoC is mandated to guarantee that communication services, including broadcasting, are available and accessible to all citizens (South African Department of Communications 2014: s 9.1). In this sense, participant 1 explained that "so we are part of the ICT integrated policy in a way that we deal with all four components but currently we are dealing with content matters, audio-visual content matters". Therefore, this content should be driven towards educating, informing and entertaining citizens. The DoC thus plays a cardinal role in ensuring that a South African 4IR society is created that uses ICT services to develop and empower itself. More crucially, these services should be used for socioeconomic development and the DoC should ensure that this is realised even in the era of increased reliance on digital communication services, applications and content.

Therefore, the 2016 national ICT policy proposes that the DoC should develop amended policies and legislation for broadcasting or audio and audio-visual content Hence, the role of the DoC is to ensure that the broadcasting sector is aligned to the principle of convergence and should clarify what qualifies as broadcasting in the digital age. In this sense, the policy states that "given media convergence, there is a need for holistic regulation and classification across the media\content sector" (South African Department of Telecommunications and Postal Services 2016: s 7.5).

The definition of broadcasting should be reviewed and realigned to the needs and practices of the 4IR. The 4IR has created an environment in which the traditional forms of broadcasting are no long relevant. Hence, the possession of new skills is required in order to use the advanced technologies of the 4IR for broadcasting. Participant 1 maintained that this is important because "everything is running on the same network, you are able to do artificial intelligence and all of those things on the same broadband network". The new role of the merged DoC should address these issues as they are pertinent towards creating an inclusive digital society.

(c) Independent Communications Authority of South Africa

The Independent Communications Authority of South Africa (ICASA) plays a central role in the management and regulation of the ICT sector. The ICASA is a result of a merger that occurred in July 2000 when the South African Telecommunications Regulatory Authority (SATRA) and the Independent Broadcasting Authority (IBA) were combined to form ICASA (cf. Chapter 2). This merger was necessitated by the advent of ICT convergence that had taken root at a very radical pace. This is linked to the mandate of ICASA which is to ensure the effective and converged regulation of the three ICT subsectors, namely, telecommunications, broadcasting and postal services (cf. Chapter 1). In addition, ICASA ensures that there is fair competition among ECNS licensees and that consumers are not in any way harmed or exploited in this process.

The 2016 national ICT policy has restructured and reconstituted the scope and operation of ICASA (South African Department of Telecommunications and Postal Services 2016: s 7.5). This is aimed at ensuring that ICASA is well equipped to deal with the regulation of an increasingly converged ICT sector. In this regard, participant 2 stated that "so we need a different type of a regulator, taking the good aspects of ICASA but we need a single integrated regulator who will deal with the future and it is not ICASA". This has furthermore called for new ICT policy and legislative and regulatory frameworks to be established to deal with and prepare South Africans for the next globalisation phase, that is, the 4IR. Participant 2, in this regard, stated that "artificial intelligence, robotics and the internet of things. Those are not the things that actually ICASA is dealing with".

In response to this, the 2016 national ICT policy proposes that a new economic regulator be formed to address the ICT sectoral and societal issues of today. Therefore, the role of ICASA towards the implementation of this ICT policy has been unbundled and is in the form of a new ICT regulator. In relation to this new ICT regulator, the 2016 national ICT policy states that "the consolidated ICT regulator will be given additional responsibilities to ensure holistic governance, administration and regulation across the Internet value chain." (South African Department of Telecommunications and Postal Services 2016: s 13.4). These are additional responsibilities on top of those currently performed by ICASA. The rationale behind this is that ICASA was formed as a result of critical ICT sector trends and innovations

that had taken root in the developing world. Likewise, the economic regulator is a response to more recent ICT trends and practices that ICASA could not adequately address.

(d) Universal Service and Access Agency of South Africa

The 2016 national ICT policy maintains that universal service to ICT underpins a fundamental goal that needs to be realised in the South African society of today (South African Department of Telecommunications and Postal Services 2016: s 5.1). This ICT policy is therefore geared towards ensuring that South African universal service projects are implemented in the best interest of citizens. In this regard, participant 3 stated that "the main purpose is to make, of that whole White Paper, is to make sure that there is universal accessible affordable ICTs and postal services". More importantly, universal access to and use of ICT underscores a vital objective that is enshrined in the NDP (cf. Chapter 2). In addition, the theme of this study, namely, digital inclusion, is based on the view that for an inclusive digital society to be realised there should be adequate universal access and service to ICT.

The Universal Service and Access Agency of South Africa (USAASA) was established to ensure that ICT services are available and accessible to all citizens regardless of where they live. Moreover, the USAASA is tasked with managing and regulating the Universal Service and Access Fund (USAF) so that there is proper financing and sponsoring of universal access projects and services (South African Department of Telecommunications and Postal Services 2016: s 5.1.1). However, the ICT policy review panel found that the USAASA has been ineffective and therefore failed to deliver on this mandate (South African Department of Telecommunications and Postal Services 2015: s 1.8.4). Consequentially, the ICT policy review panel recommended that the USAASA should be dissolved and the USAF should be transformed in a new digital development fund (digital-DF). In response to this, participant 2 stated that "USAASA we are evolving it and we are repurposing it and repositioning it to be what they call a digital development fund". Participant 1 further explained that "the digital development fund will be funding all the deficits of universal access they will be dealing with that to close the digital divide".

In this sense, the USAASA and USAF have no role or stake in the implementation of the 2016 national ICT policy. The digital-DF has been assigned the role and mandate to ensure that ICT services are available, accessible and affordable to citizens. Similar to the economic regulator, the digital-DF is given the task of addressing the intricacies of the 4IR and transforming the national ICT sector into a formidable global competitor and exporter of ICT. On the whole, the digital-DF is envisaged to be a better and more efficient version of the USAF, as well as to be used as a vehicle which ensures that people are not robbed of the right to communicate and to do so at an affordable cost.

