TOWARDS UNDERSTANDING THE DIFFICULTIES AND CONCERNS OF DEEP RURAL COMMUNITIES IN SOUTH AFRICA AND THE EFFECT THEY HAVE ON COMMUNITY ENGAGEMENT IN ICT4D

Mini-dissertation by

BUZWE GXULWANA

(S29482136)

Submitted in partial fulfilment of the requirements for the degree

MASTER OF INFORMATION TECHNOLOGY

in the

DEPARTMENT OF INFORMATICS

of the

FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

UNIVERSITY OF PRETORIA

Supervisor: Mr. K. Krauss   **2010**

i

Contents

List of figures

List of tables

Abbreviations

BNA – Basic Needs Approach

CA – Capability Approach

CHDM – Christ Hani District Municipality

CRDP – Comprehensive Rural Development Programme

DFID – Department for International Development

DHIS – District Health Information System

DRDLR – Department of Rural Development and Land Reform

FOSS – Free and Open Source Software

G7 – Group of Seven

GDP – Gross Domestic Product

GNP – Gross National Product

GNPpc – Gross National Product per capita

GSM – Global System for Mobile Communications

IBM –   International Business Machines

ICANN – Internet Corporation for Assigned Names and Numbers

ICT – Information and Communication Technology

ICT4D – Information and Communication Technology for Development

IDS – Institute for Development Studies

IMF – International Monetary Fund

IYM – Intsika Yethu Municipality

IS – Information Systems

ITU – International Telecommunications Union

MDG – Millennium Development Goals

MS – Microsoft Software

NEPAD – New Partnership for African Development

NGO – Non-Governmental Organisation

OECD – Organisation for Economic Co-operation Development

PC – Personal Computer

PQLI – Physical Quality of Life Index

RDP – Reconstruction and Development Project

SAP – Systems, Applications and Products

UN – United Nations

UNESCO – United Nations Educational Scientific and Cultural Organisation

UP – University of Pretoria

USAASA – Universal Service and Access Agency of South Africa

WDR – World Development Report

WTO – World Trade Organisation

Acknowledgements

The researcher would like to thank the following people

TOWARDS UNDERSTANDING THE DIFFICULTIES AND CONCERNS OF DEEP RURAL COMMUNITIES IN SOUTH AFRICA AND THE EFFECT THEY HAVE ON COMMUNITY ENGAGEMENT IN ICT4D

By Buzwe Gxulwana

Department of Informatics

UNIVERSITY OF PRETORIA

ABSTRACT

The contextualisation of Information and Communication Technology (ICT) in development attracts ample research interest in the field of ICT for Development (ICT4D). This study focuses on exploring the perspectives from which deep rural communities define development. In addition, this study seeks to understand the issues facing deep rural communities, as well as the effect that these issues have on community engagement in ICT4D initiatives. The core problem being considered is the differing views about the meaning of development as understood by the intended beneficiaries of development initiatives, compared to that which those working to develop deep rural communities hold. Furthermore, the role of ICT in development is also examined, with primary criticisms levelled against its use considered. In an attempt to understand these ideas, interpretive case study research is used and qualitative techniques applied to analyse data from the field work that was completed.

The results confirm the dominance of basic human needs and economic growth ideas as the basis from which the majority of poor people define development. Moreover, the study reveals that, deep rural communities share the same sentiments as with the so-called development 'experts' regarding the importance of ICT in facilitating development goals.

Chapter 1

Problem Statement

1.1   Introduction

This chapter delineates the content of the study including its purpose, the problem under consideration, as well as the contribution it intends to make to the body of knowledge. Further discussed in this chapter is a preview of the research methodology used to accomplish the objectives of the study, with definitions to key concepts briefly examined. Central to this work is an attempt to understand concerns with which deep rural communities in South Africa are faced and how these affect their engagement in Information and Communication Technology for development (ICT4D) initiatives. In addition, the bias of the researcher on the subject is also considered. To conclude the chapter, a brief overview of the chapters that constitute the rest of this study is presented.

1.2   Background to the study

The idea of development is very contentious and still attracts key consideration in many fields including social studies, economics and not surprisingly, development studies. Some of the key discussions revolve around the very definition of the word 'development', the associated theories, models and approaches as well as policies and strategies for implementing these ideas, which have been widely criticised for their partiality towards European and North American values (Zheng, 2009; Hettne, 1995; Escobar, 1992; Gabriel, 1991; Seitz, 1988; Kothari, 2005). Radical critics even question the core agenda behind development and some, including Escobar (1992), propose alternative discourses to be created, while others such as Bernstein (2005) warn against accepting development programmes without questioning them.

That said, principal stakeholders in development who for a long time have largely followed the traditional view of development continue to look for ways in which the various development goals can be achieved, culminating in the recent sighting of Information and Communication Technology (ICT) as one of the possible instruments by which to accomplish these goals (Dymond & Oestmann, 2004). The unprecedented

growth of the internet in the 1990s, simultaneously coupled with the reprioritisation of international development in many developing countries brought a spotlight on how ICT can be applied in addressing challenges of under-development in these so-called Third World countries (Heeks, 2006). As a result, many development-focused initiatives including those that aimed to reduce poverty and improve the quality of healthcare and education as well as economic conditions of the poor located mainly in Asia, Latin America and Africa were accelerated – ICT had become one of the key components of the development faction, therefore another possible instrument with which to help the poor (Tumusiime, 2006; Chigona & Mbhele, 2008).

1.3   Purpose of the study

The purpose of this study is twofold; firstly, it seeks to understand the difficulties and concerns of deep rural communities in South Africa regarding their development challenges. Secondly, this study further seeks to understand how these issues affect community engagement in the use of ICT in overcoming the development challenges they face. The underlying matter is that, the meaning of development differs from person to person; between that which is held by the beneficiaries of development and those held by people producing development initiatives (Marglin, 1990). As a result, approaches to bring about development tend to be based on a misunderstood idea of what deep rural communities actually need (OECD, 2009). Also, the conceptualisation of ICT in development is also a highly debated issue, making it more difficult to correctly apply ICT to benefit the poor (SAITIS, 2000).

1.4   Problem statement

The meaning of the term 'rural' suggests various things to different people; there is no exact definition for this term, conceptually or empirically; defining rural is a highly contested issue and is influenced by a nation's development needs and realities associated with aspects that include agricultural landscapes, isolation, legal proclamation, population density and the like (Shaohua et al., 2011). Essentially, defining rural for research purposes depends primarily on the core aspects of rurality which are relevant to the topic that is being studied (Hart, 2005). At least once, the South African government stated that "...no legal definition exists, and there are no

formally accepted definitions in use" (Ministry in the Office of the President, 1995; Goldman & Reynolds, 200-). For statistical reporting, the government often use an urban/non-urban classification of an area type (Stats SA, 2001).

Despite theoretical limitations in conceptualising rurality, for practical and decision-making purposes, including the criteria to allocate the limited national resources, a definition of rural is important (Hart, 2005). As a working definition of rural for South Africa, Stats SA (2010, cited in Shaohua et al., 2011) proposed a classification based on population density, settlement type, legal proclamation and the type of economic activity, and continue to propose the following outline definition – a farm, traditional area, or any other settlement type with population density not exceeding a certain number of people per square kilometer (X) and/or with a total population not exceeding a certain number (Y) or where agriculture is the main economic activity. But what are the (final) values to substitute for X and/or Y?

The complexity in defining 'rural' makes it considerably difficult to define 'deep rural', as the attempt to do so also compounds the subjectivity underlying the definition of the term rural. One of the limitations in defining a deep rural community is the lack of literature evidence that deals directly with the issue of this definition. So, the approach the researcher adopted when attempting to define deep rural was a tentative comparison-based system using attributes of rural and their austerity to refer to deep rural. Lacking the statistical data to substitute for X and Y, the point of departure is based on the characteristics of the demography of a community and socio-economic conditions that are perceived to be more extreme compared to those of areas that are generally classified as rural for suchlike purposes.

Common views that explore the idea of rural communities tend to adopt the perspective of limited product and service availability into these areas as a consequence of poor or non-existent infrastructure, therefore not only affecting the immediate benefits of having access to such a service, but the livelihoods of these communities at large (Dymond & Oestmann, 2004; Nkonki, 2006; Herselman, 2003). Furthermore, deep rural communities are worse off considering that, not only are the rural poor generally denied access to products and services, but they are also not

knowledgeable of what is available and how to use it (Prahalad, 2010, p. 37), theirs is a deprivation perceived to be of a greater degree.

In studying the rural phone network pilot project in Nigeria, the work of Dymond and Oestmann (2004) funded by InfoDev Program of the World Bank refers to deep rural communities as "...localities that lie beyond the normal coverage range of GSM cells but where signal reception is still possible with the use of low-cost external antennas and more sensitive user terminals", thereby depriving these communities of the benefits presented by having good quality access to a mobile communication.

In essence, this study intentionally shunned the discussion about the difference between urban and rural areas, and the difference between the main types of rural areas such as commercial farming areas and those dominated by mining activities for two fundamental reasons. Firstly, the researcher found it critical to keep the focus on the generic type of rural as that would minimise further complexities and subjectivity in differentiating the types of rural. Secondly, lack of valuable literature that deals directly with the concept of rural and deep rural communities in great depth re-enforce the first point about the complexity of this subject; an issue that requires further research.

However, from the literature that was reviewed, the difference between rural and deep rural is often miniature and subjective, and is characterised by the severity of conditions (such as remote versus *extremely* remote, marginalised versus *very* marginalised) which the following authors elaborate on; that rural populations have relatively more elderly people and children, higher unemployment and underemployment rates, more vulnerable to economic downturns, lower population density with higher percentages of poor, uninsured, and underinsured residents (Hart, 2005); that in defining rural areas, a broad understanding of their realities is crucial. The New Growth Path of the South African government emphasises that a rural development strategy must focus on understanding the economic potential of a region including the quality of land, water and proximity to the markets (Shaohua et al., 2011); and that deep rural areas lack access roads that link communities with the main road network (Department of Transport, 2007). Even though this study does not intend to

provide a definition for deep rural, it is important to have explored attributes of this concept at the least.

Particularly relevant for this research, the consideration of deep rural communities as marginalised groups (Marshall & Taylor, 2005; DLRLD, 2009) draws great interest in the study and practice of ICT4D. It is not uncommon to find that these communities live under poor conditions characterised by prevalence of poverty, high unemployment rate, inadequate shelter, poor health, deficient education, as well as limited access to many services necessary for all citizens to achieve a fulfilling life (Marshall & Taylor, 2005). As a result, many development initiatives, some of which attempted to exploit ICT capabilities, were set up in Third World countries in order to address these challenges.

The main problem centres on the lack of understanding among the various stakeholders in relation to the meaning of development and the role of ICT in development. In the following sections, the main research problem that informs this study will be expanded into three sub-problems.

1.4.1 The meaning of development

It was shortly after World War II that the idea of the three worlds emerged; the first world mainly being the Western European and North American countries, the second world being Soviet Union and Eastern European countries and then the third world, Africa, Asia and Latin America (Hettne, 1995) – precipitating the formation of the terms developed and under-developed nations. World leaders of that time saw this as a problem and started discussing ways in which the under-developed countries could become developed (Bernstein, 2005). During this period, many ideas (specifically) in the field of development studies were about development; debating what progress is desirable and trying to understand human needs and how theory can be applied to issues of social change. Over time, these discussions evolved to include another facet, the for development stance. This phase of discussions focused on building skills and competencies for development policy and management (Kothari, 2005). The scope of possible solutions expanded to become more than just a focus on economic growth and provisions for basic needs – approaches that Sen criticises as taking a narrow view of

development (Sen, 1987, 1999). Issues of social change formed part of this expanded scope.

On the other hand, having emerged as a possible instrument to facilitate development, and now widely accepted as having an important role to play in national development, ICT in development also attracted plenty attention (Harindranath & Sein, 2007; Flor, 2001). At a high level, ICT is seen as a key component in the pursuit of closing the gap between the developed and under-developed nations. ICT is then analysed for its role in reducing many other forms of inequality including economic growth and social exclusion as a consequence of the digital divide, to mention but one factor. As a result, numerous assumptions are embedded in the idea of development, thus raising concerns over the meaning of development; a well documented issue in social science literature, specifically in development studies. The discussions (detailed in Chapter 2) expand not only on how to achieve development but also the type of development for which Third World countries aspire (Sen, 1987; 1988b, 1999; Gabriel, 1991; Ngwenyama, 2006; Thompson, 2008; Kothari, 2005; Marglin 1990; Hettne, 1995; Escobar, 1992).

1.4.2 Issues facing deep rural communities

Prevalence of poverty, lack of adequate infrastructure for access to clean water, houses, roads and electricity are some of the problems facing deep rural communities of the world (Werlen, 2007). The dire state of South Africa's education and health system aggravates the living conditions of the poor (USAASA, 2007; Davison et al., 2000). Sustainable Villages Africa (2002, cited in Herselman, 2003) declares that, nowadays, without electricity, no momentous industrial development can take place; without telecommunications, the flow of information becomes a costly exercise if not downright impractical. This highlights only a few of the issues facing development workers, governments, local and international organisations and rural communities of the world, including those in South Africa. The problem is that, these issues may be common across communities but may differ in other aspects such as severity, thus, development needs of deep rural communities have a degree of uniqueness to them,

and should be treated in that way when solutions to their challenges are being considered (Werlen, 2007).

1.4.3 Conceptualising ICT in development

While the potential of ICT to contribute positively towards the development of the world's poor is widely discussed in literature (Langmia, 2005; Harindranath & Sein, 2007; Herselman, 2003), the extent of its successes and failures depends largely on how ICT and development are conceptualised by the key role players such as local communities, governments, local and international development agencies, funders as well as non-governmental organisations (Harindranath & Sein, 2007; Sen, 2009; Davison et al., 2000). A misfit in this facet most likely has serious consequences to the effectiveness of these efforts, with implications for sustainability. Many authors have thus embarked on developing frameworks and models (Parkinson & Ramirez; 2006; Alampay, 2008; Avgerou 2008; Nerurkar, 2005; Harindranath & Sein, 2007) through which to inspect the idea of development and the application of ICT in development initiatives. The problem is that, the role of ICT in development is not a well understood phenomenon. These attempts still continue to reflect and explore the conceptualisation of ICT and its role in development with the intention of influencing the use of ICT for developing purposes.

1.5   Overview of the research paradigm

Interpretivism will be espoused as a paradigm for this study. Interpretive methods of research take a position that, human knowledge about reality is a social construction by human actors. In this view, the enquirer uses their preconceptions to guide the research process, and furthermore, the interaction of the researcher with the research participants potentially changes the perceptions of both parties. Therefore, interpretivism does not provide for value-free data (Walsham, 1995; Travis, 1999). This paradigm can best be described by discussing, firstly, *ontology* - the underlying assumptions of interpretivism, and secondly, *epistemology* – the way knowledge is built (Krauss, 2006). These two aspects are considered in more detail in Chapter 4.

1.6   Overview of the research methodology

The research approach that will be adopted in this study is influenced by the research paradigm in that, as a way to gain an understanding of the social experiences being studied, an interpretive case study emerges as an appropriate methodology to use. Field work aspects that compliment case study research, where the researcher may interact with people, entail the use of data collection instruments where deep rural community members (such as community leaders, community visionaries and entrepreneurs) will be surveyed by way of interviews and questionnaires administration, in order to collect the relevant data for this study. The expected data will be in written form and content analysis will be used to analyse the data. Details of the research methodology are discussed in Chapter 4.

1.7   Intended contribution of the study

This study aims to contribute to the body of knowledge by applying interpretivism as a paradigm through which to gain an in-depth understanding of the social phenomena that is being studied according to Section 1.4. Interpretivism is well distinguished for facilitating a thorough enquiry into social experiences (Alexander, 2009).

Complemented strongly by this paradigm, the use of case study research as a methodology further enhances the ability to learn and analyse complex social situations, and provides a stage from which conclusions about a specific context can be drawn (Olivier, 2009).

The researcher also endeavours for this study to contribute to the field of ICT4D by offering specific answers to the research questions that will be investigated (see Chapter 2, Section 2.8). By so doing, firstly, this study will provide a perspective on the meaning of development. Secondly, it will provide an understanding of issues facing deep rural communities in the context of South Africa. Thirdly, this study will offer an understanding on the role of ICT in development as perceived by these communities (see Section 1.4).

1.8 Overview of chapters

The rest of this study is structured such that, Chapter 2 will explore literature on (a) the subject of 'development' with the intention of illustrating how the different views, theories, strategies and their respective criticisms have contributed to the complexity in the idea of 'development' and its discourses and (b) how ICT emerged a strong contender as a means (if not the end) to achieving the kind of development which deep rural communities are said to aspire to achieve. Collectively, these two points attempt to locate a confirmation in the literature of social science (specifically development studies) and ICT4D that the problem statement being studied is indeed a worthy matter to explore. Core to this chapter is to provide a background for the research questions that arose, the research method adopted for this study and eventually the analysis and reporting of the findings which are answers to those research questions.

Chapter 3 provides an in-depth exploration of the selected frameworks that primarily discuss the role of ICT in development from various angles. Special attention is paid to key concepts of a framework, the perspective from which it looks at the role of ICT in development, and objectives of the framework. Perhaps more importantly, this section also looks at the relationship between the individual frameworks and the way these fit within the intentions of the overall study.

Chapter 4 will be a detailed discussion of the method used while undertaking this study. This chapter will cover research design concepts including the research paradigm, the strategy and methodology adopted as well as the field work carried out to collect data. In addition, the details of the data collection process, sources of data and analysis thereof will also be discussed. The last considerations of this chapter are research limitations and bias, and ethical concerns affecting the researcher, the participants and the environment in which the study is conducted.

Chapter 5 will be a discussion and analysis of research findings and interpretation thereof. The researcher will attempt to compare the findings of the method described in Chapter 4 to the ideas crafted and backed by literature evidence in Chapter 2 with the intention of applying deductive reasoning as an approach to partially answer the relevant research questions posed.

Concluding this study is Chapter 6 which will be a summary of the critical issues discussed throughout the study including the research proposition, the research problem and perhaps most importantly, demonstrate how answers to the research questions were provided as well as provide a synopsis of the implications for future research in ICT4D. Moreover, the contribution of the study, research limitations and recommendations for further study will also be summarised.

1.9   Conclusion

This chapter provided a brief background to the study, a discussion of the problem under consideration including its objectives, research contribution and delimitations. Furthermore, the research paradigm and key assumptions as well as an outline of all subsequent chapters were also presented. The next chapter is an outcome of an extensive literature review carried out with the intention of constructing the main argument of this study.

Chapter 2

Literature Review

2.1 Introduction

This chapter intends to provide an account of literature on development and the link between ICT and development as can be found in countless social sciences and ICT4D writings. The literature review seeks to present the contributions of various theories, strategies and criticisms that constitute the idea of 'development', and therefore ICT4D, such a complex phenomenon. Furthermore, this chapter establishes a background for the research problem from which a research method is identified and subsequently adopted as a means to find answers to the research questions arising. These research questions are articulated at the end of this chapter.

2.2 Preliminary literature review

The purpose of a literature review is not only to present the work of authors whose work in being reviewed, but to also synthesise these ideas in a rational manner that demonstrates relevance to the problem, balance in the arguments, gaps in the literature and logic in the works when combined. The themes which are expected to materialise from the literature review below are that:

- development theory informs the ideas underlying the various definitions of development
- the meaning of development is a complicated issue to which no single view is likely to succeed, and will continue to change for a long time to come
- development issues facing deep rural communities are contextually unique, and are not well understood by the so-called development 'experts'
- the role of ICT is yet to be established effectively to facilitate national development goals

Using Fourie's (2009) guidelines for literature searching, keywords such as *rural development, ICT4D, international development* and *social exclusion* were attained from the research topic, leading to the recognition of databases such as GoogleScholar, IEEE Xplore, EbscoHost, JStor, Science Direct and UPeTD after searching the internet

for the keywords. These databases were then used as information resources from where to obtain journals and conference proceedings. Key journals used include the International Journal of Education and Development using Information and Communication Technology, Information Technology and People, and Information Technology for Development. In addition, textbooks borrowed from the library at the University of Pretoria (UP) were used, and most electronic journal articles and dissertations were identified through crosslinking (using links in the references of an article to access the full-text of the articles cited), and accessed via the UP library website, and complimented with more information sources from websites of organisations such as the World Bank, the International Telecommunications Union (ITU) and the South African government.

2.3   Background of development theory

"Development theory is a loose body of contending approaches which, in spite of contradicting each other, also presuppose each other" (Hettne, 1995) because development theories tend to accumulate rather than replace each other. According to Leys (1996), the study of development theory takes us back to the early years of human life when agriculture began to replace hunting and gathering. This was around the time when European society was in the midst of transforming itself from 'tradition' to 'modernity'. Then, the emergence of modern social science took place and subsequently, early theories of development started to surface (Hettne, 1995). But it was this establishment of agriculture that brought about, perhaps, the greatest acceleration of social evolution in the history of human life on earth (Mokyr, 1990 cited in Kleine & Unwin, 2009).

Again, after World War II a renewed interest in the development of the so-called 'backward areas' emerged and also gave rise to the theoretical concerns similar to those of the classical social science of the earlier time marked by the prevalence of theorising about development from a sociological and anthropological view (Hettne, 1995).

Unlike conventional social sciences, which are still ensnared with functionalism and comparative statics, development theory is more concerned with change in under-

developed countries; a phenomenon that is based implicitly on the assumption that conditions in these communities are undesirable and have to be changed (Bernstein, 2005; Escobar, 1992).

Typical of development theory is the presence of three broad perspectives, namely, Marxist, Westernisation and Alternative development (Hettne, 1995). A decision to explore only the following theories is based on the author's perception that they are directly relevant to the problem this study is investigating.

2.3.1 Classical Marxist Theory

Leys (1996) argues that, the beginning of industrialisation and specifically the introduction of industrial capitalism (Peet & Watts, 1993) prompted people to take cognisance of human, economic, social, political and cultural development. Prominent thinkers at the time tried to make sense of all this change and where it would ultimately lead. Credit is often given to Hegel and Marx as true originators of development theory because they realised that it was the rapid change in capitalist production and the establishment of the middle class that made it necessary to look at history in an entirely new manner. Between them they created what Leys (1996) refers to as a "theory-inspired historiography and historically based social science concerned with understanding the evolution of human life on earth as a structured totality".

Central to Marxist theory is the preoccupation with understanding the problems and socio-economic development prospects of poorer countries, many of which are former-colonial states located mostly in Asia and Africa. According to Bernstein (2005), this theory pays particular attention to three themes about poor countries, namely "how their processes of accumulation were shaped by their internal social structures and associated forms of state, their location in the social divisions of labour of a capitalist world economy and, how international and domestic class forces interacted".

2.3.2 Westernisation Theory

For over six decades, much of Asia, Africa and Latin America have been referred to as the 'Third World' or 'under-developed' (Escobar, 1992). The aspiration to become 'developed', as prescribed by the already developed Western countries, gave rise to the development discourse which has ruled out most social designs and actions in the

'under-developed' countries post-World War II (Escobar, 1992). Central to the idea of westernisation is the concept of modernisation which presents arguments for economic growth as development and views societies as evolving around core processes of industrialisation and urbanisation (Gabriel, 1991); a change that is characterised by ideas of shifting societies from tradition to modern; agricultural to industrial; rural to urban (Gabriel, 1991); "an approach that taught that technological innovation and upgrading, connected with cultural change, would help modernise economies and societies" (Kleine & Unwin, 2009).

2.3.3 Alternative Development Theory

Stemming from the criticism of earlier development theories and their application to developing countries, especially in Africa, where many countries such as South Africa were colonies at the time, the Eurocentric period marks the juncture when development theories were imported to the South and usually implemented without prior consultation with the inhabitants on what kind of development they needed or wanted (Hettne, 1995). It is therefore not surprising that doubts were eventually raised about the relevance of these theories in the developing countries (Banuri, 1990). A number of Third World authors and grassroots movements took this further by not only resisting this model of development but started searching for alternatives to it (Escobar, 1995). Escobar (1992) also proposes that alternative discourses must be created; those which would have Asian, African and Latin American countries see other means of organising their societies and economies independently of the Western-defined 'development' discourse which is characterised by European and North American modernity and economic models.

