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I declare that this mini-dissertation, submitted by me, is my own work, that I have referenced all the sources that I have used and that no part of this dissertation was previously submitted at any tertiary institution.

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Found in translation: Effective translation of the needs of rural
women for social support services delivered through ICT

A Mini-dissertation by

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Abstract

A field study was performed in a rural community in the Limpopo province, South Africa. The aim of the field study was to find an approach to effectively translate the needs of rural women for information about social support services provided through ICT. Sen's capability approach framed the study with the Capability Approach Framework used to analyse the results.

The results of the study confirmed the need of the rural women for access to relevant information; indicated an acceptance of the concept to use cell phones as the ICT commodity to access information; and demonstrated the conceptual journey of the participants' agency role, from standard of living to agency. An approach based on the amended Capability Approach Framework is suggested to effectively translate the needs of rural women for information about social support services provided through ICT:

- a) Assess the agency role of the participants at the beginning and conclusion of the study
- b) Build the appropriate interventions
- c) Consider the conversion factors
- d) Define the capabilities applicable to the study and affected through the study

The limited time spent with the participants and the restricted nature of this study are not supportive of a detailed and comprehensive map to the Capability Approach Framework. Further research with the study design based on the Capability Approach Framework, adapted with the agency role, is recommended.

Keywords: ICT4D; capability approach; women; rural community.

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Chapter 1 – Introduction

“Overcoming poverty is not a gesture of charity. It is an act of justice.” - Nelson Mandela

1.1 Introduction

The purpose of this study is to find an approach to effectively translate the information needs of rural women for social support services accessed through information and communication technology (ICT), in order to enhance the women’s experience of the good life, as defined by the capability approach (Sen, 1999).

Poverty is the deprivation of basic capabilities rather than merely the lowness of incomes (Sen, 1999). In South Africa, 16.5 million people are living below the poverty line (Statistics South Africa, 2010). The poverty line used, is the proportion of population with an income below R269 per month (Statistics South Africa, 2010). In addition, the Gini coefficient (total income including free services) is 0.71 (Statistics South Africa, 2010). The Gini coefficient measures the distribution of the national income and varies between 0 and 1, with a score closer to 1 indicating more inequality (Landman, Borat, Van der Berg, & Van Aardt, 2003).

Poverty can also be seen as a form of social exclusion; however, income as a measurement of poverty is not the only influence on the lives people lead (Sen, 2000). Sen argued that human development could be seen as a process of expanding the real freedoms that people enjoy (Sen, 1999). He developed and refined the capability approach over three decades, since the Tanner lectures in 1979 (Robeyns, 2003; Zheng, 2009). The capability approach is a broad normative framework for the evaluation and assessment of individual well-being and social arrangements (Robeyns, 2003; 2005). According to the capability approach, the capability perspective on poverty is multidimensional, with distinct capabilities (what people are effectively able to do and to be) and functionings (the beings and doings of people) (Sen, 1999; 2000; Robeyns, 2003). Therefore, poverty alleviation should also be addressed with a multidimensional approach to unlock the capabilities of people to live a good life (Sen, 2000).

One way of measuring human development, is the United Nations Development Programme’s Human Development Index (HDI). The HDI was created to emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone (United Nations Development Programme, 2010). In the same spirit, Nelson Mandela wrote, in “The Long Walk to Freedom” (1995), that, education is the great engine of personal development that enables a daughter from a peasant to become a doctor – it is what people make out of what they have, not what they are given, that separates one person from another.

The reduction of poverty is one of the Millennium Development Goals (MDGs) that South Africa embraced into a national set of ten priorities (Statistics South Africa, 2010). Throughout the MDGs, the role of women are intertwined, such as in the eradication of extreme poverty and hunger, promoting gender equality and empowering women, child mortality and the various health related goals. Specifically, “Promote gender equality and empowerment of women” is the third MDG (Sachs & McArthur, 2005; Statistics South Africa, 2010). The Heads of States of the African Union announced 2010-2020 as the decade for the African Woman in recognition of her role in combating poverty and stimulating sustainable development (Government Communications, 2010). The importance for research on the role of women in connection with ICT in developing countries has been identified (Walsham, Robey, & Sahay, 2007). Women are the catalyst for social change.