(e) South African Post Office

An effective and converged regulation of the ICT sector calls for efficient postal services to be available, accessible and affordable to all citizens. Thus, the universal access and service to postal services is an indispensable aspect that needs to be realised towards an inclusive digital society. In this regard, the 2016 national ICT policy states that "the uptake of e-services should be at the centre of the strategic turnaround of SAPO" (South African Department of Telecommunications and Postal Services 2016: s 11.6). To achieve this, Chapter 11 of this ICT policy outlines crucial policy interventions that are envisaged to transform the South African Post Office (SAPO) into a more digitalised entity. In this sense, participant 5 stated that "the policy would try to address how to optimise the postal infrastructure. You are not just using it for traditional mail, now we are speaking about the advent of e-commerce". Therefore, the SAPO should provide both conventional and digital postal solutions and services. This is key to ensuring that the role of postal services is strengthened and relevant as South African gears up for the 4IR.

The national 2016 ICT policy seeks to transform the role of the SAPO and enable it to provide innovative and much-needed electronic or e-services and to make these services accessible and affordable. Postal services are still widely used and many citizens still depend on postal services to communicate and make financial transactions through the Post Bank. In explaining this, participant 4 stated that "SAPO is the universal obligation in terms of the postal services. Post Bank's mandate is financial inclusion to the marginalised". Therefore, the inclusion and incorporation of postal services in the 2016 national ICT policy plays a vital role in making these services relevant and applicable in the South African ICT sector and society of today.

Over and above providing traditional postal services, the 2016 national ICT policy has expanded the role of the SAPO to include the following four electronic or e-services (South African Department of Telecommunications and Postal Services 2016: s 11.1):

    (a) e-post services

    (b) e-finance services

    (c) secure e-government services

    (d) e-commerce services

Through the universal provision of these services, the SAPO can then underpin a successfully transformed and digitalised ICT government entity. Moreover, these services are interlocked with bridging the digital divide because millions of South Africans who use postal services will be exposed to these services. It is critically important for government to invest thoroughly in the transformation of the postal sector so that this sector can play an active role in the objectives of the NDP. To accomplish this, adequate attention should be given to the implementation of the 2016 national ICT policy, this being a policy upon which the new digitalised role of the SAPO is based.

4.3.6.2 Electronic Communications Act amendment bill

The objectives of the 2016 national ICT policy can only yield tangible results if these are implemented in a manner that is development-driven and people-centred. Hence, the effectual and strategic implementation of this ICT policy cannot be overstated nor taken as a matter of little significance. A remedy for this is that the same energy, intellectual capacity, research and resources that went into developing the 2016 national ICT policy should also be used when it comes to matters of implementation. There should not arise a situation in which implementation of policy is clouded with self-serving interests that seek to drive this implementation to a particular direction. Hence, the 2016 national ICT policy should be judged by the level to which it can bring fundamental development and change in the manner in which people access and use ICT services. In this regard, participant 3 stated that "so any government policy is developed with the citizen in mind; how are we going to develop our people through this policy?".

It is imperative to note that the implementation of the 2016 national ICT policy is given effect by the electronic communications act amendment bill (ECA Bill). In this regard,

the 2016 national ICT policy states that "laws such as the electronic communications act, no 36 of 2005 and the electronic communications transactions act, no 25 of 2002 will where necessary be amended in line with this White Paper" (South African Department of Telecommunications and Postal Services 2016: s 1.3). Consequently, there is an interplay of roles that exists between the law and an ICT policy. A national ICT policy gives guidelines and outlines directives and recommendations on how to effectively regulate and converge the ICT sector in a manner that maximises the greatest amount of efficiency and inclusion (cf. Chapter 1). The law then acts as a basis that legitimises the guidelines of this ICT policy and makes these to underpin proper, acceptable and lawful conduct. Essentially, this is a process embarked on to translate policy into legislation which then results in proper and effectual implementation and regulation.

In response to this, participant 4 stated that "the policy is what will influence the laws, because afterwards the laws that you develop will have to be using the broader policy as a guideline". Participant 1 maintained that "the position is codified in the White Paper. Then it is made into law in the Bill and the Act". Therefore, the ECA Bill, once it is made into law will be implemented. This is to ensure that the law is implemented as per the guidelines of the 2016 national ICT policy, thus making the policy not to infringe or go against the law. In addition, the implementation agencies that this ICT policy seeks to establish should function within the confines of the law. More importantly, the initiatives of the 2016 national ICT policy (see sub-section 4.2.5) should also be implemented in a manner that is in line with the law.

In this regard, implementation of the 2016 national ICT policy should be in line with the constitution and this policy should not impact negatively on the constitutional rights of citizens. Intrinsically, the implementation of the ECA Bill and the 2016 national ICT policy should adhere to a rights-based approach (see sub-section 4.2.3.1). To achieve this, the ECA Bill should prioritise matters of digital inclusion so that proper socioeconomic development takes place through the access and use of ICT. This will ensure that the ECA Bill is relevant and addresses pertinent communication needs linked to the era of the 4IR. More importantly, this will ensure that the ECA Bill as well as the ECA Act are in line with the objective of creating and sustaining an inclusive digital society.

Moreover, former Telecommunications Minister Siyabonga Cwele stressed that the DTPS will act speedily to implement those aspects of the policy that do not require legislative changes made to them (Cwele 2017). These legislative changes are meant to guarantee that the ICT sector, including relevant agencies, is well-converged to effectually address the dynamic changes in the sector. The 2016 national ICT policy outlines the most recent of these changes as well as the strategies to confront them.

In South Africa, the process of making a proposal into law is that it is first presented as a bill in parliament (cf. Chapter 2). Subsequently, numerous debates and consultations are embarked on to discuss the bill and if necessary amendments are made to the bill to make it more representative of the needs and trends linked to a specific ICT policy area. This is followed by recommendations from which the bill takes its cue and final structure. Once all relevant issues have been addressed and the implications and eventualities thereof have been incorporated, the bill is signed into law for the entire nation. In this regard, participant 1 stated that "the final law is the Act".

The ECA Bill was approved by the government in November 2017. The ECA Bill includes directives on how to implement the WOAN, rapid deployment of ICT and radio frequency spectrum policy initiatives (Mzekandaba 2018). Moreover, from 17 November to 17 December 2017 the ECA Bill was released for comments from both the public and ICT industry. This period was extended to 31 January 2018 and this was the final date for comments or inputs on this bill (Gilbert 2018). Public consultations on ICT policy and laws is a vital and much-needed prerequisite in a constitutional democracy like South Africa. More importantly, this adheres to the multi-stakeholder approach (see sub-section 4.2.3.4) that advocates for such consultations to take place. In an address at one of the consultations on the ECA Bill in December 2017, DTPS Director-General, Robert Nkuna stated that the bill is aimed at "balancing industry needs as well as arriving at a common way forward that all stakeholders can endorse and be a part of" (Nkuna 2017). In this sense, the ECA Bill is driven towards implementing the 2016 national ICT policy in a manner that maximises economic growth and achieves universal access and service to ICT.