Lastly, in organising the theories discussed above, Hettne (1995) provides a tentative grouping of these and more development theories along two dimensions (see Figure 2.1). It should be noted that this outline does not intend to classify development theories but it rather recognises that this theoretical subject can be located within a space delimited by two dimensions which he names, positive-normative and formal-substantive.

Positive

Marxist
accumulation
model

Westernisation
studies

Mode-of-production
analysis

World-system
analysis

Formal ← → Substantive

Neoclassical
growth theory

Structuralist
economics

Modernisation
Theory

Dependency
theory

New political
economy

Basic needs
approach

Another
Development
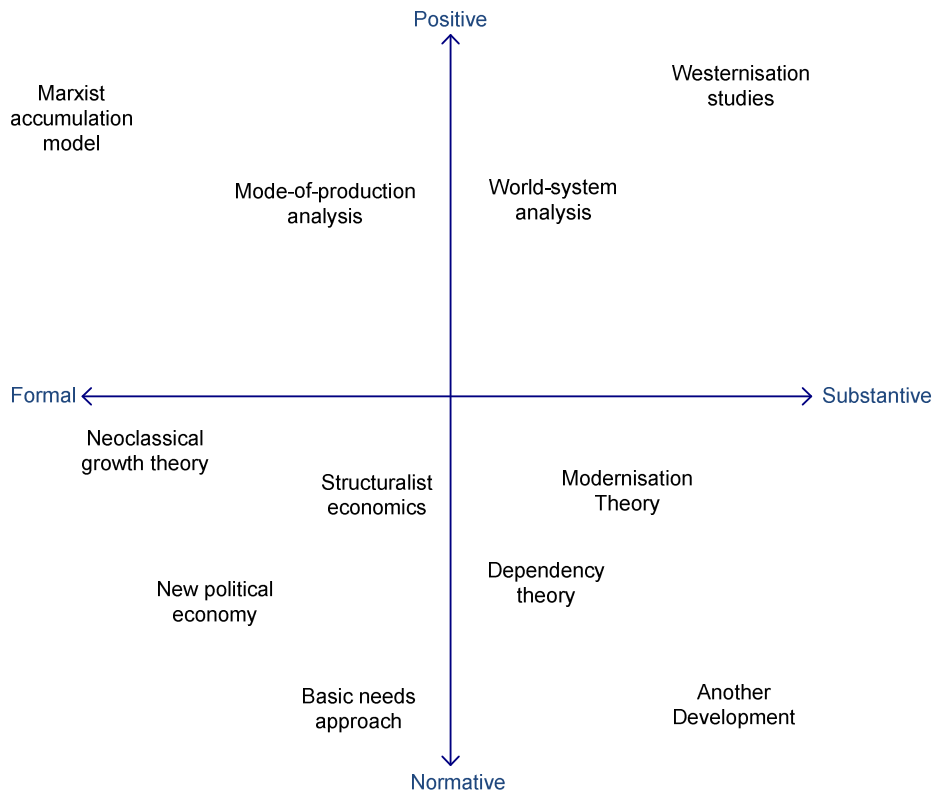
Normative

Figure 2.1: Hettne's (1995) tentative outline of development theories

Depicted in Figure 2.1 is Hettne's (1995) representation of the development theoretical space delimited by the positive-normative dimension and the formal-substantive dimension, loosely locating the various development theories according to how closely each theory is associated with a dimension. Evidently, the discussion of development theories in Section 2.3 covers only a subset of these. This is done for two reasons, firstly, it is thought that the theories discussed are fundamental to development, and broad enough to encapsulate the general ideas many subsequent theories adapt. Secondly, the intention was also to pick at least one theory per quadrant and describe it according to its bounding dimensions.

- **The positive-normative dimension**

According to Hettne (1995), the *positive* view in development theory (also known as positivism) studies the world as is. Central to this 'realist' way of thinking is that development is inherent in all societies and goes through preset stages; a stance for which this perspective is strongly criticised as being a trivial and oversimplification of a complex phenomena. Positivism studies development as it happens and is guided by people's interests and declared values at the time. In contrast, the *normative* perspective (usually referred to as normativism) looks at the world as it should be. Development theory is by its nature implicitly normative, becoming explicitly normative as influences of how development is defined have taken shape. Needless to say, the most influential view of what constitutes development at a given time also influences the kind of development being theorised about.

These two dimensions should not be judged as binary opposites, but should rather be appreciated equally for there is no conflict in theorising about 'what is' and 'what should be'; as long as that distinction is maintained. Nonetheless, history has shown that the two positions tend to move back and forth, correcting each other.

- **The formal-substantive dimension**

The *formal* approach defines development in terms of a limited number of universal goals and indicators (such as economic growth through the increase in per capita gross domestic product; improved quality of life through longevity and poverty alleviation) which can be combined to produce a predictive model. Differing from this view, the *substantive* approach studies development as a historical change of the world based on a more comprehensive, qualitative and less predictable occurrence.

Overall, "positive/formalist approaches to studying social reality have shifted as a result of critiques to include a normative/substantive approach. Instead of assuming that positivist research could lead to formal laws that can be generalised to many contexts, there is a realisation that development comprises a multiplicity of variables contextual in nature; unless the local cultural values are understood, development does not occur" (McIntyre, 2000).

Figure 2.1 locates the Marxist model of accumulation (and various other Marxist contributions put in different quadrants as an illustration that they tend to rather be

closely expressive of those dimensions) along the formal/positive quadrant as an argument to demonstrate that what happens in societies is somehow meant to happen. Modernisation theory and Another Development (also known as Alternative Development) occupy the substantive/normative quadrant. As can be seen in the diagram, Another Development presents itself as more normative than Modernisation, an indication that theorists in this space acknowledge that even though they may sometimes resemble the classical modernisation theory, alternative theories must be created for different societies who should follow their own development paths which are relevant to their history, ecology and culture (Hettne, 1995). As a tentative outline, this grouping can certainly be disputed.

2.4   What is development?

It should be emphasised that it is not the intention of this study to attempt to define 'development'; however, it is critical that the various opinions of other authors be mentioned at the least. Defining 'development' is a highly contested issue in many disciplines (Zheng, 2005; Thompson, 2004; Hettne, 1995). What is clear, however, is that there is a general consensus that the core problem in defining 'development' lies in the many perspectives from which it can be defined (Gabriel, 1991; Zheng, 2009) as well as the large number of dependent variables (Ngwenyama, 2006; McIntyre, 2000).

In his attempt to unveil the foundations of knowledge and discourse about the Third World as under-developed, Escobar (1995) is of the opinion that the reason Third World countries see themselves as 'under-developed' is founded in the historical discourses of development which were spearheaded by the United States and Western Europe post-World War II; that today many Asian, African and Latin American countries are faced with the challenge of 'un-under-developing' themselves as a way of dealing with this alleged problem, and thus forming a new domain of thought and practice materialised – that is, development.

Literature that explores the subject of development typically as a path that started with civilisation and modernisation (Kothari, 2005). Sen (1987, 1988b, 1999) criticises his path for its narrow view of development. Some believe that "...there can be no fixed and final definition of development; only suggestions of what development should imply

in particular contexts" (Hettne, 1995). Many authors have resorted to discussing development according to its features (Gabriel, 1991), that they rather look at development as:

> "...a process of change it may involve both economic growth and social improvements" (Gabriel, 1991, p.13).

> Involving "...other social measures which mutually enforce the economic success of a nation" (Ngwenyama, 2006).

> "...a process of expanding the real freedoms that people enjoy to lead the lives they have reason to value" (Sen, 1999, p.3).

> "'Development' cannot be easily defined or measured, since it involves a powerful political and culturally specific term. Instead, it may be useful to seek to understand the rational meaning of social situations for the actors or participants involved in them. From this perspective development is likely to mean very different things for different individuals and groups" (Gabriel, 1991).

Radical views of development tend to explore development from a more political and power standpoint (Thompson, 2004). For instance, Kothari (2005) investigates development from a colonialism point of view. Marglin (1990) categorises many of these views along three trails of thought along which 'development' can be defined, economic growth, the fulfilment of basic needs and the expansion of choice, even though there exist many more development perspectives.

2.4.1 Development as economic growth

Early theories of development and strategies saw development as a process of growth in the economic sense (Gabriel, 1991) and after much criticism, later supplemented this view with the dimension of social improvements leading to the broadening and deepening of this thought space towards a historically-structural perspective (Hettne, 1995); an introduction of some kind of structural and organisational change in the society (Gabriel, 1991).

Measures of progress in this approach included economic indicators such as the gross nation product per capita (GNPpc) which quantifies the level of productivity of a

nation (Gabriel, 1991). This measure is often associated with the physical quality of life; the higher the GNPpc the better it is for the citizens of a nation. Another indicator that was used was the physical quality of life index (PQLI) which determined a nation's progress in term of (high) life expectancy, (low) infant mortality at age one and (high) level of adult literacy (Gabriel, 1991).

2.4.2 Development as the fulfilment of basic needs

Over the years, the view of development has gone beyond the focus on economic indicators (Ngwenyama, 2006) to include other dimensions such as social change and political systems (Gabriel, 1991). One of the development sentiments of the 1970s was the acknowledgment that economic growth did not necessarily lead to poverty alleviation, actually, in most developing countries it led to an increase in absolute poverty. The basic needs approach (BNA) was seen as a direct response to this problem (Hettne, 1995) rather than waiting for the effects of economic growth to filter-down and address poverty (Emmerij, 1988 cited in Hettne, 1995). The BNA views development from a human resource perspective (Gabriel, 1991) and rejects earlier growth paradigms by recognising that a stronger focus on helping the poor (using instruments such as agricultural subsidies and welfare grants) is required (Hettne, 1995). It recognises that "better health and education services often make a greater contribution towards improving labour productivity than do most alternative investments" (Gabriel, 1991). To conclude this section, the following definition provides a rather clear narrative on what should be understood in order to fulfil the basic needs of communities:

> *"Basic needs... include two elements. Firstly, they include certain minimum requirements of a family for private consumption: adequate food, shelter and clothing are obviously included, as would be certain household equipment and furniture. Second, they include essential services provided by and for the community at large, such as safe drinking water, sanitation, public transport, and health and educational facilities" (Hettne, 1995).*

2.4.3 Development as the expansion of choice

A major issue in the conceptualisation of development is the gap between the exclusive focus on economic wealth and that of a broader focus on the lives that people can lead (Sen, 1999, pg. 14). He further argues that, wealth in itself is not the good people seek, but that which it can afford them; wealth is useful for the things it allows people to do – the freedom to choose the kind of life they prefer to live.

It is important to distinguish between two forms of wanting an expansion in choice, *intrinsic* (valuing the freedom of choice for its own sake independently of choices actually made) and *instrumental* (valuing the freedom of choice because it allows one to achieve the things that they would otherwise not be able to achieve). In the first case, expansion of choice is an end in itself, in the second it is a means to achieve something else (Sen, 1987, 1988b, 2009). To further illustrate this point, an example can be made that, attainment of good education has a crucial influence in the individual's freedom to live a better life. Not only that, but to also participate meaningfully in social, political and economic activities. It is this (*instrumental*) view that Sen and others of the same school of thought are advocating for and this is the fundamental aspect of upon which Sen's Capabilities Approach is developed (discussed in Chapter 3, Section 3.5).

2.5   Technology perspective in development

According to Kleine and Unwin, (2009), content created for human development purposes has traditionally been produced by experts and broadcasted to people whose lives could be improved by the acquisition of such knowledge. Mobile technologies and the internet have the potential to change this model by enabling more people to generate human development-oriented content and share it through these technologies.

Following the Industrial Revolution, a period known for bringing about unprecedented growth in the development of interconnected systems including factories, assembly lines, machinery and mass production of identical products (Schutte, 2009), Information Revolution triggered a surge in ICT inventions and innovations; suddenly power and wealth did not lie so much on possessing natural resources and capital, but information and knowledge (of how to best exploit these resources) became a representation of supremacy (Schutte, 2009). In the view of development-as-modernisation, this aspect

co-determined relations between the 'civilised' and the 'backward' (Kleine & Unwin, 2009); the 'developed' and the 'undeveloped'; the richer and the poorer.

Since key innovators in this space were mainly European and North American countries, it soon became evident who was 'left behind' – Latin American, Asian and African countries. And together with international organisations and governments, the 'developed' countries took it upon themselves to assist poorer countries 'catch up' (Alampay, 2006). Arguably, ICT innovation presented a great opportunity to help achieve this 'development'.

With the computing revolution having taken place in the 1970s (Kleine & Unwin, 2009) as described in Section 2.5, the development of computer networks leading to the 'invention' and exceptional growth of the internet in the early 1990s (Brown et al., 2009) and now the meteoric rise of mobile phones (also called cellular phones or cell phones) (Kleine & Unwin, 2009; OECD, 2009) and the impact they have in people's lives, it is not difficult to understand the initial excitement around ICT4D.

2.5.1 The rise of ICT in development

Based on the premise that ICT has the potential to contribute positively towards the development of the poor, many governments and donor agencies such as the World Bank, the United Nations (UN) and the International Monetary Fund (IMF) embarked on a drive to have developing countries increase investment on ICT (Alampay, 2006; Brown & Grant, 2010; Ngwenyama et al., 2006; Kleine & Unwin, 2009). As such, ICT has been pushed to the forefront of development programs in many of these countries (Zheng, 2005; Hanna & Schware, 1990, cited in Brown & Grant, 2010) – ICT4D had been born.

In Africa, the New Partnership for African Development (NEPAD) also jumped onto the ICT4D bandwagon and identified a significant role ICT can play in their strategies to address development challenges facing Africa and, in turn tackle the Millennium Development Goals (Colle, 2005).

2.5.2 Phases of ICT4D

Heeks (2009) classifies the first phase of ICT4D as ICT4D 0.0. This begins in the 1960s when the usage of the computer systems was mainly focussed on scientific calculations and data processing – rarely (if at all) used for developmental purposes. These were products that were largely supported by big research institutions and governments. Computer systems then evolved and became significantly smaller and cheaper to make and sell, and by the 1990's personal computers could easily be found in many educational institutions and households even in the developed countries (Brown et al., 2009).

The next phase, ICT4D 1.0 is characterised by the dominance of the internet and the reprioritisation of international development which saw ICT taking centre stage in the efforts to bridge the gap between the developed and developing countries after the International Development Goals of 1996 were formalised and became known as the Millennium Development Goals (MDG). Renewed focus on poverty alleviation and improvement of education and health in poor countries spiked a boost in development projects, notably telecentres – (Gomez & Hunt, 1999). That said, innovation in this space had a tendency to occur outside poor communities. Development 'experts' would typically drive projects on behalf of the poor (Cameron, 2005; Marglin, 1990) and commonly without consulting with them (Hettne, 1995).

Failure to deliver the expected results forced a relook into the ICT4D programme. Together with the resolutions to issues identified during ICT4D 1.0 (such as lack of sustainability and scalability), the emergence of new technologies (such as wireless networks and mobile phones), and the recent surfacing of new opportunities (such as collaborative content creation and social networking), saw ICT4D again reshaping to take advantage of these developments (Heeks, 2009) – a phase loosely referred to as ICT4D 2.0. The concept of para-poor innovation (that is, working alongside poor communities) started taking shape during earlier phase and seems to be central to ICT4D 2.0. Core to this idea is that, in order to understand the development needs of the poor, thereby designing and implementing the kind of projects beneficial to them, the poor have to fully participate in the processes. Ultimately, it is per-poor innovation

(which occurs within and by the poor) that should be achieved, thus ensuring ownership and management of this innovation by those who need it the most. Table 1 provides a summary of the ICT4D phases discussed.

Issue/Phase	ICT4D 0.0 (1960s – mid-1990s)	ICT4D 1.0 (mid-1990s – mid/late 2000s)	ICT4D 2.0 (mid-/late 2000s onwards)
Description	Key usage of a computer was mainly for scientific calculations and public sector administration. Later view of ICT as a tool to deliver economic growth in the private sector.	Internet expansion and emergence of Millennium Development Goals drove focus on ICT as a tool to improve health and education while reducing poverty and inequality	Given the failure of ICT4D 1.0 to deliver on expectations, this phase relooks at how 'lessons learnt' together with new technologies can better solve the problems of the World's poor
Iconic Technology	PC Database	Telecentre	Mobile Phone
Key Application	Data Processing	Content (and interaction)	Services and Production
The Poor	No clear focus	Consumers and rural communities	Innovators and Producers
Key Goal	Organisational Efficiency	MDGs	Growth and Development?
Key Issue	Technology's Potential	Readiness and Availability	Uptake and Impact
Key Actor	Government	Donors and NGOs	All Sectors
Innovation Model	Northern	Pro-Poor -> Para-Poor	Para-Poor -> Per-Poor
Development Paradigm	Modernisation	Human Development	Development 2.0?

Table 2.1: A summary of ICT4D Phases (source OECD, 2009, p. 65; Heeks, 2009)

23

2.5.3 ICT4D: views and criticisms

2.5.3.1 There are far more important things rural communities need

Contrary to the view that an increase of investment in ICT will help poor nations achieve their development goals, there are those who argue that poor countries should rather use their limited resources to deliver the basic needs such as healthcare, electricity, water and sanitation and building schools (Ngwenyama et al., 2006; Souter, 2004 cited in Kleine & Unwin, 2009). "No one can operate a computer or have meaningful access to information resources of the internet for building new businesses, learning about democracy, or more efficient farming methods without education (Ngwenyamaet al., 2006, p.8)". To significantly increase development, Ngwenyama et al. (2006) suggest that complimentary investments should be made in delivering both ICT and basic needs such as healthcare, electricity, water and sanitation and building schools. Supporting this suggestion, Zheng and Walsham (2008) state that investing in computers and other commodities alone is not sufficient to address the needs of poor communities who, for example, lack adequate healthcare and suffer from the high level of poverty.

2.5.3.2 ICT is oversold

Even though ICT can make a positive contribution in making "the world a better place, the enthusiasm and hype associated with ICT4D has often been exaggerated and misplaced" (Unwin, 2009, p. 360). There is lack of proof that ICT4D is actually effective in bringing about development; however, there is extensive research that documents its failures. There is no evidence that investing in ICT boost economic growth and leads to a better life for the poor (Avgerou, 2003b cited in Zheng, 2009).

2.5.3.3 ICT diffusion and culture

Literature on ICT4D reveals that the use of technology in development initiatives often fails to deliver on the promises made (Parkinson, 2006; Kleine & Unwin, 2009) and "that technological diffusion may not necessarily lead to development" (Zheng, 2009; Davison et al., 2000). Avgerou (2008) warns against the transfer and diffusion of ICT from developed countries into the developing countries. He argues that the values embedded in this technology are usually different from those found in the adopting

countries therefore it is unrealistic to expect the realisation of the same benefits because of the differences in context. Moreover, Danowitz et al. (1995, cited in Thompson, 2004) articulates it well that computer technology evolved in the West and with Western thinking, social behaviours, cultural and political values, therefore, when this technology is transferred to the developing countries, it comes loaded with these attributes.

Authors such as Walsham and Sahay (2006, cited in Zheng, 2009) propose that ICT4D initiatives should put more emphasis on the meaning of development. Analysing social exclusion in South Africa and China, Zheng and Walsham (2008) make interesting comments about the relationship between ICT and local context.

In the case of South Africa, these authors reveal that the introduction of ICT to rural hospitals as part of the District Health Information System (DHIS) project proved difficult for the health workers to adopt. They cite issues of illiteracy and lack of support from the higher authorities as a reason and that the health workers viewed ICT resources as being imposed upon them. In the case of China they state that, given its rather advanced adoption of ICT one would expect the Chinese to benefit greatly from the access and use of technology. In many respects, they do. However, the Chinese people are still excluded from a free flow of information because of tight government regulations on the content made available to the public (Zheng & Walsham, 2008).

2.5.3.4   The multi-disciplinary nature of ICT4D

ICT4D is inherently a multidisciplinary field (Unwin, 2009; Brown & Grant, 2010; Raiti, 2006) including concepts of sociology, economics, anthropology, information systems, political science, organisational science and development studies. In order to collaborate effectively with each other, this requires that those involved in delivering ICT4D programmes understand the distinct vocabularies, styles of discourses and agendas that are adopted in fields other than their own areas of specialisation (Unwin, 2009).

That said, existing classifications of ICT and development literature do not explicitly acknowledge that there are two distinct problem domains in this field, namely, (a) understanding technology "for development" and (b) understanding technology "in

developing countries" (Brown & Grant, 2010). Closely related to this issue is the multidisciplinary nature of ICT4D, which is cited as one of the problems with research in this field (Raiti, 2006). Raiti further states that, many authors in ICT4D research have more knowledge of development literature than of ICT literature; a view that is contrasted by Heeks (2006) when he states that ICT4D literature draws very little work from development studies.

2.5.3.5   Techno-centric versus Humanistic

Zheng (2009) and Madon (2004) claim that ICT4D initiatives often approach development by emphasising the technology aspects over those that pertain to development itself. Further assertions are that the contribution of ICT to development is based on ambiguous assumptions (Zheng, 2009). For example, a computer will have a different influence to the life of a literate person compared to an illiterate person. Sen (1999) concludes that if development is viewed as an extension of capabilities of humans to live the life they value then commodities such as ICT should be seen as means to achieve that goal in the process of development.

2.5.3.6   ICT4D: A new form of dependency

Even though ICT4D is widely regarded as having a potential of positively contributing to the development of the poor, there are strong criticisms regarding technology possibly becoming a new form of dependency (Wade, 2002) and propagator of further divides between the richer and the poorer within a country (Norris, 2001, cited in Kleine & Unwin, 2009). Wade (2002) cites the following issues:

- Developing countries have no voice in the bodies that set ICT standards – it is a fact that developing countries have little representation in organisations such as the ITU and ICANN (Internet Corporation for Assigned Names and Numbers). Even more concerning is that, when developing countries raise issues, it is very difficult to argue as there is a general lack of strong backing against other stakeholders such as the Group of Seven (G7) countries. The role played by private firms in the setting of ICT standards is significant, and in these companies there is even lesser representation of people from the developing countries

- Developing countries (aside from Korea) are mainly consumers of ICT services, not producers. As a consequence, developing countries comply with standards. They do not set them.

International development policies are commonly cited as the source of the problem (Wade, 2002) and development-oriented projects are criticised for serving the interests of donor agencies over those of poor people (Kleine & Unwin, 2009). When donor agencies grant a developing country funding to implement ICT infrastructure, it is not uncommon to have those projects run by the Western and Northern ICT corporations (Wade, 2002). The problem with that is, after implementation, developing countries do not have the skills and capacity to maintain the project. They again rely on the Western and Northern companies for support.

2.5.3.7 Who stands to gain?

Even though partnership with the private sector is frequently advocated in ICT4D projects given their high level of expertise and financial strength, Kleine & Unwin (2009) caution against the involvement of profit oriented companies and recommend the influential non-for-profit organisations such as Free and Open Source Software (FOSS) as an alternative. In addition, there are few private sector partnerships which "have actually delivered effective and sustainable benefits for the neediest of the world's people" (Wertlen, 2007).

2.5.3.8 Technology Leapfrogging

If the premise that ICT is pivotal to achieving development, developing countries have the opportunity of advancing to latest technologies without having gone through the process of upgrading from or implementing the now obsolete technologies; a phenomenon commonly known as leapfrogging (Davison et al., 2000; Safran, 2009 cited in Kleine & Unwin, 2009, p. 1048). However, it should be noted that (a) the focus of leapfrogging must consider the values embedded in the technology and take cognisance of the social context; (b) the development path underpinned by leapfrogging insinuates that developing countries rely on the approaches earlier adopted by the developed world (Davison et al., 2000). To drive this point home, Britz et al. (2006)

raises a question of whether developing countries will be able to sustain this and be able to fully utilise ICT for economic benefit once leapfrogged into new technologies.

2.5.3.9   Is ICT even a solution to development?

Interestingly, Cullen (2003 cited in Britz et al., 2006) points out that non-Western cultures have no real need to search the internet as the information in the internet is generally irrelevant to their needs. Britz et al. (2006) argues that the shortage of computers or lack of access to the internet does not necessarily prevent Africa from becoming a knowledge economy, thereby becoming developed. The biggest barrier is "lack of the ability to provide and maintain an effective infrastructure to deliver the necessary products and services to its people" (Britz, et al, 2006).