The approval of the ECA Bill can play a pivotal role for the implementation of those aspects in the 2016 national ICT policy that require changes to legislation. This implementation is geared towards creating consistency between this ICT policy and the law. More crucially, it is aimed at ensuring that the implementation of the 2016 national ICT policy creates an environment for society to communicate at affordable cost as well as to close the digital gap. Closing the digital divide can thus be achieved through an implementable ICT policy that gives adequate attention to issues of ICT development, convergence and digital inclusion. Such an ICT policy, namely, the 2016 national ICT policy can play an instrumental role in addressing relevant ICT aspects that are key to the creation of an inclusive digital society.

The ECA Bill, as well as the current and future trajectory of the national ICT sector, has been received with a great deal of criticism. The Free Market Foundation (FMF) is strongly against the initiatives of the ECA Bill and regard these as possessing the potential of having an irreversible effect on the ICT sector. Moreover, the FMF maintains that this bill ignores the recommendations and contributions by the ICT industry. This is viewed as contradictory to the prescribed process of proper public consultations related to ICT policy directives or initiatives. The FMF further maintains that the implementation of the ECA Bill as it stands can have detrimental effects for consumers and this will result in an even higher cost of communication.

According to a submission by Research ICT Africa (RIA) in January 2018, the ECA Bill is flawed as well as unconstitutional because it gives too much power to the DTPS ministry (Calandro et al. 2018:8). In this sense, this bill provides a new structure and distribution of roles between the DTPS ministry and ICASA. The ECA Bill recommends that the DTPS ministry should assume the responsibilities of the ICASA in terms of assigning spectrum to the various ECNS licensees or service providers (ibid.). This can create serious conflicts of interest for the DTPS ministry and it is also a violation of proper and non-discriminatory business conduct in the ICT sector.

In addition, the ECA Bill states that the ministry ought to play a leading role in the development of the national frequency plan or policy (Gilbert 2017). Although this is considered by RIA as counterproductive to the independence of the ICASA, it is within the responsibilities of the ministry to formulate policies that deal with the national

frequency spectrum. Furthermore, section 85 of the constitution affords to government, through the DTPS, the right to set policies or frameworks that deal with the allocation of spectrum. The ICASA, as well as the soon to be established economic regulator (see sub-section 4.2.5.3), are there to implement and regulate these policies. In light of these concerns, the RIA is of the view that the ECA Bill should be withdrawn and reconsidered together with other bills emanating from the 2016 national ICT policy (Calandro et al. 2018:7). These bills include, namely, the Digital Development Fund Bill, ICT Sector Commission and Tribunal Bill and the Electronic Communications and Transactions Amendment Bill (ECTA Bill). Moreover, inclusive and collaborative efforts should be made to develop and implement these bills in a manner that caters for the interests of citizens. These are therefore crucial pieces of legislation that should be employed to strengthen ICT policy initiatives that seek to bridge the digital divide.

More essentially, the implementation of the ECA Bill should strive to address the needs of the marginalised including those deprived of access to ICT services. An empowered and non-discriminatory society is one that possesses adequate tools to connect with one another and others around it. To connect in this manner calls for an inclusive and effectual environment wherein the use and uptake of ICT can prevail. Hence, the ECA Bill and the 2016 national ICT policy should be put in place and effectively implemented and driven towards achieving this. In this sense, participant 2 stated that "we will continue to implement the White Paper, we've got bills, we've got legislation that is implementing the White Paper".

This is not to suggest that ICT underpin a panacea for everyday obstacles in society. However, ICT possess a profound potential to address present-day challenges in ways never dreamt of before. In this regard, participant 2 stated that "so that's the power of ICT – it can change how people live, how people interact with one another and how they do business". Moreover, ICT are a fundamental enabler for the proper functioning of many sectors in society.

4.3.6.3 Three ICT policy strategies

The 2016 national ICT policy has been tasked with the responsibility of fast-tracking the development of an inclusive digital society. To achieve this, the previous discussion (see sub-section 4.2.6.2) addresses the necessary legislative and

regulatory aspects that should be developed towards implementing the 2016 national ICT policy. This sub-section discusses three policy strategies emanating from the 2016 national ICT policy. These strategies break down this ICT policy into three crucial areas that require sufficient attention, which are used to track progress towards the creation and sustaining of an inclusive digital society.

The 2016 national ICT policy addresses a plethora of issues for the reconstruction and advancement of the national ICT sector and society. Thus, the careful implementation of a policy of this magnitude can take considerable time. Reason for this, participant 3 stated is because "policy is continuous, you improve as you go along; you keep on improving". Therefore, the participation of all relevant stakeholders is pivotal for this process to be achieved. This will ensure that the implementation of this ICT policy is effective, up-to-date and addresses key communication issues linked to ICT infrastructure development, convergence and digital inclusion.

To facilitate the speedy and effectual implementation of the 2016 national ICT policy, the DTPS released three important strategies to expedite the process of implementation (Ndabeni-Abrahams 2017). These strategies divide this ICT policy into smaller and manageable units to make the implementation process more feasible and robust (ibid.). In essence, the successful implementation of these strategies will translate into the key objective of this ICT policy being met. These strategies are the national electronic or e-strategy (2017), ICT Small, Medium-Sized and Micro Enterprises (SMME) Development Strategy (2017) and the electronic or e-Government Strategy (2017). The aim of this study is not to provide a critical analysis of these strategies. However, these frameworks form the target population of this study and they are a critical part of the investigation into the 2016 national ICT policy (cf. Chapter 1). Furthermore, these are crucial frameworks that add an in-depth understanding to the initiatives of this ICT policy as well as the role of government entities towards implementing it.

Consequentially, the researcher read these strategies and appreciated the manner in which they are interlocked with the document under investigation, namely, the 2016 national ICT policy. Hence, the 2016 national ICT policy should provide an enabling environment for these strategies to be well implemented and their objectives to be

accomplished. In addition, these strategies should at all times address fundamental issues related to ICT development, convergence and digital inclusion. Therefore, future studies or research can embark on an in-depth analysis of these strategies to determine the impact they have on accomplishing a South African inclusive digital society and knowledge economy.

In an address at the DTPS pre-budget vote media briefing in May 2018, former DTPS Minister Siyabonga Cwele explained that the national e-strategy aims to equip citizens with critical and much-needed electronic or e-skills to function in the digital knowledge age. In addition, the 2016 national ICT policy states that the national e-strategy includes "programmes of action to promote trust and security and facilitate digital literacy and e-astuteness" (South African Department of Telecommunications and Postal Services 2016: s 10.5). Essentially, this strategy aims to prepare and equip South Africa to effectively take part in the fourth industrial revolution (4IR). Moreover, the national e-strategy aims to create an environment wherein ICT are geared towards socioeconomic development (cf. Chapter 2). This framework is therefore based on the idea that a transformed and liberal society is one that is able to utilise the benefits of ICT to develop and empower itself. This type of society is also one that has developed trust and a good sense of dependability on ICT platforms and services.

Speaking at a consultation session on the 2016 national ICT policy strategies in May 2018, DTPS Director-General Robert Nkuna declared that these strategies would be used to facilitate an effective service delivery plan in which ICT are the key drivers. This underpins the overriding aim of the e-Government Strategy, that is, to use ICT to deliver quick and reliable government services to citizens. Moreover, the 2016 national ICT policy states the e-government should prioritise and be responsive to "users/citizens and must consider the needs of those with the least digital skills and the most limited access to devices" (South African Department of Telecommunications and Postal Services 2016: s 10.4.2). In this sense, ICT should play an instrumental role towards delivering government services to rural areas, thus bridging the urban-rural digital divide (cf. Chapter 2).

Furthermore, the e-Government Strategy is aimed at linking government with citizens (Odendaal 2017). This can ensure that government is well attuned to the

communication needs of citizens and in turn citizens can be more proactive and empowered in their interaction with government. In this regard, the 2016 national ICT policy maintains that e-government should "offer services to users/citizens on and off line and provide assisted digital services" (South African Department of Telecommunications and Postal Services 2016: s 10.4.2). In addition, citizens can be exposed to up-to-date government e-services and use these services to develop and empower themselves. Fundamentally, the e-Government Strategy addresses the issue of connectivity, that is, connectivity between citizens and government. This connectivity or convergence is therefore made possible through effective and contemporary ICT platforms and services.

In addition, the DTPS has released a strategy that aims to assist small businesses in the ICT sector to effectively use ICT platforms and services. The ICT SMME Development Strategy is thus a strategy that promotes the proliferated use of ICT by small businesses in the ICT sector (Cwele 2018). This ICT policy strategy therefore seeks to ensure that small businesses in the ICT sector are well equipped to contribute towards inclusive socioeconomic development. More importantly, this strategy aims to empower ICT small businesses so that these can contribute towards the objective of an inclusive digital society and economy, an objective that is repeatedly promoted in the 2016 national ICT policy.

4.4 SUMMARY AND OUTLINE OF CHAPTER 5

This chapter was divided and addressed in two parts. These parts outlined the results of this study and presented substantiated proof of these results in the 2016 national ICT policy as well as in interview transcripts. Moreover, these parts, as well as the overall chapter, underpinned the accumulative efforts of the researcher towards addressing the research problem (cf. Chapter 1). In this sense, this chapter presented an in-depth analysis of the 2016 national ICT policy in relation to the main themes of the study. In addition, this chapter also presented results which emerged from a thematic analysis of this ICT policy and interviews. This was systematically juxtaposed with the main argument of this study in relation to the 2016 national ICT policy. The data presented as well as the analysis given was purposefully and skilfully outlined so that readers of this dissertation can appreciate the coherent whole that this data sought to depict.

Part one presented and analysed the results yielded by the thematic analysis method. This part aimed to depict how the themes of the study, namely, ICT development, convergence and digital inclusion are addressed and evident in the 2016 national ICT policy and interview transcripts. It was in this part, where evidence was presented, which aimed to prove that the 2016 national ICT policy is underpinned by these key themes. This was done through carefully analysing Chapters 5 and 10 of the 2016 national ICT policy as well as the interview transcripts. Part two outlined a systematic and comprehensive view and analysis of the 2016 national ICT policy. In this part, the initiatives, context and implementation of this ICT policy were outlined and linked to the main themes of the study. This part was predominantly designed to address the objective of the study which aims to investigate what the 2016 national ICT policy seeks to achieve in the era of technological and sectoral convergence (cf. Chapter 1).

Furthermore, part two outlined the role of government entities towards the implementation of the 2016 national ICT policy. The role of the DTPS, DoC, ICASA, USAASA and SAPO were stated and evidence was taken from this ICT policy as well as interviews about the role of each government entity. This was meant to examine the new role of government entities towards implementing the 2016 national ICT policy. More importantly, this was aimed at examining the role of government entities in the convergence of the national ICT sector. Therefore, this chapter touched on the crux of the matter as it sought to provide a critical analysis of the 2016 national ICT policy. The next chapter, Chapter 5, concludes the study and provides recommendations in critical detail.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter concludes the study on the 2016 national ICT policy and draws the dissertation to a close. Therefore, this chapter encapsulates the main arguments and findings of the study that were aimed at a critical analysis of this ICT policy. In this sense, the conclusions and recommendations outlined in this chapter underpin rich theoretical and descriptive aspects that contribute to present and future ICT policy research in South Africa. Furthermore, these conclusions add immense knowledge and expertise that is pertinent to the broader field of study, namely, ICT policy analysis and implementation. Scholars in this field of study should therefore continue to investigate and unpack the numerous ways in which communication has evolved and become an integral part of society (cf. Chapter 1).

To conclude this study, this chapter provides a summary of the study as well as the key findings (cf. Chapter 4) and how they address the research problem outlined in Chapter 1. In addition, this chapter addresses the objectives of the study and links them to the findings presented in the previous chapter, that is, Chapter 4. This chapter furthermore provides the conclusions of the study. This is where the researcher answers the research questions or sub-problems and provides concluding arguments and remarks in critical detail. This chapter ends by providing recommendations or suggestions. These are meant as a way of giving direction to how present and future studies on South African ICT policies should be conducted and what aspects these should address.