To conclude this section and as a way to generalise many of the underlying views that were discussed, the following section discusses Avgerou's (2008) four discourses of information systems (IS) innovation and development. This study recognises that placing heavy reliance on a particular conceptual framework creates what could be seen as an unwarranted bias, which might not always be appropriate. However, Avgerou's contribution in this regard is arguably the finest summary of the IS research in developing countries that has been done in the past fifty decades.

2.5.4 Avgerou's four discourses on IS innovation and development

2.5.4.1   Transfer and diffusion

This perspective looks at IS innovation as the diffusion of IS knowledge transferred from advanced economies and adapted to the conditions of the country to which it is relocated. Researchers who follow this approach seek to show the relevance of IS knowledge and practice as well as construct adaptations suitable for the developing countries to which this is applied (Bhatnagar, 2000). Common criticism is that this approach over-simplifies cultural variables that are unique to each country and community (Avgerou, 2008).

2.5.4.2   Social Embeddedness

The social embeddedness perspective is of the view that IS innovation in developing countries requires new techno-organisational structures to be created to suite a given

local social context in terms of what is meaningful, desirable or taboo in a particular society, then innovate within these social dynamics (Avgerou, 2008; Wertlen, 2007).

2.5.4.3 Progressive transformation

This perspective emphasises the view that investment in and effective use of ICT is good for economic development of a country; but this is often accepted without being first tested. It is worth noting that, this by no means discards the importance of other development aspects. In fact, organisational restructuring to deliver productivity gains and good governance are particularly stressed (Avgerou, 2008).

2.5.4.4 Disruptive transformation

The disruptive transformation perspective draws from ideas that are suspicious of the development agenda entirely to the extent of questioning the intentions of the very organisations that claim to be pro-development – the World Bank, IMF and WTO. Researchers who follow this view tend to explore the hidden intentions and power dynamics which maintain or worsen the inequalities in terms of wealth and opportunities leaving the so-called beneficiaries at a loss (Avgerou, 2008). The focus of this viewpoint is that, the premise about the relevance of ICT in development should not be taken without question, because it does not necessarily lead to development for all.
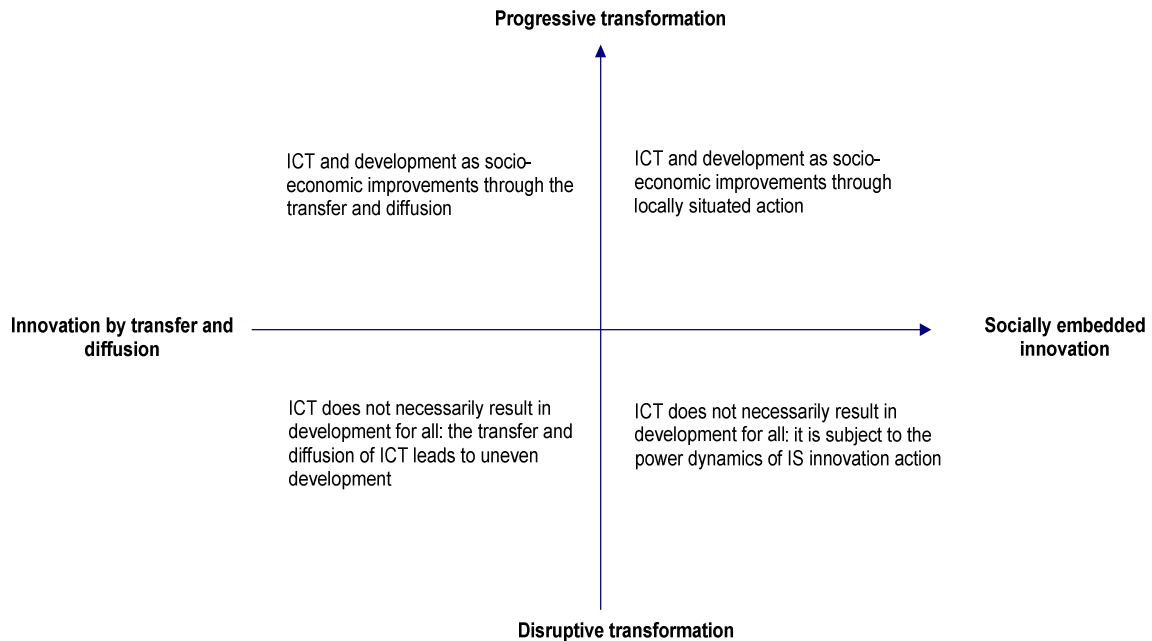
Figure 2.2: Avgerou's (2008) four discourses of IS innovation and development

Figure 2.2 not only provides a perspective of how the views discussed on ICT in the context of development, but also summaries discourses on IS innovation and development as bounded by two dimensions, namely, ICT innovation as transfer and diffusion/social embeddedness, and the progressive/disruptive transformation.

2.6   Rural development in the South African context

"Our vision for the development of rural areas arises from the fact that people in the rural areas also have a right to basic necessities. They have a right to electricity, water, flush toilets, roads, entertainment and sport centres. They have a right to shopping centres, good schools and other amenities like their compatriots in urban areas...and the programme must ensure enterprise development support." Jacob Zuma (President of South Africa)

This is a statement the President made at the launch of the Comprehensive Rural Development Programme (CRDP) in 2009 (ArchitectAfrica, 2009). The CRDP is the latest national strategy adopted by the South African government in an effort to fight poverty, hunger, unemployment and lack of development in rural areas; "focused on

enabling rural people to take control of their destiny, with the support from government, and thereby dealing effectively with rural poverty through the optimal use and management of natural resources" (DRDLR, 2009). According to the DRDLR (2009), this strategy will be successfully implemented by achieving three objectives:

- **Agrarian Transformation.** Increasing livestock farming, food security and (among other things) the use of appropriate technology and indigenous knowledge.

- **Rural Development.** Improving economic infrastructure such as roads, railways and ports, dipping tanks, electricity networks and post office services and internet cafes. Improving social infrastructure such establishing savings clubs and cooperatives for economic activities, rural libraries, social cohesion and access to human and social capital.

- **Land Reform.** Speeding up the process of land redistribution, land tenure reform, settlement of outstanding land restitution claims. Providing effective support to all land reform programmes through adequate planning and information management.

This study does not intend to explore the history of rural development in South Africa, nor will it evaluate any of the various strategies that have been used in order to achieve rural development including the Reconstruction and Development Programme, of which the fundamental goals are not very different from the current CRDP (SouthAfrica.info, 2010). The CRDP is merely used as a point of departure as to how South Africa sees its journey towards the future development of rural communities.

The CRDP objectives, namely, Agrarian Transformation, Rural Development and Land Reform, are strongly related to Gabriel's (1991) assessment of development strategies in his work on "Understanding Rural Development" where he discusses in detail the various tactics that have been used to address inequalities in developing countries; an indication that the CRDP has a theoretical and practical support in development literature. Moreover, the development perspectives discussed in Section 2.3, all form an appropriate foundation for the discussion that follows.

The approach taken by the South African government as informed by the CRDP objectives falls within what development literature considers as major development strategies to deliver rural development policies (Gabriel, 1991). According to this sentiment, *Improvement* strategies (such rural development) focus on delivering development by adopting more efficient techniques within existing social and economic structures; *Transformation* strategies (such as land reform and agrarian transformation) focus on a total change in the livelihoods of those affected by under-development. Improvement and Transformation strategies are criticised for their various shortcomings. Principal to these are that, improvement strategies reinforce socio-economic inequalities and widen the gap between the rich and the poor since it is characterised as being a slow process. On the other hand, transformation strategies are said to be marked by being high risk and complex to execute, especially with the prominent lack of adequate planning and efficient monitoring and evaluation methods in place, evident in previous attempts to apply this approach (Letsoalo, 1987; Binswanger & Elgin, 1990).

Supporting the DRDLR's goal of enabling rural communities to take control of their destiny, Marglin (1990) recommends that effort be made to move away from approaches that suggest that 'development' of the Third World people can be done for them, implying that it is the 'developed' who know what is best; and consequently suppressing the opinions of people in developing countries from discussions affecting their own development path.

2.7   Theoretical constraints

This section serves as a reminder of what has been discussed so far in this chapter. Chapter 2 opened with a discussion of development theory focusing on Classical Marxist, Westernisation and Alternative Development theories as the primary point of departure, and from where commonalities between these and various other development theories can be found. Hettne's (1995) conceptual framework was used primarily as a means to encapsulate the characteristics of these theories and provide insight into the underlying ideas of each. This by no means attempts to locate the three theories mentioned as the founding theories in development theory.

Then, a discussion about the diversity in meaning concerning development followed. With no intention to define or conclude on the meaning of development, literature on the subject was explored with the sole objective of illustrating that, the present debate in the field of ICT4D about the meaning of development is a primordial issue that continues to be a subject of debate in many other related research areas such as social studies and development studies. Given that development ideas tend to presuppose rather than replace each other, a subset of broad development ideas, namely, 'development-as-economic-growth', 'development-as-basic-needs' and 'development-as-expansion-of-choice', were discussed, setting a basis from which many other ideas can be understood. In addition, the South African strategy for rural development launched in 2009 (and being implemented through a plan known as the Comprehensive Rural Development Programme) was described so as to provide a glimpse of how the South African government sees the nation's path towards development.

In an attempt to highlight how ICT emerged as a viable instrument to facilitate national development goals, especially in developing countries, the evolution and revolution of ICT as well as the heightened interest in ICT4D was discussed. Using Heeks' (2009) concept of ICT4D phases, a summary of the progression of ICT4D initiatives that are characterised by limitations and outright failures of the previous phases was also considered.

Furthermore, the main criticisms regarding ICT4D were considered and key ideas summarised using Avgerou's (2008) conceptual framework as a way to gain insight into the general ideas across the main criticisms, prompting the expansion of approaches, models, theoretical frameworks and similar units, which (to some degree) suggested solutions to these issues. A select few of these units were mentioned (Sen's Capability Approach (Zheng, 2009); Sustainable Livelihoods Framework, (Parkinson & Ramirez, 2006); Nerukar's eGovernance Model, 2005; and Harindranath & Sein's Integrative Framework of ICT in Development, 2007), specifically because they directly relate to the problem under study, and Sen's Capability Approach was examined in more detail since it will be further used as an interpretive lens with which data will be analysed, where applicable.

The theoretical frameworks that deal with the role of ICT in development were left separate from those that dealt exclusively with the idea of development. This was done to clarify that, even though ideas in development have long been influenced by advances in technology (especially during the Industrialisation Revolution), ICT has only recently been included in development-thinking, and to highlight that the meaning of development is historically a highly contested issue irrespective of how it has come to be understood in ICT4D. It is at this juncture that we arrive at the following research questions.

2.8   Research questions

Having used both the development and issues associated with ICT4D initiatives (Section 2.4 and Section 2.5.3, respectively) to gain clarity on the issues relating to the problem under study, concerns raised throughout this mini-dissertation lead to the following research questions:

a) What does development mean to deep rural communities? The purpose of this question is to compare this description to that of key role players in ICT4D including the Government, Funding Agencies and organisations working in the field of ICT4D.

b) What issues do deep rural communities raise regarding their development needs? The purpose of this question is to determine that which is important to the rural communities if they are to fulfil their development needs.

c) How do deep rural communities see ICT fit (if at all) in addressing their development needs? The purpose of this question is to determine the relevance of ICT in achieving the development goals of deep rural communities.

2.9   Conclusion

Demonstrated in this chapter is the often conflicting perspectives embedded in the idea of 'development'. In an attempt to locate intricacies about development, various theories and strategies were considered – mainly those that investigate development as modernisation, the meeting basic needs and the expansion of choice.

Furthermore, this discussion carried over to comment on the actual strategies that South Africa has decided to adopt, as well a general outline of how the South African government plans to implement its current rural development strategy – the CRDP.

In an effort to provide a background of how ICT came to the fore of the development agenda that has its focus on improving the lives of the poor, especially the deep rural communities in developing countries, this study followed the computer evolution and revolution, the identification of ICT as a potential contributor to development initiatives (partly inspired by the UN MDG) and lastly, the different phased through which ICT4D has undergone thus far.

Overall, the nature of this study is rooted on the desire to understand a phenomenon; specifically, development issues that concern South African deep rural communities and the role of ICT in the context of development. Consequently, this persuades the research to utilise a qualitative research approach, discussed in the next chapter.

Chapter 3

Theoretical Frameworks

3.1   Introduction

This chapter discusses four of the theoretical frameworks that exist in the space of ICT4D. Notwithstanding the subsistence of a myriad other frameworks that examine various aspects of ICT4D, the frameworks were selected based on how well they individually illustrate the depth of the problem associated with conceptualising the role of ICT in development (as per the third research question), hence, it is not uncommon to realise that some authors prefer to address smaller parts of this complex problem and others attempt to provide a comprehensive view to the same problem. Collectively, the differences and similarities among frameworks that explore this problem are also evident in their analysis.

The discussion will include the objectives of each framework, its underlying concepts, strengths and shortcomings, as well as its relevance to the research questions under study. Lastly, the emphasis will be put on how these frameworks are related to achieve the overall goal of this study.

3.2   eGovernance Framework

Taking the view of bridging the rural-urban divide, the eGovernance framework presented is based on rationalising the comparative analysis model, eGovernance system life cycle and socio-economic rationales (Narayan & Nerurkar, 2005). It seeks to serve as a framework for delivering a value-proposition to the rural communities by recognising the vertical (concerned with the stages of the system development) and horizontal (concerned with stakeholder interaction and a delivery approach) time lag in the implementation of eGovernance projects and analyses not only the time it takes to deliver the projects, but the time such projects remain useful to the public as well.

The relevance of this framework to the problem under study pertains to the third research question, which seeks to understand the perceived role of ICT in addressing development goals, especially, those of deep rural communities in South Africa. The

following discussion explores the components of Narayan and Nerurkar's (2005) eGovernance framework (see Figure 3.3).
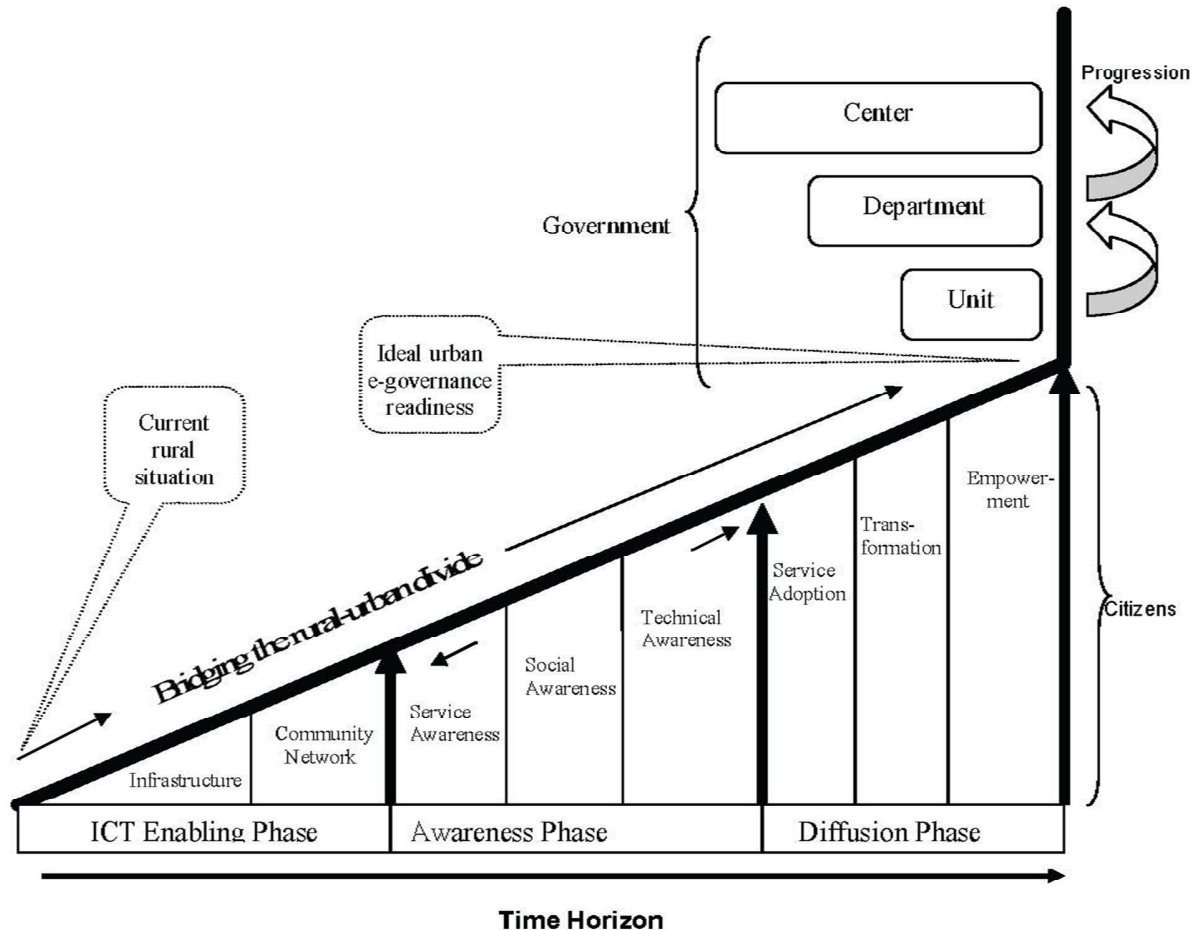
Figure 3.3: The eGovernance framework (source: Narayan, & Nerurkar, 2005)

3.2.1 ICT Enabling Phase

According to Narayan and Nerurkar (2005), this is the first step in providing ICT in rural areas and is divided into two sub-phases as follows:

- **Infrastructure creation** – provides the fundamentals for implementing an eGovernance project. A digital infrastructure such as data cables and wireless networks is barely found in deep rural areas, so this should first be provided.
- **Community network** – once the infrastructure is in place, following is the provisioning of community network centres (also referred to as telecentres).

These offer a host of information services about various sectors including education, healthcare, e-government and communication.

3.2.2 Awareness Phase

To ensure greater prospects for the success of eGovernance services, user acceptance is paramount. End users should understand how a particular service is going to create value for them. The awareness phase aims to address this aspect and is divided into three sub-phases:

- **Service awareness –** people should know what services are being offered by the new system. This should create the differentiation that is required for the service to be successful, that is, it should demonstrate how the new service is superior to the previous one.

- **Social awareness –** it is important for its diffusion that the new service is compatible with the existing cultural norms and values in a community. The issue of technology being incompatibility with cultural norms and values is well documented in ICT4D literature (Ojo 2005; Rachovides et al., 2007; Bhatnagar, 2000).

- **Technical awareness –** the perceived complexity of the technology with which the services are developed is also critical to the diffusion of such services. Well-established perceptions of this nature tend to exist in the minds of deep rural communities and should be carefully considered.

3.2.3 Diffusion Phase

The final phase in the horizontal time horizon consists of three sub-phases as follows:

- **Service adoption –** this refers to a stage where the rural community starts to use eGovernance services.

- **Transformation –** where the benefits of online services are being realised.

- **Empowerment –** this is the ultimate objective of the implementation, where the community demands for more government services online.

3.2.4 Citizens

Starting on the vertical time horizon, the involvement of the community (labelled as *Citizens* in Figure 3.3) is considered from the early stages of the implementation and it generally increases as the project approaches the diffusion phase and more people get involved. This model introduces two concepts of time, namely:

- **Time-to-public –** pertains to the time it takes to develop the eGovernance solution and get it ready for roll-out to the public.
- **Time-in-public –** pertains to the permanence of the eGovernance solution while in public use and is highly affected by the life of the software.

3.2.5 Progression

The common approach to deploying eGovernance solutions is bottom-up. In hierarchy-based organisations (such as government), this may be executed from a Unit, Department and then the Centre level. The risk-reward ratio of this strategy is clear. Logically, it is less risky and therefore less costly, to first deploy an experimental solution (also known as a pilot) to a small group of users and progressively move to a larger group as the solution becomes successful and the level of diffusion increases.

3.2.6 Value-proposition

The value-proposition of eGovernance services goes beyond the core benefits of the services themselves; it is a cluster of benefits an organisation promises to deliver to the end-user that makes the most difference (Kotler & Keller, 2006). The success of the eGovernance services depend on the value-proposition on offer and these can be classified into:

- **Service value –** this is the most apparent value offering, an eGovernance solution usually replaces existing manual processes and/or creates new services. A higher value-quotient is realised when the new service is accessible, reliable, secure and enhances user experience.
- **Economic value –** this relates to the cost-benefit ratio associated with the use of eGovernance services such as monetary (for example, where the new services cost less than those being replaced), time (such as the reduced time

queuing at government offices) and confidence in government (such as having user expectations being met without the usually frustrating processes for which many governments in developing countries are popular).

- **Social value –** perhaps the most difficult to quantify, the social value derived from eGovernance services pertains to the elimination of bias (including gender or status in the community) and unification of different strata of the community propagated by the diffusion of such technology.

Prahalad (2010) adds benefits such transparency and improved quality of service as such factors that reduce the notorious practice of government officials expecting bribes in order to services the public effectively.

In closing, Narayan and Nerurkar's (2005) eGovernance framework attempts to address a critical aspect of social exclusion that commonly exists between rural and urban communities, in a form of restricted access to government services in this instance. This is especially relevant to South African deep rural communities where it is one of government's priorities to deliver such services to remote areas, therefore, exploring the role of ICT in facilitating those objectives (Masinga, 2009).

However, the framework assumes the intrinsic value of ICT in development without questioning it. Neglecting to discuss this aspect may lead to the perception that, the development workers know what remote communities actually need; that they understand the kind of development for which these communities aspire. As will be argued in this study, the definition of development is very subjective and contextual. Even though it positions itself as a roadmap to equip rural communities to better use eGovernance, the framework doesn't provide guidance on how to quantify its value-proposition in real terms.

3.3   Integrative Framework of ICT in Development

The ambiguity associated with the role of ICT in national development is associated with flaws on how ICT has been conceptualised (Sein & Harindranath, 2004). Acknowledging the value in efforts made to develop theoretical frameworks that aim to address this issue, these authors further state that, these frameworks have merely linked ICT and development at a higher level without delving into the specific

characteristics and nature of ICT, hence (through surveying the work of others) they propose the integrative framework of ICT in development. This framework focuses on conceptualising the ICT artefact over three dimensions: ICT use, ICT views and ICT impact (see Figure 3.4).
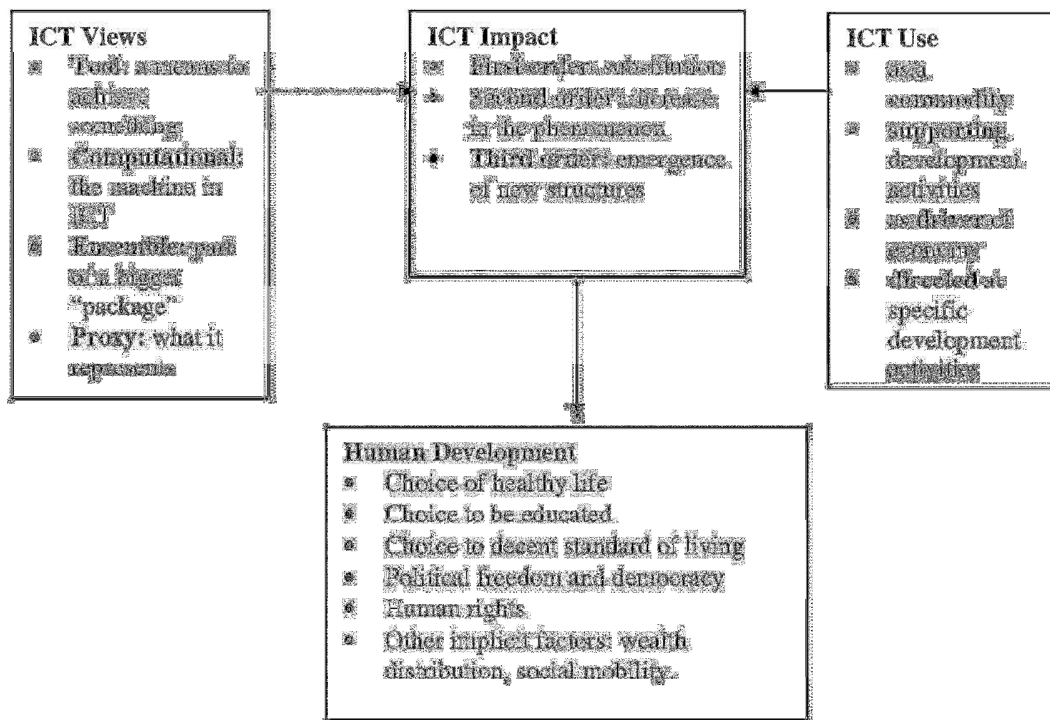
Figure 3.4: The integrative framework of ICT in development (source: Sein & Harindranath, 2004)

3.3.1 ICT Views

- **Tool view –** refers to a view where ICT is seen as a means to achieve something else, for example, a computational tool or information processing instrument.
- **Computational view –** slightly more abstract than the tool view, in this case, ICT is seen simply as a machine, for example, a mobile phone versus a landline.
- **Proxy view –** refers to a notion of 'what ICT represents', for example, ICT as an enabler of another concept.
- **Ensemble view –** refers to the idea that ICT is more than just the technology; it is contextual and is therefore affected by social and cultural dynamics.