5.2 SUMMARY OF THE STUDY

The purpose of this study was to explore and describe the 2016 national ICT policy. This ICT policy was released by the South African government in September 2016. The 2016 national ICT policy underscores a national ICT vision that is used to propel the South African ICT sector towards effective ICT convergence and regulation. Moreover, this ICT policy seeks to ensure that ICT infrastructure and services are well developed as well as universally available and affordable. Moreover, society can use these services to empower itself, as well as create opportunities that can be used to alleviate the effects of the digital divide (cf. Chapter 2).

Hence, the findings (analysis) of the study addressed the research problem in Chapter 1 and these were indicative of how this ICT policy aims to integrate the national ICT sector. The researcher used qualitative document analysis as a research approach. Documents and interviews were employed as research methods. Thematic content analysis was used to critically and comprehensively analyse the 2016 national ICT policy and interview transcripts (cf. Chapter 3). This underscores the research methodology of the study that was employed to address the research problem in Chapter 1 and provide a basis for the analysis of this research problem in Chapter 4.

Furthermore, this study sought to explore and describe the role of the 2016 national ICT policy towards establishing an inclusive digital society. Central to the arguments of this study is that ICT should be strategically used towards impactful socioeconomic development and digital inclusion. More crucially, ICT should be accessible, available and affordable to all citizens, regardless of their geographical location, gender or socioeconomic status. To achieve this, ICT policies or strategies should be developed and be made to play a critical role towards ensuring that citizens are empowered and well equipped to cope with the developments of the fourth industrial revolution (4IR).

Therefore, this study aimed to investigate the initiatives of the 2016 national ICT policy and the ways in which these are linked to ICT development, convergence and digital inclusion. These underpinned the overriding themes of the study and were used to determine the extent to which this ICT policy addresses key ICT policy issues in South Africa. In this regard, the researcher focused on Chapters 5 and 10 of the 2016 national ICT policy. Moreover, this study sought to determine the role of government entities towards the implementation of the 2016 national ICT policy. This underscored one of the objectives of the study as outlined in Chapter 1 of this dissertation. These entities are tasked with implementing the national ICT vision and to also ensure the universal access and service to ICT. In addition, these agencies are tasked with policymaking and regulation functions that directly relate to and impact the national ICT sector. The government entities whose role this study investigated are the DTPS, DoC, ICASA, USAASA and SAPO.

5.3 KEY FINDINGS

This section of the chapter answers the research questions. This is how the researcher concludes the dissertation, by juxtaposing the research questions with the overall argument or position of the study (research problem). This argument is centred on the fact that the South African ICT sector is not properly converged; nor is it well regulated. As a result, the 2016 national ICT policy is disintegrated in its approach towards properly addressing key ICT policy issues of today, namely, ICT development, convergence and digital inclusion. These issues ought to be properly addressed in a well-integrated policy framework in order for South Africa to benefit from the technologies and innovations of the 4IR. Moreover, these issues underpinned themes that this entire investigation sought to uncover and contextualise (cf. Chapter 4).

The research questions and discussions (answers) are as follows:

(a) What are the key ICT policy initiatives identified in the 2016 national ICT policy in relation to ICT development, convergence and digital inclusion?

The overriding goal of the 2016 national ICT policy is to create and sustain an inclusive digital society that effectually uses ICT to develop and empower itself. Throughout the analysed chapters of the ICT policy, that is, Chapters 5 and 10, the creation of an inclusive digital society is continuously made mention of and promoted. Digital inclusion is important because South Africa suffers from alarming levels of digital divide and illiteracy and this has a crippling effect on overall socioeconomic development. Hence, the 2016 national ICT policy proposes initiatives or strategies that can be used to ensure that ICT are accessible and affordable to citizens. In so doing, significant strides can be made towards addressing the digital divide and ultimately create an environment whereby people can participate in and have access to ICT applications and services.

To achieve this, the 2016 national ICT policy aims to establish and implement the WOAN network, rapid deployment of ICT, content and economic regulator and the digital-DF. These underpin initiatives as well as policies that the government plans to implement to accomplish effective ICT development, convergence and digital inclusion. The rapid deployment of ICT, for example, proposes the use of any available

infrastructure or land for the rollout of ICT services to under-serviced areas (cf. Chapter 4). Similarly, the digital-DF is tasked with ensuring that ICT infrastructure, services and applications is accessible and affordable to all citizens (South African Department of Telecommunications and Postal Services 2016: s 5.5.2). The digital-DF also aims to ensure that ICT skills, awareness and literacy programmes are implemented and accessed by all citizens (ibid.). The rapid deployment of ICT and digital-DF, therefore, are there to ensure that the South African objective of the universal service to ICT is achieved and constitutes a reality that is experienced and accessible to all citizens.

The WOAN network and radio frequency spectrum are policies that equip ECNS licensees with resources and infrastructure to deliver efficient ICT services to large amounts of the South African population. Such infrastructure should be well developed and be in line with the latest technological trends or developments (cf. Chapter 4). The content and economic regulators have the role of ensuring that these initiatives and policies are effectively regulated, implemented and aimed at the benefit and interest of citizens. To achieve this, the economic and content regulators would need to be integrated so that they are able to adhere to an integrated approach in regulating the national ICT sector. If this is not implemented soon, the national ICT sector and policy will remain disintegrated as well as ineffective in achieving its mandate of a converged ICT sector.

(b) Which government entities are identified in the 2016 national ICT policy to implement ICT policy initiatives (ICT development, convergence and digital inclusion) and their roles?

The systematic and strategic implementation of the 2016 national ICT policy cannot be overstated. Implementation of this ICT policy underpins an important aspect that will ensure that the national ICT vision is achieved and sustained. In addition, implementation of the 2016 national ICT policy should be implemented by those meant to implement it so that this policy does not become a programmatic failure (cf. Chapter 4). The government entities assigned with implementing the 2016 national ICT policy are the DTPS, DoC, ICASA, USAASA and SAPO. However, in Chapter 4, it is revealed that the structure, mandate and operation of these entities has been unbundled and

further expanded. Moreover, the new roles of these entities will be to implement specific initiatives aimed at achieving effective ICT development, convergence and digital inclusion.