3.3.2 ICT Use

- **ICT as a commodity –** seen as a product to be used to earn foreign currency through export, for example, off-shore software development and manufacturing of computer products. The production and consumption of ICT is often associated with a positive impact to the economy and national development.

- **ICT supporting general development activities –** helps address the challenge of collecting, organising and synthesising information for decision-making purposes when implementing development activities.

- **ICT as a driver of the economy –** given its ability to change existing practices through automation, to increase productivity and to provide cost-effective means of facilitating domestic and international trading, ICT is seen to have a macro-level influence to the economy.

- **ICT directed at specific development sectors/projects –** this refers to the value of ICT when applied to developmental projects, especially those aimed at benefiting deep rural communities, in sectors such as healthcare, employment, public information and geographical information systems.

3.3.3 ICT Impact

- **First order/primal effect –** is simply the substitution of old technology with the new, for example, having distant visits among people replaced by the use of telephones and mobile phones. While this is not necessarily an indication of development, it is nonetheless essential for the higher order effect to take place.

- **Second order/secondary effect –** refers to an increase of a phenomenon enabled by technology, for example, increased communication due to an increase in the number of mobile phones.

- **Third order/tertiary effect –** refers to the generation of new technology-related businesses and social change, for example, an increase in the number of service providers and the impact of social networking on how people connect.

3.3.4 Human Development

The manner in which ICT is viewed has an impact on its potentially developmental impact; the manner in which ICT is used helps with the classification of how they can be applied for development purposes. Together, these make it easy to

study the impact of ICT in development. This is how these three components integrate. Sein and Harindranath (2004) argue that, it is necessary to look at the tertiary effects in order to understand the influence of ICT on national development which they conceptualise in terms of human development. Furthermore, they state that this framework is valid for other development paradigms as well.

To conclude, what Sein and Harindranath (2004) achieved with this framework started simply as a categorisation of existing work in ICT4D. However, the real value of this framework lies in its ability to provide a systematic approach to thinking about the contribution each initiative is meant to have. In its application, the integrative framework forces the implementers to think about what view, use and impact they want a particular ICT4D project to achieve. The most obvious shortcoming in this framework is the lack of elaboration on the human development block, which makes it the more difficult to imagine how it can be extended to other development paradigms. Perhaps that is the intention, the results of the impact that stems from the application of this framework are dependent on the fundamental aim and context to which it is applied, therefore, there is likely to be substantial variations in the realisations of the paradigm used instead of human development.

3.4   Sustainable Livelihoods Framework

Building from the work of organisations such as the Institute of Development Studies (IDS), the Department for International Development (DFID) expanded this to produce the sustainable livelihoods framework (DFID, 1999). The main objective of this framework is to help improve understanding of livelihoods, those of the poor in particular. The sustainable livelihoods framework is a useful tool to assess the contribution of ICT to development projects (Parkinson & Ramirez, 2006). Presented below are the components of the framework.
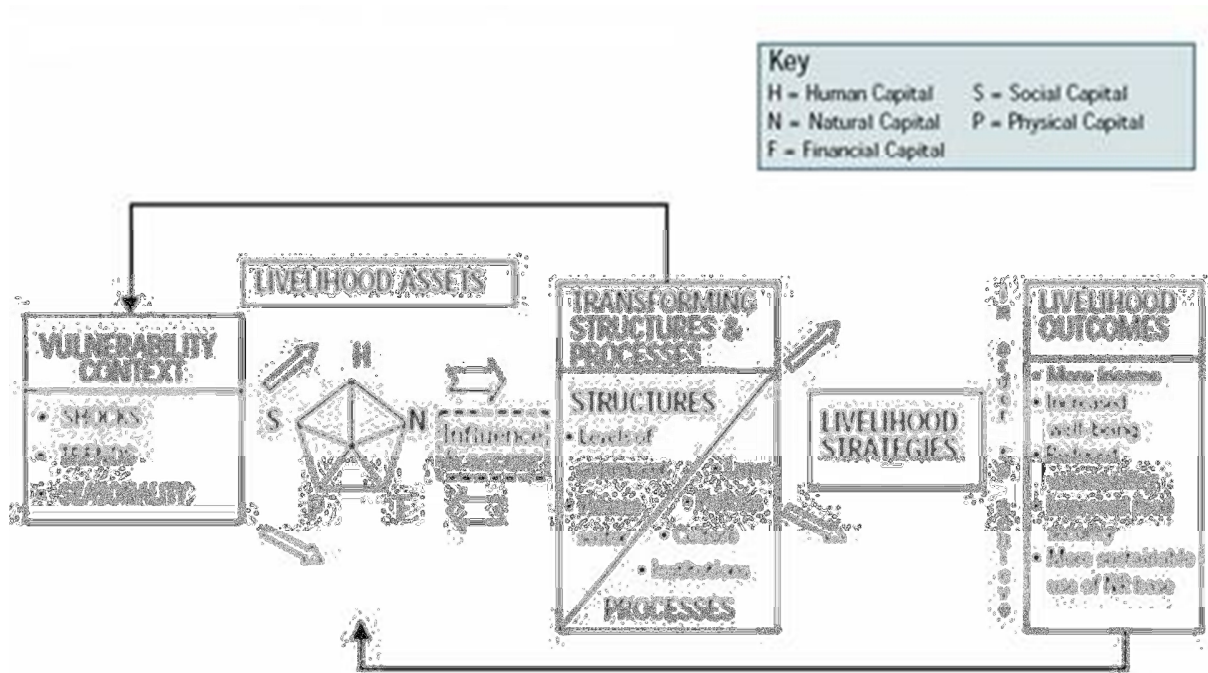
Figure 3.5: The sustainable livelihoods framework (source: DFID, 1999)

3.4.1 Vulnerability Context

This context frames the external environment in which people exist and it considers people's livelihoods according to the availability of fundamental assets that affect them. These are trends (such as population, resources, economic and technology trends), shocks (such as human health, natural, economic and agricultural shocks) as well as seasonality (such as those of prices, production, health and employment opportunities). The vulnerability context is important because it has a direct impact on the status of people's assets and the options open to them in pursuit of beneficial livelihood outcomes.

3.4.2 Livelihood Assets

The livelihoods approach is concerned with people's strengths and how they convert these into positive livelihood outcomes. Since poor people tend to have limited access to a given category of assets, they have to find ways of nurturing and combining what assets they do have in ways that will ensure survival. Logically, the asset pentagon lies 'within' the vulnerability context, but is represented separately for the purposes of visualisation. The elements of the pentagon are:

- **Human capital (H) –** represents skills, knowledge, ability to work, and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives, for example, improved access to high-quality education and healthcare.

- **Social capital (S) –** in this context, social capital refers to the social resources upon which people draw in pursuit of their livelihoods objectives through the development of relationships and the ability to collaborate and expand access to social institutions including political and civic bodies.

- **Natural capital (N) –** refers to natural resources that are useful for livelihoods including the atmosphere, biodiversity, trees, land which are often threatened by shocks (such as fires, floods, earthquakes) and seasonality.

- **Physical capital (P) –** comprises of basis infrastructure (such as affordable transport, adequate water supply and sanitation and access to information) and producer goods (such as tools and equipment used to enhance productivity) that are required to support livelihoods.

- **Financial capital (F) –** denotes the financial resources needed for people to achieve their livelihood objectives. The two main sources of financial capital considered are *available stocks* which refer to typical forms of savings such as cash, bank deposits and liquid assets; and *regular inflows of money* such as pensions and remittances, and excluding earned income.

3.4.3 Transforming Structures and Processes

Within the framework, transforming structures and processes refer to institutions, organisations, policies and legislation that govern livelihoods at all levels. Effectively, they determine *access* to items such as capital, livelihood strategies and to decision-making bodies; *terms of exchange* between different types of capital; and *returns* to any livelihood strategy in a form of economic gains and otherwise.

- **Structures –** denote private and public organisations that set and implement policy and legislation, deliver services, and perform all functions that affect livelihoods. Absence of structures can be a major limitation to development, and this is a particular problem in deep rural communities. As a consequence,

people are constrained in knowledge about the way government works, further isolating them and making it hard for them to exert pressure for change in the processes that affect their livelihoods.

- **Processes –** determine the way in which structures and people operate and interact. There exist numerous transforming processes including those associated with macro and redistributive policies, domestic and international legislation, the market as well as social norms and beliefs. Processes are important in that, if government adopts policy that restricts the poor from accessing opportunities for advancement, this may further effect social exclusion.

3.4.4 Livelihood Strategies

Livelihood strategies entrench the core objective of the framework, namely, to promote choice, opportunity and diversity in order for people to achieve their livelihood goals. According to Scoones (1998 cited in DFID, 1999), the IDS developed a useful checklist of questions to help formulate livelihood strategies such as those related to sequencing (what is the starting point for successfully establishing a certain strategy?), clustering (is there a clustering of particular assets associated with a particular strategy?) and trade-offs (in pursuing certain strategies, what trade-offs face the different people with access to different assets?). Responses to these questions shape the basis on which livelihood strategies are formulated.

3.4.5 Livelihood Outcomes

Simply put, livelihood outcomes refer to the achievement of livelihood strategies. Parkinson and Ramirez (2006) warn that, the critical aspect of this component is to resist the desire to jump into quick conclusions or hasty judgements about the exact nature of the outcomes that people pursue, but rather carefully investigate, observe and listen to them. Since livelihood outcomes most likely differ from one individual to the other; are subjective and contextual, it is unrealistic to provide a comprehensive list of these. However, examples may include more income, increased well-being, reduced vulnerability, improved food security and a more sustainable use of the natural resource base. One of the major difficulties with this component of the framework is that,

livelihood outcomes are not necessarily logical and certainly incommensurable. It becomes very hard to weigh-up one outcome over the other, however, this is the type of decision to be made whenever a particular strategy has to be adopted, and thereby introducing the need to consider trade-offs.

3.4.6 Relationships within the framework

- **Livelihood assets and vulnerability context –** assets are created and destroyed due to trends, shocks and seasonality of the context.

- **Livelihood assets and transforming structures and processes –** the greater people's assets endowment, the more influence they can exert.

- **Livelihood assets and livelihood strategies –** people with more assets tend to have more options and strategy flexibility to secure their livelihoods.

- **Livelihood assets and livelihood outcomes –** different assets are required to achieve different outcomes, it is access to those assets that enables people to escape their deprivations.

- **Transforming structures and process and vulnerability context –** processes that are established and implemented through structures affect trends in various ways, for example, well-functioning markets can help reduce seasonality effects by facilitating inter-area trading.

- **Transforming structures and process and livelihood strategies –** institutions can restrict people's choices. Generally are policies and regulations that affect the attractiveness of particular choices given their impact upon expected gains.

- **Transforming structures and process and livelihood outcomes –** structures and process can help reduce the vulnerability of people through the provision of the necessary services, especially to deep rural communities.

Finally, the strength of the sustainable livelihoods framework lies in its ability to ground the thinking about the role of ICT in development towards people-centeredness, and provides for a comprehensive approach including the identification of unanticipated risks (DFID, 1999). Moreover, it is well suited for this study as the framework was originally designed for the rural context. Criticism of the sustainable livelihoods

framework is often towards its practicality in application. Another common criticism relates to the emphasis the framework puts on the idea of self-help for poor communities to which it is applied. This may result in under- emphasis on macro-economic and political factors that influence existing realities in the local context (Toner 2002, cited in Parkinson & Ramirez, 2006). The researcher disagrees with this view as the DFID (1999), through its description of relationships within the framework, explicitly considers the role of transforming structures and processes relative to other components of the framework.

3.5 Sen's Capability Framework

Based on his critique of the typically traditional welfare economic models that he charges for taking too narrow a view to development, Sen's Capability Approach (CA) is a product of his work on this subject spanning over thirty years (Zheng, 2009). Central to the CA is Sen's (1999) argument for an integrated analysis of economic, social and political activities, and the role the various stakeholders play (including the government, market, media, legal system and public interest groups such as non-profit-organisations), the outcome of which should enhance and guarantee substantive freedoms of individuals, which consequently enables them to proceed as "active agents of change rather than as passive recipients of dispensed benefits" (Sen, 1999). It is in the exploration of this idea that Sen developed the CA. The CA can be summarised as being composed of three aspects, namely, commodities or means to achieve, capabilities or freedom to achieve, and functionings or achievements together with the conversion factors that connect them – personal, social and environmental factors (Sen, 1992 cited in Zheng, 2009).

The CA to well-being and development evaluates policies according to their impact on people's capabilities. It is concerned with questions such as whether people are being healthy; are the necessary resources present? "It asks whether people are well-nourished, and whether the conditions for this capability, such as sufficient food supplies and food entitlements, are met. It asks whether people have access to a high quality education, to real political participation, to community activities which support them to cope with struggles in dally and which foster real friendships, to religions that

console them and which can give them people of mind" Robeyns (2003). Furthermore, development and well-being are regarded in an inclusive and integrated manner with plenty attention paid to the links between material, mental, spiritual and social well-being, or to the socio-economic, political and cultural facets of life. Therefore, the CA takes a comprehensive view to human well-being and development.

3.5.1 Means to achieve

Seen in terms of their various characteristics, commodities are the means to achieve that which a person desires. Acquiring amounts of these commodities allows for the person to gain command over the corresponding characteristics (Sen, 2005). For example, owning a personal computer gives the owner access to productivity tools such as word processors and spreadsheets, the ability to communicate with people at distant locations, access to information, educational tools and multimedia for entertainment. Another way of looking at commodities is to think of them as goods and services, characteristics of which enable people to live the life they value.

3.5.2 Freedom to achieve

However, the characteristics of a commodity do not necessarily tell us what a person will be able to do with that commodity. Continuing with the example, if there is no computing infrastructure to which to connect the computer, such as a local area network (LAN) or internet, the owner is limited in what they can achieve with that commodity. If there is no additional software available for installation, this too limits the owner's capabilities.

3.5.3 Achievement

As a result of having the means to achieve and the freedom to do so, the actual achievement is realised. The core aspects of the CA discussed above are, as mentioned, connected by three conversion factors. Firstly, *personal characteristics* such as physical and mental conditions, level of literacy and place of origin, influence the type and degrees of capabilities a person can generate from resources (Sen, 2005). Secondly, *social factors* such as tradition, culture, norms and power structures play a significant role on what a person eventually achieves. Thirdly, *environmental factors* such as infrastructure, institutions and climate also play a role in how commodities are

converted to individual functionings. Following is a graphical representation of how all these aspects come together (see Figure 3.6).

Means to achieve

Freedom to achieve

Achievement

```
┌──────────────────┐        ┌──────────────┐        ┌──────────────┐
│   Commodities    │        │ Capabilities │        │   Achieved   │
│                  │───────▶│      =       │───────▶│ Functionings │
│ (Characteristics)│        │  Potential   │        │              │
└──────────────────┘        │ Functionings │        └──────────────┘
                            └──────────────┘
        Personal, social and            Personal preference,
          environmental                 social pressure and
        conversion factors              other decision-
                                        making mechanisms
```
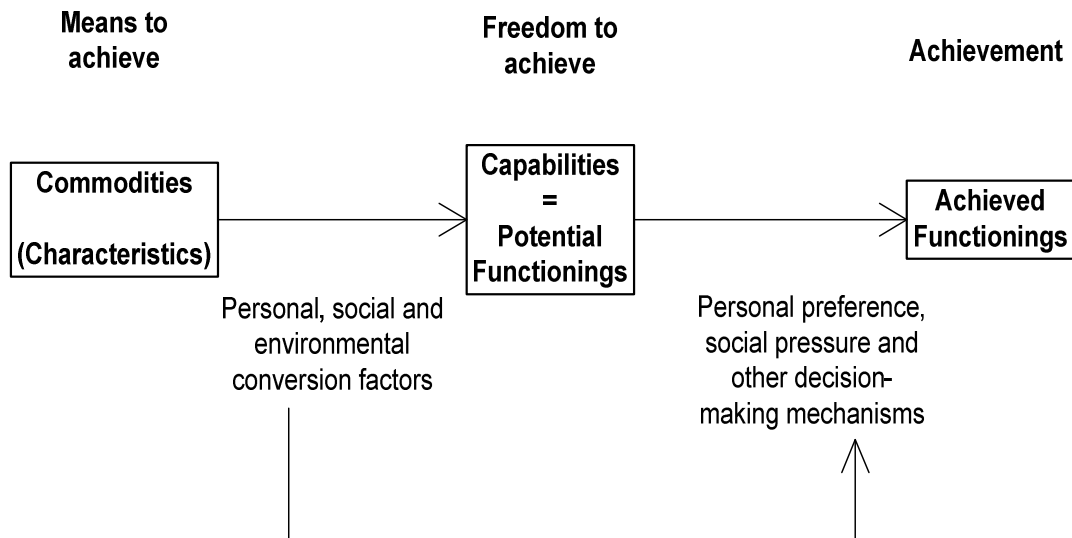
Figure 3.6: Sen's Capability Approach (source: Robeyns, 2003)

3.5.4 Well-being and agency

The main difference between well-being and agency can be found in the work of Robeyns (2003) where it is stated that, the standard of living is personal well-being related to one's own life, whereas supplementing well-being with the concept of a commitment to doing something which is not beneficial to the agent themselves shifts the focus to agency. According to Sen (1999), agency is the freedom to set and pursue one's own goals and interests, which may include improving the well-being of others. The CA is concerned with an individual's real opportunities to achieve their "well-being freedom", that is, one's freedom to achieve things that are constitutive of one's capability set; and "agency freedom", that is, one's freedom to bring about the achievements one values and which one attempts to produce (Sen, 1992, cited in Zheng, 2009).

In the end, Sen's CA is not without criticisms. One of the main criticisms centres on the difficulty with which this framework can be operationalised. Reasons given for this include the opinion that, Sen has not proposed a list of functionings nor does he provide a selection criterion for capabilities (Sugden, 1993 cited in Robeyns, 2003).

Another criticism focuses on the view that, the CA will be insufficiently critical of social limitations on people's actions, global forces and local systems of repression (Koggel, 2003, cited in Robeynes, 2003). Sen's response to this is that, the CA is intended to remain general and the selection of functionings or capabilities should be treated individually for each case. In addition, a wider interpretation of the CA accommodates divergent views on social realities given that it is positioned as only as an evaluative framework (Zheng, 2009).

3.6   How the frameworks are related

The relevance of each framework to the study was discussed in Section 3.1; that they were chosen because they adequately illustrate the complexity associated with conceptualising the role of ICT in development as this is key to providing an answer to the third research question, which attempts to understand this phenomenon. Having explained the reasons for selecting this particular set of frameworks to discuss, this section explores how the four frameworks are related.

The eGovernance framework provides a low level analysis of time-related issues allied to implementing an eGovernance solution, commonly regarded as a key aspect to employing ICT for the provision of government services to the people. The focus for this framework centres on project implementation.

At a level higher, the integrative framework for ICT in development explores the role of ICT at a more abstract plane than project implementation. In a sense, it categorises ICT4D projects. Essentially, the eGovernance framework may be explained in terms of the concepts discussed in the integrative framework. For example, an eGovernance project can be analysed in terms of falling under the ensemble *view,* and its *use* specifically for improving the quality of government services, *impact* of which can be measured according to its primal effect (such as the ability to pay municipal rates online, therefore saving people time they would otherwise spend travelling and/or waiting in queues), secondary effect (such as the government subsequently having more rates being paid as it is now easier and more efficient) and tertiary effect (such as people requesting for the ability to not only pay online but be able to schedule future payments).

The sustainable livelihoods framework focuses on issues that affect people's livelihoods and the typical relationships between these issues; a view broader than what the previous two frameworks covered. Basically, this framework can be used for both planning new development activities and assessing the contribution that these activities make to the sustainability of livelihoods. So, the sustainable livelihoods frameworks can be applied prior to or together with the conceptualisation of the development project under consideration, regardless of where if falls within the integrative framework, even though the analysis of the impact of the project may still serve as input to the assessment stage of the sustainable livelihoods framework.

Lastly, the CA adopts a human development perspective to evaluating individual well-being and social arrangements, among other things. At its core, the sustainable livelihoods framework shares a lot of concepts with the CA, making these two frameworks somewhat similar. For example, the concept of livelihood assets in the sustainable livelihoods frameworks is similar to the idea of commodities (or means to achieve) in the CA; so is the livelihood outcomes being similar to the concept of achieved functionings in the CA. However, the CA seems to be more established and powerful as it goes beyond discussing the achievement of livelihoods objectives (which it broadly refers to as freedoms to lead the kind of life people want to lead) to look into issues of agency. Another factor that distinguishes the CA lies in its strong theoretical base on development theory.

The CA is relevant to this study in two ways. Firstly, to provide an alternative view to the definition of development as considered in the first research question. Secondly, to provide a perspective on the developmental impact of ICT4D projects, an issue that is related to the objective of the third research question. For these reasons, it is the one framework that is most suitable to carry forward into the data analysis section of this research.

3.7   Conclusion

Discussed in this chapter are four theoretical frameworks that can be applied in an attempt to understand the role of ICT in development. The key focus of each framework was examined including its strengths and prominent criticisms. Perhaps more importantly, the manner in which these frameworks relate was examined, starting with the low level discussion of the eGovernance framework that deals with project implementation aspects of ICT4D initiatives, producing a sequence that cultivates into a high level and broader argument of the what is meant by development and the role of ICT in development provided by Sen's CA. In between these two frameworks, the integrative framework of ICT in development and the sustainable livelihoods framework present a classification of ICT projects in development and factors that affect people's livelihoods relating to ICT in development, respectively.

Chapter 4

Research Methodology

4.1 Introduction

This chapter will focus on describing the details of the research method applied to investigate the problem discussed in Chapter 1 and at the end of Chapter 2. It will specifically discuss how the research was designed, including the paradigm within which the study is bound, the research strategy and methodology adopted as well as the field work executed to collect data. Perhaps the most important aspect about discussing these concepts here is that, this chapter aims to partially serve as a justification for the way this mini-dissertation is designed. Furthermore, this section will delve into the details of the data collection process, the sources of data and analysis thereof (discussed at length in Chapter 5), research limitations and bias, as well as ethical concerns that affect the researcher, the participants and the environment in which this study is conducted.

4.2 Research paradigm

As defined in the research guide by Voce (2004), a paradigm (a word that comes from the Greek word 'paradeiknyai' (Voce, 2004) may be described as a set of one's beliefs that ultimately represents their view of the world. Guba and Lincoln (1994, cited in Voce, 2004) further state that this view is based on philosophical debates to which there is no ultimate truth, and should be accepted simply on faith (Voce, 2004).

The goal of this study is to gain an understanding of that which deep rural communities in South Africa consider issues barring them from achieving the kind of development they aspire for, and how these (in turn) affect community engagement in ICT4D initiatives. It should be noted that the realities of community members are also subjective and heavily influenced by their experiences.

The outcome hoped for is an expanded insight into these issues, namely: the meaning of development, issues facing deep rural communities, and role of ICT in facilitating development. As a result, the strategy used to achieve this goal is an interpretive approach. According to Olivier (2009, p.112), one of the major limitations of

this strategy is that, understanding the use of language is not a trivial task; it often depends on the meaning the user attaches to the words they use.

As such, the *ontology* of this research, defined as "the form and nature of the one's reality" (Voce, 2004), can be described as that which is cynical of the 'development' programme, that is highly influenced by the Western and North American views, upon which even the South African rural development initiatives are partially based. This study holds that, the intended beneficiaries of a development programme should decide what kind of development they want for themselves and how they want to achieve it (Hettne, 1995), as opposed to the current model that is usually prescriptive of what and how development of the so-called Third World countries, including South Africa, should occur. In addition, it is worth noting that the *epistemology*, from the Greek word '*episteme*' (and defined in Krauss (2005) as a manner in which people come to know the reality that is created by their ontology) also plays a key role in how this research is interpreted. Epistemology interrogates the relationship between the knower and what is known; it pertains to how knowledge is built (Krauss, 2005). This demonstrates that the researcher will inescapably have preconceived ideas about the problem being investigated, and therefore a bias in interpreting such a problem; something the researcher acknowledges directly, and that is acceptable.

4.3   Case study as a research methodology

Given that this is a study of interaction between actors and the environment, and that the research strategy chosen is interpretive, it is therefore indicative that, adopting a case study as a methodology is appropriate for this research. In her presentation of information systems research methods, Alexander (2009) classifies the methodology adopted in this study as Empirical-Interpretive; using a case study as a data collection process and questionnaires and interviews as instruments; together with the application of a qualitative method to analyse and synthesise the data collected. Authors such as Olivier (2009) provide a slightly different classification of research methodologies. This study follows Alexander's (2009) recommendations.

Case study research is suitable for studying phenomena which are poorly understood or little known (Leedy & Ormrod, 2005, p.135, cited in Krauss, 2006, p. 55).

In this instance, many of the views to be studied that relate to the development aspirations of deep rural areas partially concern the Tsomo community; the rest of the respondents are currently located in Gauteng, but they all have their roots either in Limpompo, Mpumalanga or the Eastern Cape province, South Africa. A case study of this nature can help investigate the expected outcomes as specified in Section 3.2.

4.4   Field Work

4.4.1   Research protocol

The research protocol is described as a process that sets out precisely what is expected to be studied and learnt about the case by Olivier (2009). Based on Olivier's (2009) guidelines on what should form part of a research protocol, the research proceeded as follows:

- the researcher made the observations
- the researcher briefed the gatekeeper about the research objectives and the way in which the filling out of questionnaires should be conducted
- a gatekeeper administered the questionnaires and collection thereof
- the researcher administered the interviews and transcription of the recordings
- each interview began with a brief introduction explaining the objectives of the study, how the interview will be conducted, confidentiality of information shared, and presentation of the approval letter from the university to prove the legitimacy of the process
- the researcher ensured that the environment under which the interview takes place is conducive and the interviewee is comfortable
- data collected was coded and categorised appropriately for open-ended and closed-ended questions in preparation for the application of the content analysis technique

Several questions in the survey were rephrased in the interview script such that, they allow for the respondent to come up with their own answers and provide more information about the subject being studied. Explaining the purpose of each question used in the questionnaire, and in the interview script, and to what research question it relates, is the two tables (Table 4.12 and Table 4.13) in Appendix II whose content can

be summarised as follows: Table 4.12, Question 1, 2, 3, 4, 8, 10 and 11; Table 4.13 Question 1, 6 and 9 are closed-ended and highly structured questions. Table 4.12, Question 5, 6, 7 and 9; Table 4.13 Question 2, 3, 4, 5, 7 and 8 are open-ended questions. Collectively, these questions address the themes stated in Chapter 2, Section 2.2 and consequently, the research questions in Section 2.8. That is, Table 4.12 Questions 1 to 5 aim to address the first research question, Questions 6 and 7 aim to address the second research question, and Questions 8 to 10 pertain to third and last research question. Question 11 is for biographical purposes and is intended to provide insight into the profile of the respondents. Similarly, Table 4.13 Question 4.3 Questions 1 and 2 aim to address the first research question, Questions 3 and 4 related to the second research question, Questions 5 to 8 pertain to the third research question, whereas Question 9 is for biographical purposes.

4.4.2   Sources of data and the process of selection

In order to improve data validity, various community stakeholders participated in this study. Through an annual career guidance project in which the researcher is involved and hosted in Tsomo (Tsojana village) since 2009, the researcher already had established a good relationship with some of the community members, the majority of whom are teachers. The principal of Tsomo High School was approached regarding this study and one teacher was delegated to help the researcher as required. Having been briefed about the research and the kind of participants needed, the selection of participants was championed by this teacher. This proved to be a wise move as the teacher not only approached the would-be participants, but also organised a venue at which the questionnaires were later administered. In addition, due to his familiarity with the community, it was not difficult for him to identify the type of participants required based on the researcher's guidelines (stated in the next paragraph). This invariably meant that the researcher had to trust the selection of the participants. Furthermore, respondents to the interview questions were selected entirely by the researcher based on the same guidelines and relationships already established through the researcher's professional and personal links.

Participants may be identified as follows:

- Community leaders – these are people who hold a leadership role in the community. Three were surveyed; one teacher from Tsomo High School; one principal from Tsojana Junior Secondary School; one minister from the local church.

- Community visionaries – these are people who are proponents of community 'development' and usually do not reside in the community. Two were surveyed; both are employed but continue to be massively involved in community development projects, especially those focusing on youth development.

- Community entrepreneurs – described similarly to visionaries, except that these people live in the community and use their business skills for community development. Two were surveyed; one developing farmer of livestock and tomatoes; one businessman in the financial services industry.

- Local people – these are the common residents of the Tsomo community in the deep rural areas of the Eastern Cape Province in South Africa (further described in Chapter 4, Section 4.3). Forty-five were surveyed; a mixture of grade 12 learners, tertiary students, the employed and unemployed local people.

- Community development devotees – these are people who have their roots in the rural communities, are proponents of community development, but have subsequently relocated to urban areas in search for a better life. Three were surveyed; one from Nelspruit and one from Venda (both now lives in Johannesburg); one from Tsomo (now living in Cape Town).

Given the nature of an interpretive approach, the researcher's actions, views and values are bound to influence the way in which data is synthesised and translated. It is the researcher who facilitates communication, sets the respondents at ease and who identifies cues during the discussions (Poggenpoel & Myburgh, 2003). Therefore, this study considers the researcher a source of data and acknowledges the bias and limitations imposed by that choice.

Crediting the relationships established during the enculturation phase, as well as the pre-existing personal and professional relationships, with a promise of anonymity, it was possible to conduct the study without having to compensate the participants. An

offer to provide a report of the research findings (at a request of the respondent) was made.

4.4.3 Ethical considerations

Proper course of action was taken to ensure that this study is conducted according to the imperatives as stated by the University of Pretoria policy and enforced by the Ethics Committee (see Appendix II for the consent form). Throughout this study, due diligence continues to be taken to ensure that this research is conducted in an ethical manner. With respect to the participants that responded to the questionnaires and the interviews, a suitable procedure was followed by firstly, ensuring that they are fully informed of the objectives of the study and their role in it; secondly, by implementing the necessary measures to protect the privacy of the respondents by conducting the process as anonymous; that responsible use of the information was both communicated and implemented to ensure that this information is strictly used for the purposes of the study, thereby preventing exposure of respondents to harm in any way possible. In addition, the researcher ensured that the integrity of the work and the scientific community at large is preserved by warranting that no part of the study is fabricated or plagiarised.

4.4.4 Data that was collected

The themes that were identified in Chapter 2, Section 2.2 inform the nature of data to be collected. Open-ended and closed-ended questions were used to address issues of meaning regarding development. Similar forms of questions were used to determine a list of development issues facing deep rural communities. Data was also collected on whether or not ICT is perceived to have a role in facilitating the achievement of development goals. To help gain more insight into this perception, complimentary questions regarding how this can be achieved were asked, including a brief inspection of mobile technology usage as a case in point. In addition, the purpose of each question in the interview script and questionnaire highlights these themes (see Table 2 and Table 3).

The process of collecting data was performed in two asynchronous steps namely:

- Enculturation – a phase during which possible participants are identified prior to data collection for the study occurring. Bernal & Knight (1997, cited in Kamimura, 2006) defines enculturation as "a process of functioning within a given set of values and cultural norms needed to integrate into a new culture". This is achieved through informal, unorganised social conversations upon which the researcher exploits the opportunity to assess whether a person, firstly, is competent to contribute to the study and secondly, willing to do so.
- Actual data collection – a phase during which the sample population identified through enculturation and other means, fills-out questionnaires or respond to interview questions according to the research protocol.

4.4.5 Data collection instruments

Since the purpose of this study is to gather factual information (subjective but factual nonetheless), interviews and questionnaires were used as data collection instruments. Ordinarily, the use of interviews would have been sufficient for data collection, as this would provide the depth required for this kind of enquiry. However, two limitations make it necessary to supplement interviews with a questionnaire that contains open-ended questions. Firstly, access to the majority of sources of data is limited by distance; the researcher's location is approximately 1 100 km from where the majority of the members of the community being studied reside. Secondly, the time required to conduct enough interviews in order to get the required data is substantial. The cost implications of this exercise prove to be beyond the means of the researcher. Nonetheless, both the use of questionnaires and interviews achieve the same goal as illustrated by the content of the questions posed in Table 2 and Table 3. The interview and questionnaire both address open-ended questions which gave qualitative data. Prior to commencing with data collection, a pilot run was conducted in order to determine that questions are understandable, unambiguous, as well as to provide an indication of the approximate time required for completing the exercise.

4.5   Data analysis

Data collected was processed broadly in two ways. Firstly, the closed-ended and highly structured questions (Appendix II, Table 2.12, Question 1, 2, 3, 4, 8, 10 and 11; Table 2.13 Question 1, 6 and 9) were grouped, analysed and represented using frequency tables for content analysis. Secondly, responses to the open-ended questions (Appendix II, Table 2.12, Question 5, 6, 7 and 9; Table 2.13 Question 2, 3, 4, 5, 7 and 8) expressed by the participants either in written or verbal form, were grouped according to the underlying ideas embedded in them, with the frequency tables enhanced as the common words are encountered, and then analysed through content analysis as well. Furthermore, all data was examined in relation to the themes that were discussed in Chapter 2, and the main problem being investigated. As such, the focus of this analysis is to understand the meaning of development as perceived by deep rural communities, identify development issues (or factors) facing these communities from which the respondent originates, and how these affect their engagement in ICT4D initiatives.

Determination of this effect was be achieved by measuring a factor's strength using content analysis, thereby establishing a count of the total number of times a particular issue is raised. The primary purpose of an interpretive approach to research is not so much about the frequency of issues raised, but rather the breath of issues or themes that arise (Klein & Myers, 1999). In other words, even if an issue is mentioned by only one respondent, it should be considered relevant. The point of counting frequencies in content analysis in interpretive research is not necessarily to emphasise the importance of themes, but rather to highlight the theme for interpretive discussion as it emerge from the data (Krauss, 2006).
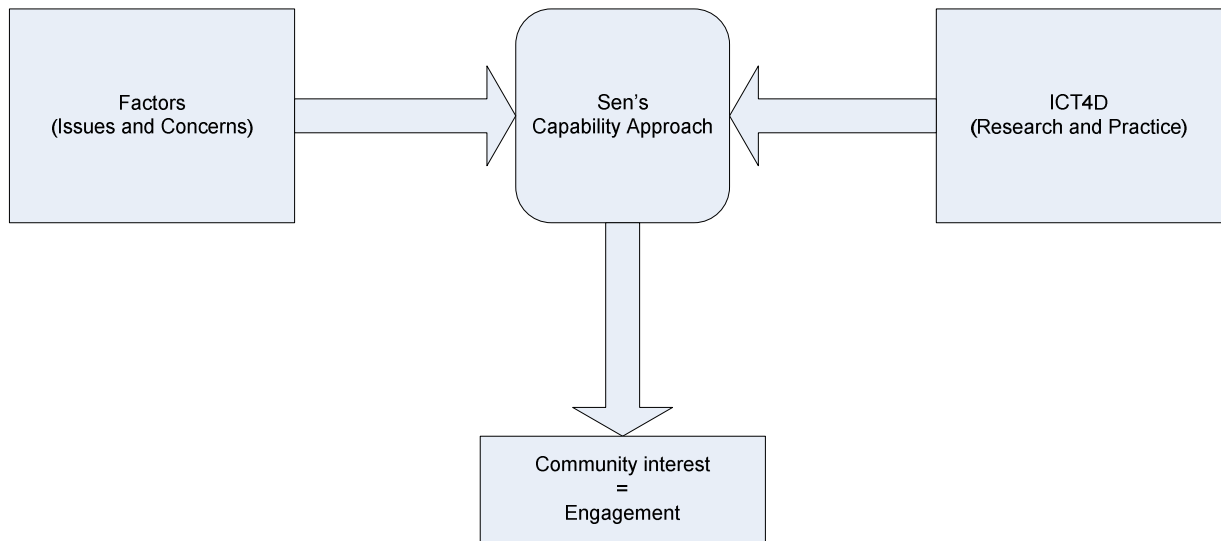
Figure 4.7: A graphical representation of how the indentified development issues will be used to measure community interest towards ICT4D initiatives

Where applicable, Sen's CA will be used as a lens through which to interpret the kind of 'development' for which deep rural communities aspire. In addition, the issues the literature identifies as being addressed by ICT4D research and practice will also be highlighted. Using deductive reasoning, conclusions will be drawn as to the level of interest rural communities have on ICT4D initiatives. Figure 4.7 provides a graphical representation of this idea and Section 3.6 provides a detailed description of the idea behind deductive reasoning and how it can be applied.

4.6   Describing deductive analysis

Deductive reasoning is the mental process of making inferences that are logical (Johnson-Laird, 2009). It begins with a general scenario and works towards a specific instance of that scenario (Byrne & Tasso, 1999). It is sometimes informally called a 'top-down' approach. Reichertz (2004) also refers to this concept as subsumption; a process of moving from an already known perspective of features seeking to find this perspective in the data in order to gain knowledge about an individual case. For example:

- If Thabo is taller than Craig
- And Craig is taller than Nomsa

- Therefore, Thabo is taller than Nomsa

This example illustrates the application of deductive analysis by drawing a conclusion (the third statement) from two known facts (the first two statements or premises).

Another common illustration of deductive reasoning can be found in mathematical study of logic, where:

- If A = C
- And B = C
- Therefore, A = B

Deductive arguments are never false or true, only valid or invalid, sound or unsound. If the conclusion must be true if the premises are true, the conclusion is said to be valid. A conclusion is sound if it is based on premises that are true (Byrne & Tasso, 1999).

It is precisely this concept that will be used to answer the research questions posed in Chapter 2. By revisiting the idea summarised in Figure 4.7, Chapter 6 will apply deductive reasoning to answer the research questions pertaining to understanding the meaning of development as well as the role of ICT in facilitating the development of deep rural communities in South Africa.

4.7   Research limitations and bias

A qualitative approach seeks to demonstrate that there is no one objective reality, but rather a multitude of realties created by those experiencing the phenomenon of interest (Krauss, 2005; Krauss, 2006). So, the methodology used in this study, namely interpretive case study, does not escape the established shortcomings of a qualitative approach as will be detailed in Chapter 6, Section 6.4. In addition, due to the nature of this approach, it is inevitable that the researcher's preconceived ideas, personal values and beliefs will influence the interpretation of data collected (Poogenpoel & Myburgh, 2003). In an attempt to create meaning and develop an understanding of the research findings, the outcome will be biased as a result these factors. Furthermore, the instruments used to collect data using this methodology also suffer from their own inherent imperfections. Limitations of a questionnaire as a

research instrument include, formulating questions such that they are clear, unambiguous and able to accurately relay that which they are designed to extract is very difficult. Limitations of an interview as a research instrument include issues of rigour and the risk of misinterpretation, therefore validation that what the respondent meant is what was understood. Many other limitations encountered relating to the research design will be described as the study progresses and detailed in Chapter 6.

4.8   Delimitations of scope

This study acknowledges the various factors such as cultural norms, values and individual beliefs have a significant influence in the content which the respondents provide as answers to the survey. However, it makes no elaborate attempt to incorporate these in analysing their responses. The history of South Africa including the effects of how colonialism has shaped people's thinking and consequently, their way of life is also not discussed in data analysis. As such, discussions of the various causes that partially led to the current state of 'under-development' in South Africa fall outside the scope of this study.

In addition, the study is limited by the inherent shortcomings within the following:

4.8.1 Research strategy

As a fundamentally qualitative approach, a survey using interviews and questionnaires yields itself to a subjective reality. According to Krauss (2005), there is not a single unitary reality apart from our perceptions. Qualitative research is a study of the "nature of multiple perspectives held by many individuals" (Krauss, 2006).

4.8.2 Data collection method

The interpretation of data collected using interviews and questionnaires opens itself to vulnerabilities of simply misunderstanding what the respondent intended to say. Also, it is not unnatural for respondents to provide answers that may not necessarily reflect their truth about a subject, but that which they think the interviewer expects to hear.

4.8.3 Researcher bias

This will especially be evident in cases of interpreting literature and data collected. Thus, beyond the researcher's declarations throughout this dissertation, it is important to always be cognisant of the partiality embedded in such interpretations. These and more constraints are mentioned as the mini-dissertation develops.

4.9 Conclusion

Considered in this chapter are the many aspects pertaining to the research design for this study. In summary, these include the research method which covered certain facets of ontology, epistemology as part of the research paradigm and then the research strategy and methodology followed while conducting this study. Furthermore, the data collection method, instruments used and issues relating to limitations, ethics and bias were also discussed. In addition, a brief description of how data analysis will be performed was conferred. The following chapter provides more insight about this aspect and discusses the findings of the study.

Chapter 5

Data Analysis and Findings

5.1   Introduction

This chapter focuses on examining data that was gathered during the data collection process, through the use of questionnaires and interviews. Frequency tables for content analysis are used to provide graphical representations of data, grouped by theme, and a six-step implementation of content analysis (as an appropriate technique to count worded content) is also used where applicable. Data analysis is carried-out, where themes under a category are described, inferences about the data collected are made and recounted with the literature review, setting a foundation to refer to Sen's CA where appropriate (described in Section 3.5). This is done in order to provide a perspective on the meaning of development. Section 4.6 in Chapter 4 attempts to link the analysis of the content to the research questions and accomplishes this by describing how a technique known as deductive reasoning will be applied, thus providing answers to the research questions as will be presented in Chapter 6.

5.2   Summary of data collection and coding

Subsequent to the establishment of both professional and personal relationships, participants were identified and later requested to take part in the survey. Many of them filled out hard copies of the questionnaires with only two participants using electronic medium; that is, they got the questionnaire via email, filled it out as a Microsoft (MS) Word document and emailed it back. A total of 52 questionnaires were sent out and all of them returned. As described in Chapter 4, Section 4.4.1, a gatekeeper was critical in organising for the majority of questionnaires to be completed in groups and collected immediately thereafter. Each questionnaire took approximately 30 min to complete. Interviews on the other hand, which were audio recorded, took between 30 and 60 minutes. Meetings were set up with the interviewees, the questions read-out to them and the conversation recorded. It is imperative to mention that, during the interview, certain questions prompted a spontaneous discussion on related topics.

As a common practice in qualitative research, transcription was used (Oliver et al., 2005) to code the interviews. Specifically, a combination of naturalised and denaturalised transcription method was adopted. The logic behind this method was to exploit the strengths of each approach fully; that is, the strength of the naturalised approach lies in its ability to capture each and every utterance in as much detail as possible. The strength of the denaturalised approach lies in depicting the meanings and perceptions created during the interview (Davidson, 2009; Oliver et al., 2005). Combining these two extremes of interview transcription also reduced the constraints inherent in the individual methods; the main ones coming from critical discourse analysis that, by keeping the transcript in its natural form, the influence of the society and ideology are ignored (van Dijk, 1999) when applying the naturalised approach; and for the denaturalised approach, the main criticism centres around possible misinterpretation of what the respondents meant which is further complicated by the use of slang, geo-ethnic accent, dictation and involuntary as well as non-verbal vocalisation (Oliver et al., 2005). The additional limitation is that of translating some responses from isiXhosa to English, an exercise on which it was entirely the researcher's understanding of the content that was considered.

In preparation for analysis, themes that emerged from the literature review and expected from the study were organised as a basis for the analysis. Not all the original themes got used and new themes got added as the study developed; a feature characteristic of qualitative analysis (Krauss, 2006). Consequently, the questions that were derived from these themes enabled the creation of frequency tables, which were later used for content analysis. Section 4.5 further explains how content analysis was used. Following is a brief description of the community on which the case study is based.

5.3   The Tsomo community

5.3.1 Demographic overview

Tsomo (marked in Figure 5.9) is located in of the former Transkei, approximately 200 km from East London in the North-Eastern region of the Eastern Cape province (see Figure 5.8), South Africa. It has 132 villages that fall under its municipality, Intsika

Yethu Municipality (IYM) which in turn falls under the Chris Hani District Municipality (CHDM), including the village of Tsojana (IYM, 2004). The Eastern Cape covers the second largest area of land (13.9%) of South Africa and has a population density of 38.0%, with the CHDM occupying 21.7% of that land, 21.9% of that density and has a population size of 12.6% (over 810 300 people) of the total number of people in the Eastern Cape (Stats SA, 2004). According to the Census 2001 of Stats SA (2004), over 90% of the households in the IYM are classified as non-urban, the majority of the population are students and learners, with a significant number of people employed in the community sector, agriculture and construction (where as much as twice this number of people are unemployed). It is worth mentioning that, the data provided in the Census 2001 contained significant values under the 'not applicable' category of various reports for which the researcher couldn't adequately account, therefore the researcher warns that the numbers discussed above may be inaccurate even though they present the general demography of the IYM. Lack of data available specifically for Tsomo made it the more difficult to discuss the formation of this community in relation to the CHDM.