The DTPS is tasked with policymaking functions in terms of spectrum and the achievement of universal access and service to ICT (South African Department of Telecommunications and Postal Services 2016: s 5.5). Consequently, all policymaking functions of the USAASA and ICASA will be transferred to the DTPS. The DoC has policymaking functions that directly affect the content regulator and the management and dissemination of audio and audio-visual content. The ICASA will be transformed into a new regulator, namely, the economic regulator. The economic regulator is mandated to regulate the ICT sector in an advanced manner that addresses the level to which ICT infrastructure, applications and services are developed and used. The USAASA will be dissolved and transformed into a new digital-DF whose role is to ensure that ICT services are available, accessible and affordable to all citizens (cf. Chapter 4).

It is important to note that the emergence of the 4IR has necessitated the introduction and implementation of new ICT policy initiatives and roles that should be used to address issues related to ICT development, convergence and digital inclusion. The 2016 national ICT policy consists of such initiatives through which their successful implementation can be attributed to the creation and sustenance of an inclusive digital society. To accomplish this, barriers, such as inadequate support from government, limited human and financial resources and the overlapping of roles should be addressed so that the 2016 national ICT policy fulfils the mandate given to it effectively and seamlessly.

(c) *What is the interrelationship (in literature and in policy) between ICT development, convergence and digital inclusion?*

In conducting this study, the researcher appreciated the manner in which the main themes of the study, namely, ICT development, convergence and digital inclusion are interconnected. This interconnectedness is centred on the fact that these themes underscore burning ICT policy issues in the current South African ICT sector. These

themes are also key in the formation and sustenance of an inclusive digital society that is well equipped to deal with the opportunities and challenges of the 4IR. These factors are identified and outlined in literature as well in the 2016 national ICT policy as the glue that links ICT development to convergence to digital inclusion (cf. Chapter 2 & Chapter 4).

5.4 RECOMMENDATIONS

The researcher concludes the dissertation by providing the following four recommendations. These recommendations can be of use to future studies which seek to develop theories and critical findings that can assist policy makers in developing ICT policies that make the attainment of effective ICT development, convergence and digital inclusion a reality.

(a) The researcher recommends that there should be an investigation on the feasibility of the proposed initiatives of the 2016 national ICT policy. The WOAN network and the digital-DF, in particular, should be thoroughly investigated in relation to the best course of action towards implementing them. Although the WOAN network has been implemented in other countries, for example Mexico, more research should be done on this initiative so that it is implemented with due consideration of the communication needs and realities experienced by South Africans.

(b) More robust consultations and research needs to be embarked on in order to integrate the 2016 national ICT policy. This ICT policy needs to be refined and realigned in order to properly address burning ICT policy issues or initiatives of today. Moreover, the issue of roles and responsibilities needs to be clearly outlined as well as motivated for. In so doing, the 2016 national ICT policy can effectively reflect and regulate a converged ICT sector that is astutely positioned and designed to deal with the intricacies of the 4IR.

(c) The high cost of data poses a serious impediment for the effective communication between people and between people and government. Data costs are also a hindrance towards successfully bridging the digital divide. It is generally very expensive to communicate in South Africa as compared to other countries in sub-Saharan Africa. Therefore, there should be developed policies or frameworks that are expressly dedicated to tackling this and to do so by

outlining strategies that can be used to lower the cost of communication, especially the cost of data.

(d) The researcher recommends that stability and consistency should be maintained in the running of the Department of Communications (DoC). The constant changing of Ministers and policies at the DoC is counterproductive to the realisation of the national ICT vision of this department. Moreover, this affects investor confidence and hampers any efforts made in securing and maintaining investment in the ICT sector. In this sense, the DoC should be consistent with the national ICT vision that aims to ensure that ICT development, convergence and an inclusive digital society are achieved and sustained.

(e) An academic enquiry or research needs to be conducted on the three ICT policy strategies; the national e-strategy (2017), ICT SMME Development Strategy (2017) and e-Government Strategy (2017).

5.5 CONCLUDING AND THEORETICAL REMARKS

Information and communication are concepts and practices that have dramatically changed the manner in which people work, perceive, share ideas and innovations (South African Department of Telecommunications and Postal Services 2016:1.3). Indeed, this change has been the result of the advanced and proliferated use and exploitation of technology that is used for information and communication (Odhiambo 2008). Information and communication technology (ICT) has therefore become an intrinsic part of present-day society and its use has greatly impacted on every manner of human interaction.

The findings of this study indicate that the 2016 national ICT policy underscores a strategy that seeks to integrate and unbundle the South African ICT sector in a manner that is in line with the advent of the 4IR. More essentially, this ICT policy aims to ensure the universal access and service to ICT so that communication services are available and accessible to citizens at affordable cost (inclusive digital society). However, the findings also point to the fact that the 2016 national ICT policy is disintegrated and is therefore not able, in its current state, to achieve this. In addition, the initiatives of the 2016 national ICT policy (ICT development, convergence and digital inclusion) need to employ an approach that is more integrated or converged. Such an approach will

ensure that the implementation of the 2016 national ICT policy is effective and free of any mishaps or undue influence.

On theoretical contribution, the information society and digital divide theories offer a deeper understanding of the current environment in which the 2016 national ICT policy is found. Moreover, these theories highlight pertinent issues that the 2016 national ICT policy ought to be mindful of as well as address (in the era and context of the 4IR). As such, the information society (4IR) and digital divide theories teach us that ICT policy analysis and implementation should pay close attention to three key aspects, those being, ICT development, convergence and digital inclusion. This study, therefore, adds in-depth understanding of these aspects and the manner in which they contribute to the field of ICT policy analysis and implementation. Similarly, studies (literature) conducted by Sikhakhane et al. (2015); Schwab (2016); Chisango and Lesame (2017); Bankole and Mbimbi (2017) as well as Lewis (2017) argue for the fact that ICT development, convergence and digital inclusion ought to receive much attention when matters related to ICT policy development and implementation are being discussed.

Essentially, the researcher maintains that the 2016 national ICT policy initiatives of ICT development, convergence and digital inclusion should be prioritised and taken as a matter of urgency. Moreover, the 4IR has begun and it comes with many benefits, opportunities, realities and challenges. Thus, it remains the responsibility of a transformed and forward-looking ICT policy and sector to ensure that South Africa uses these opportunities and benefits in a manner that is development-driven and empowering. In this regard, effectual ICT development, convergence and digital inclusion should therefore be put in place to mitigate the possible counter-effects of the 4IR and ensure the realisation of an inclusive digital society.

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APPENDICES

APPENDIX A: LETTER OF CONSENT

Ethics clearance reference number: 2018-CHS-0068

Research permission reference number (if applicable):

25 September 2018

Title: **A CRITICAL ANALYSIS OF THE SOUTH AFRICAN INTEGRATED INFORMATION AND COMMUNICATION TECHNOLOGY POLICY**

Dear Prospective Participant,

My name is Siyabonga Minenhle Mfuphi and I am doing research with Professor N.C. Lesame, a Professor in the Department of Languages and Communication Studies (University of Limpopo) towards a Master of Arts (MA) in Communication Science at the University of South Africa (UNISA). We have funding from the UNISA Master's by dissertation and doctoral study bursary for conducting the research as well as paying for and acquiring the necessary research essentials that will assist towards the successful completion of the study. We are inviting you to participate in a study entitled *"A critical analysis of the South African integrated information and communication technology policy".*

WHAT IS THE PURPOSE OF THE STUDY?

I am conducting this research to find out the initiatives that have been put forward by the 2016 national ICT policy that will be used to transform South Africa into an inclusive digital society. Moreover, this research seeks to investigate ICT policy initiatives that are linked to and address ICT development, convergence and digital inclusion. More essentially, the study seeks to investigate the role of government entities towards the implementation of this ICT policy, namely, the DTPS, DoC, ICASA, USAASA and SAPO.

WHY AM I BEING INVITED TO PARTICIPATE?

You have been purposefully chosen for this study because of your knowledge, experience and expertise in terms of South African ICT policy issues and implementation strategies. You were also selected because your organisation/department/entity/directorate has been given the responsibility of being

a key role player in terms of ICT policy formulation, research and implementation for the South African ICT sector.

I obtained your contact details from the many ICT policy documents that I was analysing which I found on your organisation's Web site. In these documents, you were listed as a key contact person with regards to issues on the 2016 national ICT policy and implementation. I also called your organisation and briefly explained the purpose of this research to the person on the other end of the telephone. After having done that, I was then redirected to you with the promise that you are the most suitable person to talk to in this regard.

WHAT IS THE NATURE OF MY PARTICIPATION IN THIS STUDY?

Your role in this study is to participate in an interview or information sharing session about the recently approved 2016 national ICT policy. In this interview is where you will be asked to help increase the understanding of this ICT policy, what it really means and what it aims to achieve for the South African ICT sector of today. Your knowledge and expertise will help this research to portray a true and objective reflection of this very important document in the space of our national ICT and telecommunications environment. Your knowledge and expertise will also assist the researcher to understand the link between ICT development, convergence and digital inclusion.

The interview involves the use of an audio recorder which I, with your permission, would like to use in order to correctly capture the information you will share in this interview. The questions that will be asked are related to the purpose and objective of the 2016 national ICT policy. Furthermore, these questions seek answers on the initiatives of this ICT policy as well as the role of government entities towards its implementation. This interview is expected to last for a maximum time of 1 hour. Except where there are more follow up questions it might take a bit longer than this but 1 hour is how long I expect this interview to be.

CAN I WITHDRAW FROM THIS STUDY EVEN AFTER HAVING AGREED TO PARTICIPATE?

Participating in this study is voluntary and you are under no obligation to consent to participation. If you do decide to take part, you will be given this information sheet to

keep and be asked to sign a written consent form. You are free to withdraw at any time and without giving a reason.

WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?

A noteworthy benefit of your participation in this research is that your information will give basis to the findings of the study as well as make these findings to be trustworthy and valid. More importantly, your participation will assist in determining your organisation's role and mandate towards the implementation of the 2016 national ICT policy and what challenges your organisation has faced in this regard. Overall, your participation will make the study reliable and one that has followed the prescripts of scientific research that produces objective and rigorous research results.

ARE THERE ANY NEGATIVE CONSEQUENCES FOR ME IF I PARTICIPATE IN THE RESEARCH PROJECT?

There are no negative consequences for you personally if you participate in this research project. Every kind of information that you give during this interview will only be used for research and academic purposes.

WILL THE INFORMATION THAT I CONVEY TO THE RESEARCHER AND MY IDENTITY BE KEPT CONFIDENTIAL?

You have the right to insist that your name be not recorded anywhere and that no one, apart from the researcher and identified members of the research team, will know about your involvement in this research OR your name will not be recorded anywhere and no one will be able to connect you to the answers you give. Your answers will be given a code number or a pseudonym and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings.

Your answers may be reviewed by people responsible for making sure that research is done properly, including the transcriber, external coder, and members of the Research Ethics Review Committee. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records.

Your answers may be used for other purposes, such as a research report, journal articles and/or conference proceedings. In this instance, a report of the study may be submitted for publication, but individual participants will not be identifiable in such a report**.**

HOW WILL THE RESEARCHER(S) PROTECT THE SECURITY OF DATA?

Hard copies of your answers will be stored by the researcher for a minimum period of five years in a locked cupboard/filing cabinet at the researcher's house in Pretoria. For future research or academic purposes; electronic information will be stored on a password protected computer. Future use of the stored data will be subject to further Research Ethics Review and approval if applicable. If necessary OR in the event of any real or potential danger caused by your answers in the research project hard copies will be shredded and/or electronic copies will be permanently deleted from the hard drive of the computer through the use of a relevant software programme.

WILL I RECEIVE PAYMENT OR ANY INCENTIVES FOR PARTICIPATING IN THIS STUDY?

There are no financial or payment incentives for participating in this research project. This research project is purely for academic and analytical purposes in order to obtain a deeper understanding and exploration of the 2016 national ICT policy.

HAS THE STUDY RECEIVED ETHICS APPROVAL?

This study has received written approval from the Research Ethics Review Committee of the University of South Africa (UNISA). A copy of the approval letter can be obtained from the researcher if you so wish.

HOW WILL I BE INFORMED OF THE FINDINGS/RESULTS OF THE RESEARCH?