Members of the communities in this area are mostly Xhosa-speaking people; the researcher's home language. According to Nkonki (2006), this area has inadequate infrastructure and limited services such as healthcare, telecommunication, transport and banking. She further states that, even with the apparent commitment from government, basic education, farming, ICT and good governance still require major improvements. These issues are not very different from those which Krauss (2009) describes in their work with the community of Thugela Ferry in Kwa-Zulu Natal, South Africa; issues that the partnership between the University of Fort Hare, Rhodes University and the Dwesa community in Eastern Cape aim to address; and to which Eliasz and von Staden (2008) provide a detailed synopsis of the community and the Dwesa project. These authors describe these communities as 'deep rural'. Thus, given the demography of Tsomo region and the challenges they face, this community in the Intsika Yethu Municipality provides a relevant case with which to study the problem under consideration.
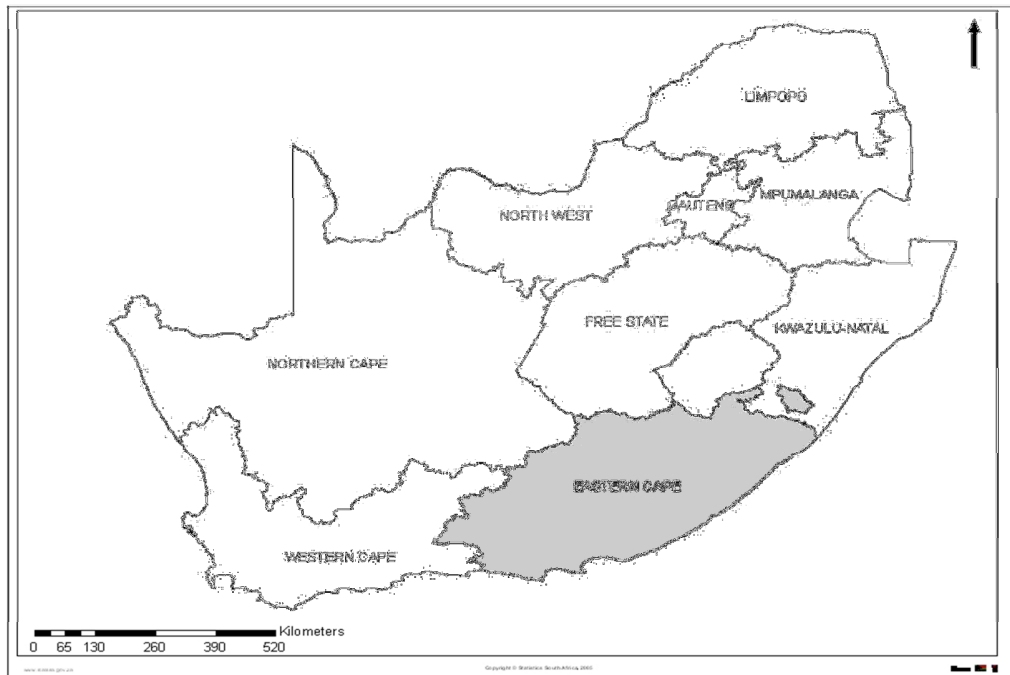
Figure 5.8: The location of the Eastern Cape Province in South Africa (source: Statistics South Africa, 2004)
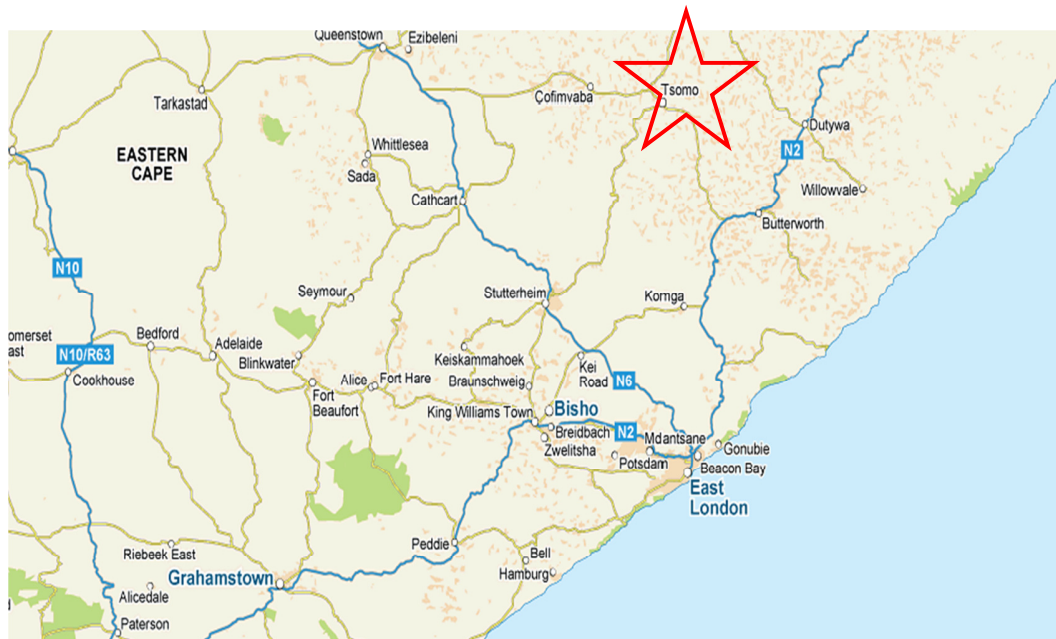
Figure 5.9: The location of Tsomo in the of the Eastern Cape, South Africa (source:
http://www.mapstudio.co.za/locationmap.php?loc=Tsomo)

5.3.2 Establishing Tsomo as a research site

The researcher counts himself fortunate to have had the opportunity to be part of the volunteers who participated as organisers and facilitators of the first careers guidance project in the Tsojana village in Tsomo that started in 2009 and since hosted annually at the Tsojana Junior Secondary School. The idea for the project came from a family that grew up in this village who have since moved to the city of Johannesburg but remain very involved and committed to the development of this community. Having seen the need for such a project, this can be viewed as a way in which they are now ploughing back into their community. The primary objective of the project is to encourage learners to pursue tertiary education and assist them in selecting appropriate career choices. That is how the researcher established a relationship with the residents of Tsojana and surrounding villages in the Tsomo district, such that, when the researcher contacted Tsomo High School about this study, they were more than happy to take part.

5.4 Categorisation of content

Data collected is structured according to a list of objectives that are set to achieve answers to the research questions. Following is a summary of how this content is catalogued into four categories.

Categories	Questionnaire	Interview
Category A	The first five questions [1-5] focus on understanding a respondent's definitions of 'development'. Questions [1-4] are closed-ended with only [5] is open-ended.	The first two questions [1-2] focus on understanding a respondent's definitions of 'development'. Question [1] is closed-ended and question [2] is open-ended.
Category B	The next two questions [6-7] attempt to extract from the respondents what major things they desire if their communities are to become a 'developed' and which of these should be prioritised. Both questions are open-ended.	The next two questions [3-4] attempt to extract from the respondents what major obstacles are to be overcome for the community to become developed and which of these should be prioritised. Both questions are open-ended.
Category C	The next three questions [8-10] aim to gauge a respondent's view of whether or not ICTs can be useful in facilitating the achievement of a community's development goals. Questions [8 & 10] are closed-ended, [9] is open-ended.	The next four questions [5-8] aim to gauge the respondent's view of whether or not ICTs can be useful in facilitating the achievement of a community's development goals. Furthermore, they seek to investigate possible difficulties that may arise from the usage of ICT's in for this purpose. Only question [6] is closed-ended, the rest is open-ended.
Category D	The last question [11] is a biographical set of sub-questions to help describe the demography of the respondents. It is closed-ended.	The last question [9] is a biographical set of sub-questions to help describe the demography of the respondents. It is closed-ended.

Table 5.2: A summary of the categorisation of questions from the data collection instruments

5.5 Content analysis

Applied in this section is the content analysis technique that was mentioned in the previous chapter (Section 3.5) which adopts List's (2004) categorisation of content analysis that is composed of six main stages as follows:

- **Selecting content for analysis**

    The content to be analysed is formed of fifty-two questionnaires and three interviews. It should be noted that the limitations inherent in the process of content analysis make it impractical if not outright impossible to be comprehensive in the way in which analysis is conducted. That is, analysing the content in all possible ways (List, 2004) was not realised. The superlative approach was to use the research questions as a guide in selecting the content to be analysed.

- **Units of content**

    Using questionnaires and recorded interviews, the content to be counted are words that form answers to the questions found in this text. When a word appears, its counter is incremented by a value of one. This is performed iteratively until the end of the content is reached.

- **Preparing content for coding**

    Fortunately, content in the questionnaires was already in written format, therefore, readily available for coding. On the other hand, interviews were in audio format. A choice on how to best transcribe this information lay between a naturalised approach (where words and sounds are captured in as much detail as possible); a denaturalised approach (which best depicts the meanings and perceptions created during a conversation); or a combination of the two (Oliver et al., 2005, p. 1277).

- **Coding the content**

    The content of the questionnaires and interviews was captured into an electronic format. Firstly, for each closed-ended question, a respondent's choice is allocated a value '1' otherwise a '0', then a sum is calculated for each choice. Secondly, responses to the open-ended questions are grouped according to their main idea, subjected to the researcher's interpretation. Given the study's interest on the meaning of things, a denaturalised transcription approach provided a superior option

to achieving this, and a software program called Express Scribe was used to implement the transcription. Like many other transcription software, Express Scribe is equipped to adjust the audio speed to allow the typist to capture the conversation as well as rewind and fast-forward the recording.

- **Counting and weighing**

    The values captured in stage 4 above are then used to calculate the sum for each choice as it appears on subsequent questionnaires and interviews.

- **Drawing conclusions**

    Using all the content analysed, the findings are then discussed and summarised with a focus on how the way they provide answers to the research questions.

    Unlike in cases where relationships between data entities needs to be analysed, the expected themes dictate it unnecessary to apply concepts such as data correlation, which could be achieved using Correspondence Analysis (described in Krauss, 2006, p.112) and many other similar data modelling techniques used for similar purposes.

5.6   Analysis of data

5.6.1 Interpretation of the meaning of development themes (Category A)

Data collected and classified as Category A seeks to understand the respondent's definition of the idea of development. In an attempt to fill the gap left by many earlier definitions of development, Sen (2005) defines development as the freedom to live the life that one values and has a reason to value; he further asserts that, it is only when the many deprivations, impoverishment and oppression are overcome that individual agency can be achieved.

To contextualise the various themes that 'define' development, as perceived by the respondents to this study, Table 5.3 contains a profile of the sample population grouped by the factor of interest (such as residential area).

Residential area [1]		
Urban	Rural	Other
2	53	-

Duration of visits [2]			
N/A	1week	2-3weeks	>3weeks
16	-	2	37

Knowledge of challenges [3]				
Excellent	Good	Average	Poor	Bad
8	14	13	17	3

State of rural community [4]		
Developed	Under-developed	Other
15	37	3

Table 5.3: Background details of respondents

As reflected in Table 5.3, the majority of respondents currently reside in the rural areas of South Africa, specifically, in the Tsomo community. This is important as it strengthens the relevance of the case study, given the broad problem being investigated as described in Chapter 1. All those who currently reside in urban areas, the duration of their visits to the rural areas (where they grew up) is between two and three weeks long. The researcher noticed that, some of the respondents did not correctly answer the question [2] in the questionnaire because, even though they reside in a rural area (as shown by their answer to question [1]), instead of choosing 'N/A' for question [2] they chose '>3 weeks' (that is, greater than three weeks), possibly due to a lack of understanding of the instructions.

Entirely based on a respondent's own assessment of their knowledge of the challenges facing the rural communities, only a few respondents described it as excellent and a substantial number of them rated their knowledge of this issue as poor. The rest almost equally described their knowledge as good and average. The majority of respondents perceive their communities as under-developed; with a few saying their communities are neither developed nor under-developed. The rest viewed their communities as developed.

Notwithstanding the prejudice embedded in all respondent's answers, a feature that is intrinsic in qualitative research (Krauss, 2006; Olivier, 2009), the collective purpose of these four questions is to establish a profile of respondents who participated

in this study, thereby providing a degree of context as to the information they give. For example, a sample population composed of a high number of people who do not originate or reside in deep rural areas will not provide a reliable narrative of the experience of rural dwellers.

Perhaps the most important question in Category A is [5] (see Appendix I), as it deals with one of the most critical debates in the ICT4D community – that of the meaning of development. For this question, responses from the survey are grouped according to the following themes (as highlighted in the literature review in Chapter 2). Table 5.4 contains themes that deal with the perspectives about the meaning of development.

	Theme	Concepts	Total
A1	Development as having the basic needs met	Provision of food, healthcare, shelter, electricity to fulfil basic human needs	28
A2	Development as growth and change	Low employment rate, high national GDP, better physical quality of life, well regulated market conditions	16
A3	Development as the ability to help ones-self	Achievement of independence, self-reliance, sustainability	5
A4	Other definitions of development	Manifestation of agency, community oriented development	3

Table 5.4: A summary of Category A themes

5.6.1.1 Theme A1 - Development as having the basic needs met

This theme groups ideas that have their underlying thoughts about the meaning of development relating to the concept of defining development as having the basic human needs met. The results confirm that issues of human basic needs inform the

respondent's view of the meaning of development. In other words, unless certain human basic needs are delivered upon, some respondents think deep rural communities will remain under-developed. Many responses specifically mentioned what these should be:

> *"Development means that every basic needs that are needed by community are provided e.g. water, electricity, road infrastructure"* – *Respondent 6*

> *"...a place that is having electricity, water taps and the RDP houses..."* – *Respondent 2*

> *"To me the word development means or refers to the building or satisfaction of the community or building up needs of the community. The community is not well developed, there is shortage of water supply, well developed schools, electricity and roads are not improved"* – *Respondent 16*

Central to these definitions is an idea similar to those fundamental in the BNA discussed in the literature review in Chapter 2, Section 2.4.2, that, in order to develop poor communities, certain minimum requirements of a family (such as adequate food, shelter and essential services) must be met.

5.6.1.2 Theme A2 - Development as growth and change for the better

Another common definition from the results perceives development as growth, and associates growth with a 'change for the better'. Ideas grouped under this theme reinforce the idea of 'better-ness', but do so without explaining what is meant by better living or having better things. This is not unrelated to the ideas expressed in Theme A1. According to these results, growth in an economical sense includes improvements in agriculture, infrastructure, job opportunities and a general change towards better living conditions, some of which are brought about by firstly achieving the provision of factors mentioned in Theme A1. Some responses are as follows:

> *"Development means to be better than what you were, before time, such as an environment or area which has better things, not suffering"* – *Respondent 47*

> *"The word development means creating opportunities like job opportunities. Increasing the standard of living in communities, decrease in poverty and crime.*

And also creating the infrastructure so that everyone cal leave a better life" –
Respondent 33

"Development means something that is growing and having an achievement at
the end of the day" – Respondent 20

Revisiting the fuzzy meaning of the word 'better' as used in the descriptions of the
meaning development above, it can be inferred from these results that 'better' relates to
improvements in livelihood. Proponents of the 'development-as-economic-growth'
approach cite that an increase in aspects such as employment and country GNP result
in development, and consequently lead to a better standard of living for the citizens.
These results confirm that some deep rural dwellers hold a similar view. To some
extent, ideas in this theme support the idea of 'development-as-economic-growth'
discussed in Chapter 2, Section 2.4.1. Improvements in the physical quality of life
through job creation stirred by economic activity may help increase the capability of
people to afford attaining the things they want; something that can be perceived as
being 'better' than those who cannot afford those things.

5.6.1.3 Theme A3 - Development as the ability to help ones-self

Concepts grouped under this theme relate to the idea of self-sustenance and
independence, both as individuals and as a community. Not as prevalent a definition in
the survey results as the two previous themes, central to Theme A3 is the idea of self
reliance. Most responses from Themes A1 and A2 made no explicit mention of who is
responsible for bringing forth the development for which they aspire. Of the few that did,
government was seen as the one responsible for making development possible. In
slight contrast to this observation, under this theme one respondent who did mention
the aspect of accountability defined 'development' as follows:

"It means that the needs that we need we afford to reach them all what we want
is there for us. We don't need much help from the government we are suitable.
Much things we have no matter not all but some" – Respondent 19

The author chose not to edit this (and every) response even though it obviously can be
improved grammatically, thereby making this response more understandable. In
essence, what the respondent is saying can be interpreted as that –

Development means being able to afford some (if not all) of the things that we want without necessitating a lot help from the government.

Translated from isiXhosa, while defining her idea of development during the interview one of the interviewees said that, development should:

"...not only tell people, but make them understand that one doesn't have to be working for somebody else in order to be successfully, one can be self-employed; do it for yourself. And become independent and not necessarily be employed... – Interviewee 3

This idea emphasises something more than having one's needs met (Theme A1), but also the way in which those needs are met and sustained; the call for independence in the quest for a better life (Theme A2); an undertaking to be free to achieve that which people desire for themselves; an idea strongly aligned with the way of thinking about 'development-as-the-expansion-of-choice', thereby supporting the discussion in Chapter 2, Section 2.4.3. Again, the link between this theme and the previous two themes is evident, even though Theme 3 provides a broader meaning of development.

Sen (2005) considers the key items mentioned in this definition as a vector of commodities or 'means to achieve' something, characteristics of which can be converted into capabilities an individual can use to achieve the kind of life they value. The BNA doesn't appear to discuss the aspect of real opportunities a person has regarding the life one may lead. Are people with adequate food and shelter free to live the life they value? Not necessarily. Seemingly, the BNA treats these commodities as an end in themselves. Furthermore, an analysis of the meaning of development through the lens of economic development has a tendency to neglect the social aspects that are key to the well-being of people; these are restricted views to defining development according to Sen (1999). Defining development in terms of the expansion of people's choice relates to the manner in which the CA views development, but the CA goes beyond this to cover issues of agency as described in Chapter 3, Section 3.5.4.

5.6.1.4   Theme A4 - Other development ideas

Theme A4 represents the remainder of ideas that could not be grouped under the previous three A themes as there was not clear association between them or the researcher found the need to highlight separately. Even though they are not entirely isolated to the ideas already discussed, some ideas that came out as definitions of development include the view of development as:

> *"The word development means something that grows up with his/her community by doing good things to the people when he/she developed" – Respondent 1*
>
> *...development to me is got to come when people believe that they can be better than they are, and they can take responsibility for that … how do we liberate the individual so that the individual becomes an agent for development for himself or herself; for his own or her own family; for the community and for the nation – Interviewee 2*

The results confirm that this theme supports the three ideas of development already conveyed, however, one aspect in the responses has to be highlighted, namely, the manifestation of agency. Agency can be described as the act of helping others develop after having developed yourself (Sen, 1999) and many of these authors view agency as the ultimate outcome of development.

Ending this categorisation, it is important to realise that this discussion is an attempt to address the first research question. Evidently, the often differing views about the meaning of development examined in Chapter 2, Section 2.5, have come up strongly in the responses provided during this study, and many can be categorised accordingly (see Table 5).

5.6.2   Interpretation of issues facing deep rural communities themes (Category B)

Adopted in this section is Sen's (1999) concept of the 'different kinds of freedoms" – social, political and economic freedoms. This suggests that things people can achieve are influenced by social opportunities that exist, political liberties they enjoy and economic facilities available to them. In addition, it further postulates that there are many other critical enabling conditions including good health, education and institutional arrangements for these opportunities (Sen, 2005).

Category B attempts to identify a list of factors (and the number of times they get mentioned by a respondent) that rural communities bring forth as issues that must be overcame if they are to become a developed community. The factors are grouped into infrastructural issues, social opportunities and economic facilities. Table 5.5 summarises all the themes to be discussed in this section.

	Theme	Concepts	Total
B1.1	Infrastructural issues as basic needs	Water, electricity, food, toilets, houses	95
B1.2	Infrastructural issues as the basis or framework of a system	Roads, transport, communication technology and other infrastructure	35
B2	Social issues	Education, church, sport, culture, social institutions, no crime, no poverty	49
B3	Economic issues	Jobs, land, natural resources, development projects, small businesses	22

Table 5.5: A summary of Category A themes

5.6.2.1   Theme B1 – Infrastructural Issues

The Oxford dictionary compiled by Hawkins (1988) defines the word *infrastructure* as "the subordinate parts and installations etc. that form the basis of a project. Another source, Dictionary.com (Anon, 2010), defines *infrastructure* as "the fundamental facilities and systems serving a country, city or area as transportation and communication systems, power plants and schools".

This theme groups the issues that concern deep rural communities under two categories, *basic needs* and *infrastructural system issues*. Looking at the results from the survey, it is clear that the word 'infrastructure' is used not only to refer to infrastructure as a system (as per the dictionary definitions above) but also as the

primary items individually. The problem associated with this is that, it may sometimes be unclear what the use of the word 'infrastructure' refers to; the individual item (such as electricity in the houses) or the system (such as the electricity network)? For example, the reply from Respondent 15 indicates that, access to water is an issue in the same way as is 'infrastructure' – *"...we need water...and infrastructure"*. It is difficult to understand what the respondent really means without asking further questions. Therefore, using his discretion, the researcher decided to partition the results for this theme under the two categories, with the *basic needs issues* grouping focusing strongly on items that may sensibly be allocated to an individual, and *infrastructural system issues* relating to those issues for which it makes no sense to allocate to an individual. This categorisation is debatable and can be disputed. Furthermore, all issues are represented as name-value pairs, where the value is the frequency of times the associated issue was mentioned in the results. In addition, the frequency does not signify the importance of one issue of the other, that is, even if an issue has a low frequency, its importance to the study is not affected. The fact that it was raise makes it as important as the rest of issues with a higher frequency. This perspective is core to the interpretivism standpoint.

According to Gabriel (1991, p.17), the basic needs approach gives priority to meeting the basic needs of the people. It seeks to provide an adequate standard of living for the health and well-being of individuals and their families, including food, clothing, housing and medical care and necessary social services as dictated by the circumstances of lack of livelihood which may be beyond the individual's control.

Table 5.6 shows what the respondents raised as a list of issues that require being provided for before deep rural communities can become developed.

Basic Needs Issues	
Water	37
Electricity	30
Food	1
Toilets	17
Houses	10

Table 5.6: A list of human basic needs concerning deep rural communities

According to these results, most respondents state that access to water is essential to the development of their deep rural community. It is noteworthy how low is the number of respondents who think that food is pertinent to their development. This does not necessarily mean that food is less important, nor does it imply that the solution to these issues should be implemented in any order. It is possible that a significant number of respondents do not live in dire circumstances of food shortage.

Infrastructural System Issues	
Roads	23
Infrastructure	6
Transport	1
Communication Technology	5

Table 5.7: A list of infrastructural concerning deep rural communities

Looking at infrastructure as a system, lack of road infrastructure came up as the most mentioned issue, and transport as the least. Communication technology and *infrastructure* were the other two issues raised. Respondents seem to differentiate between road infrastructure (the construction of pathways from point A to point B) and transport infrastructure (the availability of carriers to move people and goods from point A to point B, say from the village to town). It is possible that this outcome reflects the community's acceptance that the availability of transport (or lack thereof) is dependent on the provision of a road infrastructure. Therefore, if such infrastructure is inadequate,

concerns about transport may be of a lower concern; and that a positive change in the road infrastructure is likely improve to the transport infrastructure.

Referring back to Sen's CA, the lists of issues listed in Table 5.6 and 5.7 can be classified as the commodities, characteristics of which a person can use as a means to achieve that which their desire. The concepts discussed under this theme support not only the literature covered in Sen's work, but that which many promoters of the BNA as a viable method to address development challenges in Third World countries (Hettne, 1995).

5.6.2.2 Theme B2 – Social Issues

Another group of issues that were raised as principal to achieving development are social opportunities in the form of improved education, health, safety, sport, cultural activities, social clubs, low crime and poverty (see Table 5.8). The construction of clinics and enhanced educational facilities emerged as the most and second-most mentioned issues respectively. Again, these numbers do not necessarily translate to the importance of any one issue over the other; they merely indicate the number of times that particular issue was mentioned.

Arguing from a youth development perspective, World Bank's WDR (2007, p.2) supports Sen's view that, with the right opportunities created (in the form of improved access to quality education and health services; providing young people with the platform to express their views), expanding their capabilities (to ensure they have viable choices) and providing adequate support systems where they can effectively recover bad choices made, young people can lead successful lives. Using the same model, this argument can be extended to include those living in deep rural communities.

Social Issues	
Education	16
Church	3
Sport	4
Culture	1
Clinics	18
Institutions	2
No Crime	1
No Poverty	4

Table 5.8: A list of social issues concerning deep rural communities

5.6.2.3 Theme B3 – Economic Issues

The last group of factors under this theme are pertinent to economic wealth for which the respondents aspire in order to live a better life, according to Respondent 1. Economic facilities can be described as opportunities that enable the community to participate in trade and production of goods in order to help generate personal abundance and public resources for social facilities (Sen, 2005).

Economic Issues	
Jobs	4
Land	1
Natural Resources	4
Development Projects	9
Small Business	4

Table 5.9: A list of economic issues concerning deep rural communities

Without giving any specific details or examples, most respondents mentioned the implementation of development projects as the most pertinent issue in overcoming economic difficulties. Some of the details that could be extracted in this category include

projects to create jobs, implementation of training programs to help with skills development.

To summarise Category B themes, all issues discussed in this category are markedly related to each other. That is, with fitting skills the people increase the chances of them creating and securing employment, and the productive use of land and natural resources will also help in improving their quality of life, something to which Respondent 3 alluded. "One manifestation of the greater participation of the poor in economic growth is the fact that the growth elasticity of poverty reduction falls with greater income inequality. In other words, the impact of (the same amount of) growth on poverty reduction is significantly greater when initial income inequality is lower" (WDR, 2006, p.9).

As an attempt to answer the second research question, the discussion of these themes under the concept of social and economic freedoms resulted in the identification of the main factors affecting deep rural communities. Unsurprisingly, there is a strong relationship between the respondents definition of development (in Category A) with what they suggest as major issues that need to be overcame in order to achieve that development (in Category B). The lists of items contained in Table 5.6 to 5.9 provide an answer to what these main factors are.

5.6.3 Remarks on the perceived role of ICT in development (Category C)

The discussion of themes in Category C aims to determine, firstly, whether or not the respondents think ICT has a role to play in helping their community achieve the kind of development they seek, and secondly, to establish how deep rural communities use cellular phone technology by surveying the features that they commonly use. The following segment illustrates the findings of these two goals. The majority of respondents think ICT has a role to play in facilitating the development goals of deep rural communities. So what does this mean?

Revisiting the results, the most common reason for their answer is that ICTs enable instant communication among people regardless of distance. However, some respondents see the usage of ICT for developmental purposes as something broader

than communication. Using the following example, Interviewee 2 described this point as follows:

> *Just take a project we're doing now at home... there's people sitting in Tsomo, there's people sitting here (in Johannesburg), we are designing the day (Heritage Day celebration) and … I can tell you, over the four months the people involved have met only once physically. All the planning is being carried out via email, internet, SMS and phone conversation – Interviewee 2.*

One other supporting statement made was...