If you would like to be informed of the final research findings, please contact Mr Siyabonga M Mfuphi on 073 463 1715/012 429 6661 or email minenhlemfuphi@gmail.com. The findings are accessible for three months.

Should you require any further information or want to contact the researcher about any aspect of this study, please contact Mr Siyabonga M Mfuphi on 073 463 1715, minenhlemfuphi@gmail.com.

Should you have concerns about the way in which the research has been conducted, you may contact Professor NC Lesame on carol.lesame@ul.co.za OR on 015 268 3084/072 269 1634. Contact the research ethics chairperson of the UNISA Research Ethics Review Committee, Professor Azwihangwisi Mavhandu-Mudzusi on mmudza@unisa.ac.za if you have any ethical concerns.

Thank you for taking the time to read this information sheet and for participating in the study.

Siyabonga Minenhle Mfuphi

APPENDIX B: INTERVIEW SCHEDULE

INTERVIEW GUIDE FOR SOUTH AFRICAN ICT POLICY GOVERNMENT OFFICIALS

RESEARCH TITLE: A CRITICAL ANALYSIS OF THE SOUTH AFRICAN INTEGRATED INFORMATION AND COMMUNICATION TECHNOLOGY POLICY

INTERVIEWER: MR SIYABONGA MINENHLE MFUPHI

CONTACT DETAILS: 073 463 1715

PARTICIPANT NUMBERS: 1,2,3,4 and 5.

CONTACT DETAILS: N/A

I am a Communication Science Master of Arts student and researcher from the University of South Africa (UNISA). I am conducting interviews to explore and describe the initiatives of the 2016 national ICT policy. The initiatives that I wish to investigate and contextualise are those that are linked to key ICT policy themes, namely, ICT development, convergence and digital inclusion. I also wish to find out the role of key government entities in implementing the 2016 national ICT policy. These entities include the DTPS, DoC, ICASA, USAASA and SAPO.

I have an informed consent letter for you to read. This will indicate that you have received information about this study and agree to participate. I also have an ethical clearance certificate that I received from UNISA which grants me permission to conduct this research. I would like to record this interview, with your permission, to be able to transcribe it and do a general analysis with all other interviews, if you agree to be recorded.

QUESTIONS

1. What is the name of the organisation that you work for?

2. What position do you hold in this organisation?

3. What are the responsibilities of the position that you hold?

4. What role does this organisation play in the 2016 national ICT policy formulation and implementation?

5. What do you think is the importance of having an integrated approach in terms of national ICT usage and skills?

6. Can you tell me about the reason(s) why there needed to be an integrated ICT policy in South Africa?

7. In what way is the 2016 national ICT policy a reflection of the national development plan (NDP)?

8. What implications does the 2016 national ICT policy have on the advancement of the South African ICT sector?

9. What implications does the 2016 national ICT policy have on the convergence of the national ICT sector?

10. What does the 2016 national ICT policy aim to achieve?

11. How does the 2016 national ICT policy promote widespread or universal access to ICT services?

12. How will the 2016 national ICT policy ensure that ICT services are affordable to most South African citizens (rural and urban)?

13. What does the 2016 national ICT policy propose to do in terms of bridging the digital divide in South Africa?

14. What is the role of government entities, for example, ICASA towards the implementation of the 2016 national ICT policy?

15. What is the role of the USAASA towards the implementation of the 2016 national ICT policy?

16. What is the role of the SAPO towards the implementation of the 2016 national ICT policy?

17. Has there been any challenges in terms of implementing the 2016 national ICT policy?

18. What progress has been made in terms of implementing the 2016 national ICT policy?

19. Will South Africa be able to reach a state of being an inclusive digital society after the 2016 national ICT policy has been implemented?

Are there any responses you would like to elaborate on? Are there any questions that you would like to ask me about anything we discussed or that took place during this interview? Thank you very much for your time.

APPENDIX C: ADDITIONAL DOCUMENTS

Please note that the full references to these documents are included (in alphabetical order) on the list of sources consulted above.

Policies and Documents	Acts	Articles and Speeches
Communication and the battle of ideas. ANC Discussion Document.	ICASA Act No 13 of 2000	Cwele S. Minister Siyabonga Cwele: Approval of national integrated ICT policy.
DTPS Annual Report	MDDA Act No 14 of 2002	Cwele S. Proposed legislation emanating from national integrated ICT policy White Paper.
USAASA Government Gazette No 31333.	Telecommunications Act No 103 of 1996	Cwele S. Minister Siyabonga Cwele: 2018/19 Telecommunications and Postal Services pre budget vote media briefing
SAPO Government Gazette No. 36665.	Broadcasting Act No 4 of 1999	Gilbert P. ECA Bill gives DTPS minister too much power.
MDDA Government Gazette No. 23090.	Postal Services Act No 24 of 1998	Gilbert P. SA smartphone penetration now over 80%, says ICASA.
RDP Policy Framework.	Telecommunications Amendment Act No 64 of 2002	Mzekandaba S. ICT policy proposes new regulatory functions.
GEAR Microeconomic Strategy.	Postal Services Amendment Act No 33 of 2003	McLeod D. Ndabeni-Abrahams to lead merged communications ministry.
NAB Triple Enquiry Report.	Broadcasting Amendment Act No 64 of 2002	Nkuna R. Legislation emanating from the national integrated ICT policy White Paper.
White Paper on Postal Services.	Independent Broadcasting Act No 153 of 1993	McLeod D. How to fix the ICT policy White Paper?
White Paper on Broadcasting.	Electronic Communications Act No 36 of 2005	Mzekandaba S. D-day for comments on ECA Amendment Bill.
Convergence Bill.	Electronic Communications and Transactions Act No 25 of 2002	Smith J. Department puts ICT White Paper in context.
White Paper on Telecommunications.		Shinn J. ICT policy White Paper bad news.
National Integrated ICT policy review report.		Van Zyl G. SA's ICT White Paper 'potentially dangerous'.
Socioeconomic Impact Assessment System (SEIAS)		Voster G. NDP calls for coordinated e-strategy.

National Integrated ICT policy Green Paper.	161	Walker A. Just 10.4 of SA households have direct access to the internet.
National Development Plan		
ICT SMME Development Strategy		
National e-Strategy		
e-Government Strategy		
National Integrated ICT policy Discussion Document		
National Integrated ICT policy Framing Paper		