> *"I think ICT would help by doing work easier for old people and even for young children. Example when they are applying for their first year in universities can apply easily by emailing, using cell phones and computer and internet" – Respondent 11*

It is worth noting that, even though some people understand the advantages of using ICTs there is still preference for the more long-established method of doing things. For example, Respondent 5 says:

> *"...cell phones, internet and personal computers are the things to search about something that you want to know about so these things cannot help develop my rural community. You have to go through the helper and talk face to face"*

This underscores what is sometimes considered an overlooked aspect in development approaches, which are based on the presumption that ICT is intrinsically good for development, is the view whether or not the perceived beneficiaries of development initiatives actually see ICT as useful at all. From the survey, it is evident that a small number of respondents do not see ICT as having a role to play in development of their community.

> *"...cell phones and internets are not the major sources of development, they are not the needs, someone can survive without them" – Respondent 12*

Another such criticism by Interviewee 2 from the point of literacy is that, the ability of people to communicate effectively in writing is not being improved but rather

destroyed by the use computer software which provides spell checks and the shorthand style commonplace in mobile messaging nowadays.
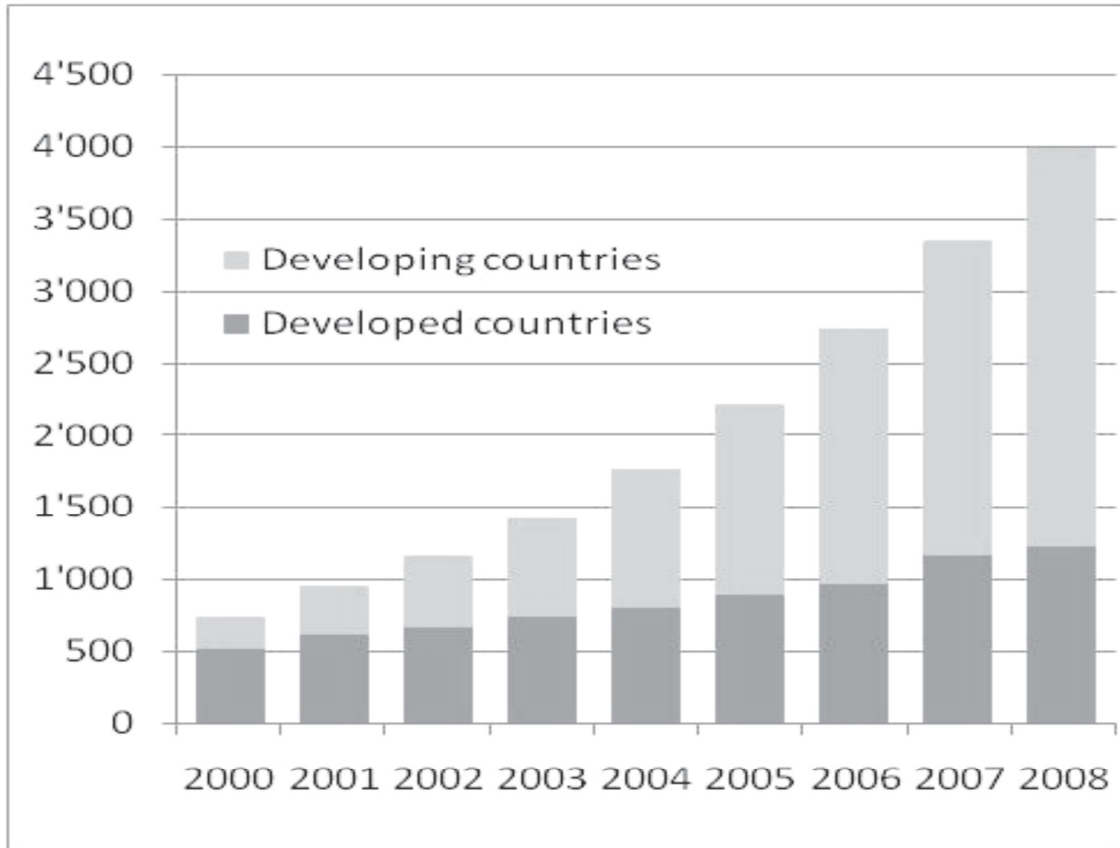
Figure 5.1: Mobile phones worldwide 2000-2008 (source: Mohnsen Khalil, Head of the World Bank/IFC Global ICT Department cited in OECD, 2009)

It is acknowledged that the respondent's knowledge about the field of ICT is limited due to many factors such as exposure to the variety of these technologies, their awareness that what they use is classified as ICT and the level to which they have engaged with these technologies during their day-to-day activities. Consequently, this limitation binds the respondent's view of what ICT can achieve for them. As such, a decision was made to focus the survey on the usage of cellular phones as an example of ICTs; given its exponential growth and dominance to such an extent that all respondent owned a handset (see Figure 5.10, developing countries account for 2/3 of these). In addition, the role of mobile phones is seen to offer real benefits for the poor (Dymond & Oestmann, 2005; Kleine & Unwin, 2009). Examples include recent surge in the usage of mobile banking in Kenya and recently South Africa with the introduction of

m-pesa by Vodacom (www.vodacom.co.za) and Nedbank (www.nedbank.co.za). It is worth noting that this choice creates a bias toward mobile technology and the reporting of survey results recognises this shortcoming by not attempting to generalise its findings. Following is the results of the survey on the cell phone features the respondents commonly use, selected at the researcher's discretion. It is worth mentioning that, four out of the fifty-two questionnaires did not fill in an answer for this category, and therefore, these were not considered in the analysis of the results.

Code	Feature	Count
MRC	Make/receive calls	48
SRM	Send/receive SMS/MMS	44
LRM	Listen to radio/music	38
PlG	Play games	35
RdN	Read news	25
RmN	Reminders/Notes	22
CrM	Create videos/photos/music	27
InD	Internet downloads	36
CIT	Calculator/Timers	44
CRD	Create/Read documents	26
CpB	Cell-phone Banking	26
CtI	Connect to internet	40
SRE	Send/receive emails	19
Oth	Other (list)	2

Table 5.3: A list of cell phone features surveyed

The first objective of choosing the features listed in Table 5.10 is less about which rating features are most used, but is rather driven mainly by the pursuit to understand how to best engage with the deep rural communities through cell phone technology. The second objective is to establish the level of user sophistication by

surveying whether or not the respondents create new content with their cell phones (an indication that they are advanced users) or they generally use the basic content provided by the manufacturer.

According to Table 5.10, about half of the respondents can be classified as advanced users and many of them use their cellular phones to connect to the internet. Just from these two facts, it can be deduced that enhancing the ability for users to create content with ease and sharing it over a network will be of great benefit to the rural communities. This could address one of the major criticisms about ICT4D, that of the lack of local content in the internet, and therefore no use for it in deep rural communities (Britz et al., 2006).

According to Zheng (2009), Sen's CA offers little information about understanding the role of ICT in development. However, it does entail a valuable critique of assumptions about development and sheds light on examining key issues in ICT4D research and practice. The CA achieves this by bringing forth questions pertaining to views held about the kind of development that ICT is supposed to promote; the type of capabilities that can potentially be generated from a particular type of ICT; conditions that enable or restrict the agency of ICT adopters; and which essential capabilities are deprived. In essence, the CA emphasises embedding ICT in the pursuit of human development goals, and provides an evaluative space to scrutinise established cultural norms or social structures in order to achieve a contextualised view of agency.

In closing, to address the third and final research question, this discussion provided insight on the opinion held by deep rural communities with respect to the role of ICT in facilitating the achievement of development goals. Furthermore, it was also possible to identify a list of features of cell phone technology these communities use in their everyday life, as hinted by the low frequency of the 'Other' feature, where respondents would typically add any of the features they use which are not covered in the list.

5.6.4 Remarks on the sample population (Category D)

The biographical information in Table 5.11 is important in order to put into context all that which has been discussed in this chapter so far, that is, the meaning of development; the issues facing deep rural communities (specifically Tsomo dwellers) regarding the kind of development for which they aspire; and role of ICT in achieving such development. It is again worth emphasising that these responses are highly influenced by the individual's reality and how they got to know what they know, therefore, these views are subjective.

Having the majority of the respondents as young literate people and principally male, gives a particular perspective about what they recognise as development as well as the issues they see as obstacle to achieving that development. This view is likely to be different had the sample being formed of a different age group. However, these are the biases that are inherent in the nature of this kind of sample. What is most important in this research strategy is not much the representativeness of the sample chosen, but rather the relevance of the case study to the problem being investigated.

Gender

Male	Female	Other
22	29	4

Age

16-25	26-35	36-45	46-55	55+	Other
45	3	0	2	1	4

Level of Education

No Metric	Matric	Post Matric	Degree/ Diploma	Post Grad	Other
9	35	2	4	3	2

Table 5.4: Biographical details of the sample surveyed

The following section will explain the method that will be used to provide answers to the research question and will be applied in Chapter 6.

5.7 Conclusion

In summary, this chapter covered the analysis of data collected during the survey (as part of an interpretive case study) and the technique used was content analysis, for it is appropriate for counting worded data. Content Analysis was applied by adopting List's (2004) six stages including selecting the content to analyse, coding and counting it ending with ways to arriving to conclusions. Based on the structure of the questionnaire and the interview, content was categorised into four principal ideas; the meaning of development (Category A), issues important to achieving this development (Category B), relevance of ICT in facilitating development (Category C) and the profile of respondents who participated in the survey (Category D). Finally, the results of this analysis were discussed in relation to their relevance to the research questions. The next chapter summarises this mini-dissertation and suggests answers to the research questions posed in Chapter 2. Also, it addresses the main problem, limitations of this research work and offers recommendations for future research.

Chapter 6

Conclusions and Recommendations

6.1   Summary of the dissertation

Stemming from the two core subjects that are extensively explored in ICT4D research and practice – ICT and development, review of literature that considers ICT in the context of development of poor communities in Third World countries led to the detection of three sub-problems of interest to the researcher as specified in Chapter 1, Section 1.4. Firstly, literature review (in Chapter 2) shows that there exist numerous and sometimes conflicting ideas about the meaning of development; an issue that has long been the centre of a contested debate in the fields such as development studies and economics even before the field of ICT4D as it is currently understood was envisioned. Secondly, literature shows that the role of ICT in facilitating the development goals of poor nations is often poorly understood. As a result, considerable research effort on this matter has over the years produced several frameworks and models that propose how this issue could be addressed. Lastly, literature also reveals the opportunities which South African rural communities could possibly unlock when ICT is considered in achievement national development goals, and of course the associated challenges brought about by the use of such technologies.

Recognition of these problems led to the use of a case study as a qualitative research approach applied in an attempt to understand the difficulties and concerns of South African rural communities and how these issues affect community engagement in ICT4D initiatives, using the Tsomo community in the Easter Cape as a case (see Chapter 5, Section 5.3). As a result, a survey using questionnaires and interviews was conducted and content analysis used as a tool to evaluate the data collected and presented in Chapter 5.

The contribution of this study to the field of Informatics, specifically ICT4D research, can be explained by focusing on the three subject matters it explores. Firstly, this study provides an enhanced understanding of the meaning of development. This was achieved through a survey and conversations with a group of deep rural community members, and tying this to the literature in development theory. An exercise that

confirmed the reality of various ideas about what development essentially means; still an ongoing subject of strong debate of in relevant research areas including social sciences and economics.

Secondly, this study provides an enhanced understanding of how deep rural communities view the role of ICT in facilitating the achievement of development goals. It accomplishes this by attempting to understand perceptions the community holds about the role of ICT pertaining to the achievement of community development, as well as by surveying the features they most use on their cell phones.

Thirdly, this study contributes by presenting, specifically, a South African context as a case to the problem being examined. Based on the themes arising from the literature review about the main problem, thus informing the research questions and research methodology accordingly, the field work did provide insight into the knowledge of those living in deep rural communities about the development issues they face and their perceptions about the role of ICT in development.

Lastly, having applied interpretive case study as a research methodology and qualitative research techniques, this study adds value by illustrating the continued relevance of this these concepts to learning and analysing complex social situations and provides evidence to conclude about the understanding gained during such a study.

In this way, this study has demonstrated its significance by being able to suggest answers to the research questions it had set to investigate. Overall, this study does not intend to provide a comprehensive solution, it simply aims to provide an understanding of the problem under study.

The following section provides answers to the research questions which form the basis of this study.

6.2   Answers to research questions

The closing of the literature review in Chapter 2 posed the three research questions to be discussed next. The conceptual framework based on deductive reasoning that was described in Chapter 4, Section 4.5 and Section 4.6 is applied to answer the research questions as follows:

6.2.1 What does development mean to deep rural communities?

The study results show that various people define *development* in many different ways. These definitions could easily be grouped under the same themes that were discussed in the literature review, that is, they define development similarly to the Basic Needs Approach which emphasises that people require to have certain minimum needs met (such as food, shelter, water and electricity) prior to achieving development; or development-as-economic-growth where a constructive shift in the economic metrics (such as a decrease in unemployment and an increase in GDP) is bound to achieve development; or development as the ability to help ones-self, a concept closely related to the idea of Sen's development-as-freedom which advocates for the improvement of one's capabilities in order to be free to live the kind of life they value, given the influence of social, political and economic environments; or lastly (and not totally unrelated to the latter ideas), falling under the category of 'other development definitions' that were forwarded which can be summarised as considering growth and the achievement of agency as the ultimate result of development. These meanings of development are all supported by one or more of the theories investigated in the literature review in Chapter 2 under the same themes. Therefore, given that:

- the results of the study confirm that development can be defined in terms of basic needs, economic growth, the ability for people to help themselves, among others,
- the literature review also supports each of these ideas of development,
- therefore, by deduction, it is valid to infer that, the current set of ideas about what the so-called development 'experts' and deep rural communities understand as development (may) agree. What has proven to conflict lies in the question about which one of these ideas reigns in development policy and practice in a particular region? A misfit between the idea of development that development leaders adopt and that which the intended beneficiaries hold leads to inconsistency; as seen with past failures of ICT4D initiatives (Madon, 2004).

In addition, this is not to say that the specific development approach which South Africa has adopted is inspired by a single development idea, as national development strategies tend to encompass aspects of various development ideas.

This further confirms that development theories do not necessarily displace but tend to build on each other, making it difficult to completely determine entirely which definition of development South Africa is indeed pursuing. For example, the Comprehensive Rural Development Programme launched by the government in 2009, it is not difficult to identify aspects of 'development-as-economic-growth' given the focus on job creation; aspects of 'development-as-meeting-basic-needs' given its commitment to helping rural communities eradicate poverty, and its welfare grants programme; and 'development-as-ability-to-help-oneself' given the focus on achieving community's self-reliance. Therefore, the researcher deduces that, this study confirms the diversity of perspectives regarding the meaning of development. In the South African context, the accepted development perspective is inclined the fulfilment of basic needs and the achievement of economic growth.

6.2.2 What issues do deep rural communities raise regarding their development needs?

The issues that emerged from the results can be listed under human basic needs, infrastructural framework, social and economic issues (Table 5.6 to 5.9); these problems confirm the view backed by the BNA and to a certain extent the economic growth perspective of development. The same results can be reorganised to fit Sen's argument using the CA by looking at these issues as commodities they require , thus enabling them to become capable of achieving that which they aspire for.

- collectively, these form a list of problems that deep rural communities mention as development challenges they face,
- literature on development as meeting the human basic needs, as economic growth and as the improvement of human capabilities together identify all these issues as problems to address if development initiatives are to benefit the poor nations,
- therefore, by deduction, it is valid to infer that the issues tabled by deep rural communities and those found in the ICT4D literature agree, albeit the possible conflict about the meaning of development as described in Section 5.2.1.

The researcher concludes that, taken at face value, addressing the lack of human basic needs and achieving economic growth levels that directly benefit the poor, would help overcome numerous development challenges facing deep rural communities. However, due to the lack of depth in the exploration of these concepts, it is possible that the issues listed as challenges are simply a manifestation of what these communities were systematically taught as the view of development. That is, had the approach allowed for a deeper introspection of ideas, the researcher would have probably gained insight into the core development aspirations from the respondents.

6.2.3 How do deep rural communities see ICT fit (if at all) in addressing their development needs?

The results show that:

- the majority of people in deep rural communities perceive ICT as having the potential to play an important role in facilitating the solutions to some of the development challenges they have identified,
- notwithstanding the problem with conceptualising ICT in development, it is widely accepted in ICT4D literature that ICT has the potential to contribute positively to the achievement of national development goals in Third World countries,
- therefore, by deduction, it is valid to infer that, the two statements exceeding agree, ICT can be used to facilitate the accomplishment of certain national development goals.

The researcher concludes that, even though these results confirm a widespread notion in ICT4D literature, data showed little attention directed on the possibly negative aspects that could influence the application of ICT in development initiatives.

6.3 The overall research problem – Lack of understanding of the meaning of development and the role of ICT in development

Revisiting the main problem statement from Chapter 1, firstly, the study shows that there still exists a variance in meaning about what development signifies to different people, and therefore influencing the kind of development problems that should be tackled (as revealed in Chapter 5, Section 5.6.1 and 5.6.2, respectively). Secondly, the study also shows that, given the strong association between what the deep rural communities bring forth as their development issues, and what the recent ICT4D initiatives aim to achieve (as seemingly moving towards a more inclusive approach following the prevalence of failures of prior attempts), the community appears to be committed to the efforts of ICT4D undertakings.

As a reaction to the overall research problem, outcomes of the study described in Section 6.2.1, 6.2.2 and 6.2.3, suggest a response to the two aspects of this main problem (a) understanding the issues facing deep rural communities in South Africa and (b) understanding the role of ICT in development; by suggesting that, addressing human basics needs such that economic freedom, for example, deep rural communities stand a better chance to achieve the kind of development for which they aspire, and, ICT is perceived to have an important role to play in facilitating development. As long as ICT4D initiatives seek to resolve development issues in ways which are inclusive and sensitive to contextual factors, community engagement is likely to be strengthened.

6.4 Limitations

Reflexivity can be described as the "researcher's mirror"; a researcher's position and perspectives, which affect every step of the research process, dispute the existence of a neutral observer (Malterud, 2001). The effects of reflexivity in qualitative research restrict and determine what can be seen. Therefore, in order to achieve a high degree of objectivity, the effects of reflexivity are accounted for throughout this study.

Interpretive case study research enables the learning and understanding of complex social phenomena in their natural context (De Vries, 2005). The one downside of case study research is that it is not universally applicable and therefore cannot be easily transferred to other contexts (Malterud, 2001).

The construction of questions for both data collection instruments used in this study exposes itself to researcher's bias regarding the way in which questions are asked, the number of questions deemed sufficient, the range and type of response categories as well as the instructions to the respondents (Kitchenham & Pfleeger, 2002), among other things. In addition, since direct questioning was applied, the questions fail to explore in-depth ideas which are normally achieved when questions are designed for such a purpose and or correctly supplemented with other instruments; an issue which interviews would have addressed, had they been used in that manner.

Data analysis using content analysis is exceedingly dependent on the availability of material. As such, questionnaires that had missing responses affected the analysis of those and related questions. Therefore, to ensure data validation proved to be slightly challenging. This limitation is in addition to the intrinsic drawback of subjectivity when choosing content categories onto which to apply content analysis. Another limiting factor was that, given the nature of the themes, it was not possible to compare them to each other in order to determine any possible relationships among themes.

Literature on ICT4D which this study considered is by no mean comprehensive even for the problem being studied. This is especially accurate when this relates to understanding rurality and the community of Tsomo. Thus, the concepts investigated and concluded upon are limited by that which the researcher found to be relevant, introducing further subjectivity. That said, due diligence was taken to ensure that ideas presented in this study were analysed from different angles, thereby reducing the effect of research bias in the results.

6.5   Recommendations and further research

The mining of tacit information (such as intuition, experience, assumptions and beliefs) from people is not trivial. Polanyi (1966, cited in Schutte, 2009) further suggests that, people know more than they can express. Even though this is a well documented issue in literature on Information Management (Schutte, 2009), there is still a requisite to develop simplified techniques easily applicable to survey methods in order to improve the accuracy of information respondents provide when answering questionnaires and interview questions.

Finding the means to minimise the presence of the limitations discussed in Section 6.4, and therefore the impact they have on the various aspects of this research, can potentially improve the quality of the research results. Another gap in the literature is that which deals directly with the issue of community engagement in ICT4D initiatives. Lack of extensive literature on the subject is not the only concern, but the scarcity of ways in which this can measured, posed a challenge throughout this study. Furthermore, there is very little helpful literature on the subject of rurality. Additional research in this area would go a long way to strengthening the differentiation of a rural and deep rural setting.

Questionnaire and interview questions were narrowly asked, probably with not much room to explore the participants' deep insights. Effective consultation with an experienced researcher would have helped in identifying and improving the quality of the questions.

References

Alampay, E.A., 2005. Beyond Access to ICTs: Measuring Capabilities in the Information Society. I*nternational Journal of Education and Development using Information and Communication Technology,* 2(3), pp.4-22.

Alexander, P., 2009. *Informatics Research Methodology - MIT 862* [Class Notes].

ArchitectAfrica, 2009. *ArchitectAfrica.com.* [Online] Available at: http://architectafrica.com/sa-launches-rural-development-plan-2009 [Accessed 22 September 2010].

Avgerou, C., 2008. Discourses on Innovation and Development in Information Systems in Developing Countries' Research. *Journal for Information Technology*, 23(3), pp.133-146.

Banuri, T., 1990. Dominating Knowledge - Development, Culture, and Resistance. IN: F.A., Marglin, S.A., Marglin (eds.) *Development and the Politics of Knowledge*. New York: Oxford University Press Inc., pp.29-72.

Bernstein, H., 2005. Development Studies and the Marxists. IN: U. Kothari (ed.) *A Radical History of Development Studies*. Cape Town: David Phillip (New Africa Books) pp.111-137.

Bhatnagar, S., 2000. Social Implications of Information and Communication Technology in Developing Countries: Lessons from Asian Success Stories. *Electronic Journal on Information Systems in Developing Countries,* 20(5), pp.1–13.

Binswanger, H.P., Elgin, M., 1990. *What are the Prospects for Land Reform.* London: Dartmouth Aldershot.

Britz, J.J., et al., 2006. Africa as a Knowledge Society: A Reality Check. *The International Information and Library Review,* 38, pp.25-40.

Brown, A.E., Grant, G.G., 2010. Highlighting the Duality of the ICT and Development Research Agenda. *Information Technology for Development,* 16 (2), pp.96-111.

Brown, V.C. et al., 2009. *Managing Information Technology.* New Jersey: Pearson Prentice Hall.

Byrne, R.J., Tasso, A., 1999. Deductive Reasoning with Factual, Possible, and Counterfactual Conditionals. *Memory and Cognition,* 27 (4), pp.726-740.

Cameron, J., 2005. Journeying in Radical Development Studies: A Reflection on Thirty Years of Researching Pro-poor Development. IN: U. Kothari (ed.) *A Radical History of Development Studies*, Cape Town: David Phillip (New Africa Books), pp.138-156.

Colle, R.D., 2005. Building ICT4D Capacity in and by African Universities. *International Journal of Education and Developement using Information and Communication Technology* , pp.101-107.

Curwen, P., Whalley, J., 2005. Structural Change in African Mobile Telecommunications. *Communications and Strategies*, pp.55-62.

Davidson, C., 2009. Transcription: Imperatives for Qualitative Research. *Internal Journal of Qualitative Methods,* 8(2), pp.35-51.

De Vries, E.J., 2005. Epistemology and Methodology in Case Study Research: A Comparison Between European and American IS Journals. IN: *Proceedings of the ECIS 2005 (CD),26-28 May 2005.* Regensburg, Germany, paper 145.

Dictionary.com, n.d*. Infrastructure*. [Online] Available at: http://www.dictionary.reference.com/browse/infrastructure [Accessed 13 August 2010].

DRDLR (Department of Rural Development and Land). *Background (CRDP).* [Online] Available at: http://www.ruraldevelopment.gov.za/DLA-Internet/content/pages/CRDP_Background_and_Framework.jsp [Accessed 12 September 2010].

Dymond, A., Oestmann, S., 2004. *A Rural ICT Toolkit for Africa*. [Online] Available at: http://www.infodev.org/projects/telecommunications/351africa/RuralICT/Toolkit.pdf. [Accessed 3 February 2010].

Eliasz, T., von Staden, R., 2008. *Dwesa Village Connection Business Model - Feasibility Analysis*, Ungana-Africa: South Africa.

Escobar, A., 1992. Reflections on 'Development': Grassroot Approaches and Alternative Politics in the Third World. *Futures*. June 1992. Butterworth-Heinemann Ltd. pp.411-436.

Escobar, A., 1995. *Encountering Development: The Making and Unmaking of the Third World.* Princeton University Press.

Fourie, I., 2009. *Guidelines to Literature Searching and the use of e-Journals [Class Notes]*.

Gabriel, T., 1991. *The Human Factor in Rural Development.* London: Belhaven Press.

Goldman, I., Reynolds, K., 200-, *Rural Local Government in South Africa*. [Online] Available at: http://www.population.gov.za/pop_dev [Accessed 12 March 2011].

Gomez, R., Hunt, P., 1999. *Telecentre Evaluation. A Global Perspective*. [Online] Available at: http://idl-bnc.idrc.ca/dspace/bitstream/10625/15457/1/115668.pdf [Accessed 14 March 2010].

Harindranath, G.H., Sein, M.K., 2007. Revising the Role of ICT in Development. IN*: Proceedings of the 9th International Conference on Social Implications of Computers in Developing Countries, May 2007.* Sao Paulo, Brazil.

Hart, L.G., 2005, Rural Definitions for Health Policy and Research. *American Journal of Public Health*, 95(7), pp. 1149-1155.

Hawkins, J.M., 1988. *The Oxford Paperback Dictionary.* New York: Oxford University Press.

Heeks, R., 2009. ICT4D 2.0: The Next Phase of Applying ICT for International Development. *Computer*, June 2008, pp.26-33.

Heeks, R., 2006. Introduction - Theorising ICT4D Research. *Information Technologies and International Development,* 3(3), pp.1-4.

Herselman, M.E., 2003. ICT in Rural Areas in South Africa: Various Case Studies. IN: *Proceedings* of the *Informing Science, 2003*. Pretoria, South Africa. [Online] Available at http://informingscience.org/proceedings/IS2003Proceedings/docs/120Herse.pdf [Accessed 15September 2010].

Hettne, B., 1988. *Development Theory and the Three Worlds,* s.n: s.l.

Intsika Yethu Municipality (IYM), 2004, *Annual Report 2004,* s.n.: s.l.

Johnson-Laird, P., 2009. Deductive Reasoning. *Wiley Interdisciplinary Reviews: Cognitive Science*, pp.8-17.

Kamimura, M., 2006. Finding my Way - Enculturation to the Ph.D. IN: J., Gloria, A.M., Kamimura, M., Vasquez, M. Castellanos *The Latina/o Pathway to the Ph.D.: Abriendo Caminos.* Stylus Publishing.

Kitchenham, B., Pfleeger, S.L., 2002. Principles of Survery Research Part 4: Questionnaire Evaluation. *ACM SIGSOFT-Software Engineering Note,* 27(3), pp. 20-23.

Klein, H.K., Myers, M.D., 1999. A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems. *MIS Quarterly*, 23 (1), pp.69-94.

Kleine, D., Unwin, T., 2009. Technological Revolution, Evolution and New Dependencies: What's New About ICT4D? *Third World Quarterly*, 30(5), pp.1045-1067.

Kothari, U., 2005. From Colonialism Administration to Development Studies: A Postcolonial critique of the History of Development Studies. IN: U. Kothari (ed.) *A Radical History of Development Studies*. Cape Town: David Phillip (New Africa Books).

Kotler, P., Keller, K., 2006. *Marketing Management,* 12th Ed, Pearson Education Inc.: s.l.

Krauss, K., 2009, *Informatics Outreach Initiative.* [Feedback document] 27 June 2009 - 12 July 2009, Tugela Ferry, KwaZulu-Natal. University of Pretoria.

Krauss, K., 2006, *Visual Easthetics and its Impact on Online Communication Intent*. Masters: University of KwaZulu-Natal.

Krauss, S.E., 2005. Research Paradigms and Meaning Making: A Premier. *The Qualitative Report,* 10(4), pp.758-770.

Langmia, K., The Role of ICT in the Economic Development of Africa: The Case of South Africa. *International Journal of Education and Development using Information and Communication Technology,* 2(4), pp.144-156.

Letsoalo, E.M., 1987. *Land Reform in South Africa: A Black Perspective.* Johannesburg: Skotaville.

Leys, C., 2005. The Rise and Fall of Development Theory. In: M., Haugerudd, A. Edelman (ed.) *The Anthropology of Development and Globalization*. Wiley-Blackwell. pp.109-125.

List, D., 2005. Know Your Audience: Chapter 16 - Content Analysis. *Audience Dialog.* [Online] Available at: http://www.audiencedialogue.net/kya16a.html [Accessed 19 August 2010].

Madon, S., 2004. Evaluating the Developmental Impact of e-Governance Initiatives: An Exploratory Framework. *Electronic Journal on Information Systems in Developing Countries,* 20(5), pp.1–13.

framework. Electronic Journal on Information Systems in Developing Countries 20(5), 1–13.Malterud, K., 2001. Qualitative Research: Standards, Challenges and Guidelines. *The Lancet*, 358, pp. 483-488.

Marglin, S.A., 1990. *Dominating Knowledge.* Clarendon Press - Oxford, 1990.

Masinga, S., 2009. Service Delivery Priority - ANC. *News24.* [Online] 28 October 2009 Available at: http://www.news24.com/SouthAfrica/Politics/Service-delivery-priority-ANC-20091028 [Accessed 12 March 2011].

Ministry in the Office of the President, 1995. Rural Development Strategy. General Notice, Notice 1153 of 1995 [Discussion Document] [Online]. Available at: http://www.polity.org.za/polity/govdocs/rdp/rural1.html [Accessed 12 March 2011].

Narayan, G., Nerurkar, A.N., 2005. Value-proposition of e-Governance Services: Bridging Rural-Urban Digital Divide in Developing Countries. *International Journal of Education and Development using Information and Communication Technology,* 2(3), pp.33-44.

Nkonki, B., 2006. The Diversity of Smallholder Wool Production and its Marketing Aspects - A Case of Xume, Eastern Cape, South Africa. Masters: University of Pretoria.

OECD (Organisation for Economic Co-operation Development), 2009. *ICT4D: Improving Policy Coherence.* Paris: OECD Publications.

Ojo, T., 2005. Wiring Sub-Saharan African for Development. *International Journal of Education and Development using Information and Communication Technology*, 1(3), pp. 94-107.

Oliver, D.G, Serovich, J.M., Mason, T.L., 2005. Constraints and Opportunities with Interview Transcription: Towards Refleection in Qualitative Research. *Social Forces.* 84(2), pp.1274-1289.

Olivier, M.S., 2009 *Information Technology Research.* Pretoria: Van Schaik.

Parkinson, S., Ramirez, R., 2006. Using a Sustainable Livelihoods Approach to Assessing the Impact of ICTs in Development. *Journal of Community Informatics,* 2(3).

Peet, R., Watts, M., 1993. Introduction: Development Theory and Environment in an Age of Market Triumphalism. *Economic Geography,* 69(3), pp.227-253.

Poogenpoel, M., Myburgh, C., 2003. The Researcher as Research Instrument in Education Research: A possible threat to trustworthiness? *Education*, 124(2), pp.418-421.

Prahalad, C.K., 2010. *The Fortune at the Bottom of the Pyramid :Eradicating Poverty Through Profits,* 5th Ed. Wharton School Publishing: New Jersey.

Rachovides, D., Flohlich, D., Frank, M., 2007, Interaction Design in the Wild. IN: HCI, *Proceedings of the 21st BCS HCI Group Conference,* Lancaster University, 3-7 September 2007, British Computer Society: United Kingdom.

Raiti, G., 2006. The Lost Sheep of ICT4D. *Information Technologies and International Development,* 3(4), pp.1-7.

Reichertz, J., 2004. *Abduction, Deduction and Induction in Qualitative Research*. [Online] Available at: http://www.uni-due.de/imperia/md/content/kowi/abductionenglisch.pdf [Accessed 23 November 2010].

Robeyns, I., 2003. *The Capability Approach: An Interdisciplinary Introduction*. [Online] Available at: http://www.capabilityapproach.com/pubs/323CAtraining20031209.pdf [Accessed 12 August 2009].

SAITIS (South African IT Industry Strategy), 2000. *South African ICT Sector Development Framework*. [Online] Available at: http://www.dti.gov.za/saitis/docs/ictnov-00.html [Accessed 3 February 2010].

Schutte, M., 2009. *MIT 835 2009 02 23 [Class Notes]*. 23 February 2009.

Sen, A., 2005. *Commodities and Capabilities.* New York: Oxford University Press.

Sen, A., 1999. *Development as Freedom.* New York: Oxford University Press.

Seitz, J.L., 1988. *The Politics of Development.* Cambridge: Basil Blackwell Ltd.

Shaohua, C., Kariuki, S., Li, G., Govender, S., 2011. Rural Sector Profiling Project, Preliminary Findings, World Bank, South Africa.

Department of Transport, 2007. Rural Transport Strategy for South Africa. [Online] Available at: http://www.transport.gov.za/library/docs/policy/ruraltrsanspolicy-summ.pdf [Accessed 12 March 2011].

SouthAfrica.info., n.d. *Democracy - South Africa's Political Parties.* [Online] Available at: http://www.southafrica.info/about/democracy/polparties.htm [Accessed 03 October 2010].

Stats SA (Statistics South Africa), 2004, Provincial Profile 2004 – Eastern Cape [Report No. 00-91-02 (2004)].

Stats SA (Statistics South Africa), 2001, *Census 2001*. [Online] Available at: http://www.statssa.gov.za/census01/html/C2001Interactive.asp [Accessed 12 March 2011].

Thompson, M., 2008. ICT Research in Africa: Need for a Strategic Development Focus. IN: *Proceeding of IFIP WG 9.4 - University of Pretoria Joint Workshop.* Pretoria, South Africa: University of Pretoria, 2008. pp.128-146.

Thompson, M.P.A., 2004. ICT, Power and Developmental Discourse: A Critical Analysis. *Electronic Journal on Information Systems in Developing Countries,* 20(4), pp.1-26.

Travis, J., 1999. Exploring the Constructs of Evaluative Criteria for Interpretivist Research. IN: B. Hope & P. Yoong (eds.), *Proceedings of the 10th Australasian conference on information systems.* Wellington, New Zealand. pp. 1037-1049.

Tumusiime, J., 2006. Investigating a Rural Community's Use of Communication Technology: A Study of Nakaseke Community Multi-media Centre in Uganda. Masters. Grahamstown, Rhodes University.

Unwin, T., 2009. *ICT4D - Information and Communication Technology for Development*. United Kingdom: Cambridge University Press.

Van Dijk, T., 1999. Critical Discourse Analysis and Conversation Analysis. *Discourse and Society*, pp.459-460.

Voce, A., 2004. *Introduction to Research Paradigms [Class Notes]*. November 2004.

Wade, R.W., 2002. Bridging the Digital Divide: New Route to Development or New Form of Dependency? *Global Governance*, pp.443-466.

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

WDR WorldBank, 2007. *WDR (World Development Report) 2007.* [Online] Available at: http://siteresources.worldbank.org/INTWDR2007/Resources/1489782-1158107976655/overview.pdf [Accessed 05 April 2010].

Wertlen, R.R.R., 2007. *An Overview of ICT Innovation for Developmental Projects in Marginalised Rural Areas*. [Online] Available at: http://ekhayaict.com/eKhayaICT4D.pdf [Accessed October 2010].

Zheng, Y., 2009. Different Spaces for e-Development: What Can We Learn from the Capability Approach? *Information Technology for Development*, 15(2), pp.66-82.

Zheng, Y., 2005. Information Culture and Development: Chinese Experience of e-Health. IN: *Proceedings of the 38th Hawaii International Conference on Systems Science – 2005*, pp.1-11.

Zheng, Y., Walsham, G., 2008. Inequality of What? Social Exclusion in the e-Society as Capability Deprivation. *Information Technology and People*, 21(3), pp.222-243.

Appendix I

Category A – Interpretation of the meaning of development themes											
#	Growth	needs met	better change	good things	improve	poor	help others	self-help	afford	achieve	economy
1	1	1		1							
2		1									
3			1		1						
4		1									
5		1									
6		1									
7		1									
8		1									
9		1									
10		1									
11	1			1		1					
12	1		1								
13			1								
14		1									
15				1		1					
16		1									

17							1				
18		1		1							1
19								1	1		
20	1									1	
21		1									1
22			1								
23		1									1
24					1						1
25					1						1
26					1						1
27		1									
28		1									1
29			1								
30		1									
31		1								1	
32		1									1
33	1										1
34		1		1	1						1
35				1							
36	1		1								

37					1			1			
38		1									1
39		1									
40		1									1
41	1				1		1				
42			1								
43			1								
44	1							1			1
45		1									
46		1			1						
47			1								
48	1										
49				1	1						
50			1								
51			1	1							
52	1				1				1	1	
53	1				1			1			1
54	1	1			1		1				
55								1		1	
Totals	**12**	**26**	**11**	**8**	**12**	**2**	**3**	**5**	**2**	**4**	**14**

Category B – Interpretation of issues facing deep rural communities themes

Individual Benefits	#	Individual Enablers	#	Community Benefits	#	Community Enablers	#
Water	37	Education	16	Roads	23	Development Projects	8
Electricity	30	Church	3	Infrastructure	6	Small Business	4
Food	1	Farming	3	Natural Resources	3	Poverty Alleviation	4
Toilets	17	Clinic	17	Raw Materials	1	Skills Development	1
Houses	10	Sport	4	Job	3	No Crime	1
		Money	1	Technology	4		
		Medical Supplies	1	Transport	1		
		Culture	1	Communication	1		
		Land	1	Institutions	2		
Total	**95**	**Total**	**47**	**Total**	**44**	**Total**	**18**

Category C – Usage of the cell phone features

#	MRC	SRM	LRM	PIG	RdN	RmN	CrM	InD	CIT	CRD	CpB	Ctl	SRE	Oth
1	1	1	1	1				1			1	1		
2	1				1		1	1	1	1		1	1	
3	1	1	1			1	1			1				
4	1	1	1	1			1		1		1		1	
5	1	1	1	1	1	1		1	1		1	1	1	
6	1	1	1	1	1	1	1	1	1	1	1	1	1	
7	1				1							1		
8	1		1	1								1		
9	1	1	1	1			1		1				1	
10	1		1		1	1	1	1	1		1	1		
11	1	1			1	1			1	1	1			
12	1	1	1	1	1	1	1	1	1	1	1	1	1	
13	1	1	1	1	1	1		1	1		1	1		
14	1	1	1	1			1	1	1			1		
15	1	1	1	1		1	1	1	1	1		1		
16	1	1			1			1			1	1		
17	1	1			1			1			1	1		
18		1	1	1			1	1	1			1		

19	1	1		1	1		1	1	1			1		
20	1		1	1	1						1	1		
21	1	1	1	1			1	1						1
22	1	1	1	1			1	1				1		
23	1	1	1		1	1	1	1	1		1	1		
24	1	1	1	1		1	1	1	1			1		
25	1	1	1			1		1				1	1	
26	1	1	1	1			1		1					
27	1	1	1	1				1				1		
28	1	1	1	1	1							1		
29	1	1	1	1	1	1	1	1		1		1		
30	1	1	1	1	1	1		1	1		1		1	
31	1	1	1	1		1		1				1		
32	1	1	1	1		1		1				1		
33	1	1	1						1		1	1	1	
34	1	1			1			1	1		1	1	1	
35	1	1	1						1		1	1	1	
36	1	1	1	1				1			1	1		
37	1	1	1	1			1	1	1	1		1	1	
38	1			1					1					1

39	1	1	1	1		1	1	1	1	1	1	1		
40	1	1		1			1	1	1		1	1		
41	1				1			1			1	1	1	
42								1			1	1		
43	1	1			1	1		1	1	1		1	1	
44		1	1	1	1		1		1	1	1	1	1	
45	1	1	1	1	1	1	1	1	1	1	1	1	1	
46		1	1	1		1	1		1					
47	1	1	1	1	1	1	1	1	1	1	1	1		
48	1	1	1	1	1	1		1	1	1				
49	1	1	1	1			1		1				1	
50	1	1					1		1					
51	1	1			1			1	1	1	1	1	1	
52	1	1	1	1	1	1	1	1	1	1	1	1	1	
53		1	1	1	1		1		1	1	1	1	1	
54	1	1	1	1				1				1		
55	1	1	1	1			1		1					
Totals	**50**	**47**	**41**	**38**	**26**	**22**	**29**	**37**	**42**	**27**	**27**	**42**	**20**	**2**

Appendix II

#	Questionnaire question	Purpose of the question	Research question related to
1	In what area (community) do you currently live?	The purpose of this question is to establish the respondent's familiarity with the issues facing deep rural communities. It helps with understanding the environmental factors that influence the community's perception of development.	1, 2
2	How often do you stay when visiting your rural community?	For those who no longer live in deep rural areas, this question aims to determine the respondent's current level of experience of the life in deep rural areas. This caters for respondents who grew up in deep rural areas but later migrated to the city, usually in search of employment and other opportunities.	1, 2
3	How would you describe your knowledge of the challenges facing those living in rural communities?	The purpose of this question is to evaluate the basis on which a respondent provides an understanding of the meaning of development, and issues facing those living in deep rural areas.	1, 2
4	What would you consider as the state of the rural community you come from?	The aim of this question is to prompt the user to reflect on what they think of their community's position given their own perception of development. As a consequence, they may	1

		formulate a particular picture of development in their mind.	
5	Given your answer to the question above, please explain what the word development means to you.	Having thought of the state (of development) in their community, the purpose of this question is to determine the respondent's view of what constitutes development. It gives them the opportunity to express what development means to them.	1
6	List 4 things that you think are most important for the development of your rural community.	Given their perception of the meaning of development, this question attempts to establish a list of concepts a respondent thinks should subsist in order to achieve that 'development'.	2
7	If you had all the power, what 3 things would you immediately do to improve the lives of the residents in your rural community?	The purpose of this question is to determine a list of concepts that a respondent see as a priority when addressing development issues. This may emphases already mentioned issues, or it may reveal new concepts that need immediate attention as opposed to the concepts in Question 6, which may be considered ideal.	2
8	Do you think ICT such as cell phones, the internet and personal computers can help develop your rural community?	The aim of this question is to determine the respondent's opinion on whether or not ICT can be used in the process of addressing their community's development issues. On its own, this question is not very useful; however, it is supported by the question that follows it and the idea was to avoid asking	3

		two questions as one.	
9	Please explain your answer to the question above (i.e. why do you say Yes or No or Other)	This question gives the respondent the opportunity to elaborate on how, if ever, they perceive the role of ICT in development. The question also aims to determine the depth to which the respondent understands the capabilities of ICT.	3
10	What do you, or those around you, use a cellular phone for? Tick your choice(s) from the following? (list provided)	Using mobile technology as an example of an ICT artefact, the purpose of this question is to understand the common uses of a mobile phone in the respondent's environment. Mobile technology is chosen due to its popularity and the support it attracts as a practical tool to deliver technology to the poor.	3
11	Please fill-in the biographical information below. Your answer will be used only for analysis of the results to provide a perspective	The purpose of this question is to establish the taxonomy of the sample population that is used in this study. These attributes, such as the level of education, inescapably influence a respondent's perspective of the issues being studied, and that necessitates a certain degree of contextualisation when discussing the results.	N/A

Table 2.5: Description of questions that form the questionnaire

#	Interview question	Purpose of the question	Research question related to
1	How would you describe your knowledge of the challenges facing those living in rural communities?	The purpose of this question is to evaluate the basis on which a respondent provides an understanding of the meaning of development, and issues facing those living in deep rural areas.	1,2
2	If you were to picture your community as developed, how would it look like? Think of the people, the way of life, the facilities and similar things.	This question aims to determine the respondent's view of what constitutes 'development'. The question attempts to provide the respondent with the opportunity to idealise about the future of their community regarding development.	1
3	Tell me about the problems that the community faces which are making it difficult to achieve this development.	Given their perception of development, this question attempts to establish a list of issues that the respondent thinks should be overcome so as to achieve that development.	2
4	In developing your community, what do you think should be on the top of	The purpose of this question is to determine a list of concepts that a respondent see as a priority when addressing development issues. This may emphases already mentioned	2

	the list and why?	issues, or it may reveal new concepts that need immediate attention as opposed to the concepts in Question 3, which may be considered ideal.	
5	What ICTs do you use? Cellphones, personal computers, the internet and the like.	The purpose of this question is to establish a list of ICTs with which a respondent is familiar. The question also aims to determine the depth to which the respondent understands the capabilities of ICT.	3
6	What do you or those around you use a cellular phone for? Answer Yes or No as I read the following list:	Using mobile technology as an example of an ICT artefact, the purpose of this question is to understand the common uses of a mobile phone in the respondent's environment. Mobile technology is chosen due to its popularity and the support it attracts as a practical tool to deliver technology to the poor.	3
7	What would you say is the value that ICT adds to your life? Think about the change(s) that ICTs have brought to your life.	This question aims to determine the respondent's awareness of how (if at all) ICT can be used in the process of addressing their community's development issues.	3
8	Tell me about the future difficulties that introducing such ICTs to rural communities may bring?	To prompt the respondent to reflect on or imagine the possibly negative impact that the usage of ICT to achieve development goals might have on their lives and that of their community.	3

	Think about the impact they may have on the way you do things.		
9	Please answer the following biographical information as I read it out.	The purpose of this question is to establish the taxonomy of the sample population that is used in this study. These attributes, such as the level of education, inescapably influence a respondent's perspective of the issues being studied, and that necessitates a certain degree of contextualisation when discussing the results.	N/A

Table 2.6: Description of questions that form the interview script

Appendix III

Ethical clearance

Reference number: EBIT/17/2010   1 June 2010

Mr B C Gxulwana
P O Box 3970,
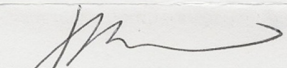Halfway House,
1685

Dear Mr Gxulwana

YOUR RECENT APPLICATION TO THE FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

1.   I hereby wish to inform you that the research project titled " Towards Understanding the Difficulties and Concerns of Deep Rural Communities in outh Africa and the Effect that these Issues have on Community Engagement to ICT4D?" has been approved by the Committee.

This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Codes of Research Ethics of the University of Pretoria, if action is taken beyond the approved proposal.

2.   According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of any member of the Faculty Committee who will deal with the matter.

3.   The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.

Prof. J.J. Hanekom
Chairman: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, THE BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY
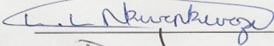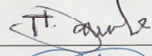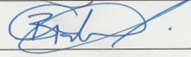
Page 1

121

Consent form

INFORMED CONSENT FORM

(Must be signed by each research participant, and will be kept on record by the researcher)

1. Title of research project: **Towards Understanding the Difficulties and Concerns of Deep Rural Communities in South Africa and the Effect that these Issues have on Community Engagement to ICT4D?**

2. I ~~Lundi   Nkwenkwezi~~ .... hereby voluntarily grant my permission for participation in the project as explained to me by **Buzwe Gxulwana**

3. The nature, objective, possible safety and health implications have been explained to me and I understand them.

4. I understand my right to choose whether to participate in the project and that the information furnished will be handled confidentially.

5. I am aware that the results of the investigation may be used for the purposes of publication.

6. Upon signature of this form, you will be provided with a copy if you so wish.

Signed: _____ Date: 17 – 09 – 2010

Witness: _____ Date: 17/9 /2010

Researcher: _____ Date: 17/ 09/ 2010

Appendix IV

Declaration of originality
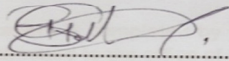
UNIVERSITY OF PRETORIA

DECLARATION OF ORIGINALITY

This document must be signed and submitted with every
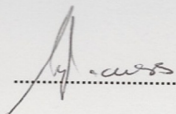essay, report, project, assignment, dissertation and/or thesis.

Full names of student: BUZWE CLIFFORD GXULWANA ....

Student number: 29482136 ....

Declaration

1. I understand what plagiarism is and am aware of the University's policy in this regard.
2. I declare that this MINI – DISSERTATION .... (eg essay, report, project, assignment, dissertation, thesis, etc) is my own original work. Where other people's work has been used (either from a printed source, Internet or any other source), this has been properly acknowledged and referenced in accordance with departmental requirements.
3. I have not used work previously produced by another student or any other person to hand in as my own.
4. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.

SIGNATURE OF STUDENT: ....

SIGNATURE OF SUPERVISOR: ....

S 4722/09

7

123