Access to information is crucial to reach the Millennium Development Goals with information and communication technology (ICT) as the delivery vehicle. The need exists for the effective application of ICT to positively influence the lives and livelihoods of poor people and marginalised communities (Unwin, 2009). In addition, the World Bank stated that ICT has an essential role to play in poverty alleviation and achieving the MDGs. To quote from the World Bank Working Paper: “*No longer are information and communication networks and services luxuries for developing countries – they are now a necessity*” (Guislain, Ampah, Besancon, Niang, & Serot, 2005). However, care should be taken not to pursue ICT for the sake of ICT. Many failed ICT initiatives bears witness to the misalignment between the research goals and the community’s requirements (Avgerou, 2008). The only way these ICT initiatives can be sustainable is, if the needs of the users are understood and the embedded technologies deliver on the needs in appropriate ways (Unwin, 2009).

It is a basic human trait to desire to help less fortunate people (Shermer, 2004 as cited in Weber, 2009). It is a visible theme in research and described as “development”, and more specifically the use of technology to enable development, referred in research and in practice as information and communication technology for development, with the acronym as ICT4D or ICT4RD for rural development. In this study, the acronym “ICT4D” will be used.

ICT4D research emerged during the late 1980s. A landmark in this emergence was the first IFIP conference in New Delhi in 1988 (Avgerou, 2008). The nature of ICT4D projects leads itself to qualitative and interpretive research. The majority of early work was based on case studies and critiqued as opportunistic work which raised questions regarding the research quality (Weber, 2009; Avgerou, 2009). In addition, ICT4D projects must consider the local unique requirements (Avgerou, 2008), such as in Africa, for effective research and projects (Krauss, 2009a; Asante, 1983; Jackson, 2002) with the unique challenges of community entry and the emancipation of both sides of the development divide (Kanungo, 2004; Krauss & Turpin, 2010). ICT4D research also raised questions

about the sustainability and measurability of the projects (Ali & Bailur, 2007; Zheng, 2009; Unwin, 2009; Weber, 2009).

1.2 Problem statement

According to Statistics South Africa, South Africa has a population of 50.59 million with an estimate of 46.3 per cent of the population living in rural areas. As indicated by South Africa's HDI of 0.597 (rank 110), South Africa has a medium level of human development, varying between the nine provinces from a high level of human development (Gauteng and Western Cape) to a low level of human development (Limpopo). The HDI is a summary composite index that measures a country's average achievements in three basic aspects of human development: health, education, and income. South Africans have a life expectancy of 52 years, an average of 8.2 years of schooling and a gross national income per capita (expressed in purchasing power parity US\$) of 9.2 (United Nations Development Programme, 2010). An application of the HDI is to indicate specific areas in South Africa for prioritising human development programs and policies.

South Africa has a large population in need of social services. The Social Cluster in the South African Government provides a basket of services with the assistance of various non-government stakeholders (Educational Support Services Trust, 2007). The Social Cluster comprises of the Department of Home Affairs, the Department of Social Development, the Department of Health, the Department of Human Settlements, the Department of Education, the Department of Labour and Local Government. A significant section of the population in need of social services lives in rural areas, mostly with women taking care of the household (Dlodlo, 2009; Statistics South Africa, 2010). Often, these women do not know what assistance is available to them or how to access the services (Dlodlo, 2009).

In addition, the information is located in Government offices and on Government websites, both locations difficult for rural women to reach. Rural women's mode of transport is mostly public transport that has a significant cost implication and is often not affordable for people who live below the poverty line. Internet access is not common in rural areas, stunted by the high costs of telecommunications, broadband and home computers (Gillwald, Esselaar, Burton, & Stavrou, 2005; Calandro, Gillwald, Moyo, & Stork, 2010). In contrast to fixed line telecommunication access, South Africa experiences a growth in the use of cell phones with more than five million people accessing the Internet through their cell phones (Calandro, Gillwald, Moyo, & Stork, 2010). According to the South African Advertising Research Foundation (SAARF), 9.4 million people in rural areas use cell phones, of which 56 per cent are women older than 15 years. Internet access is still not common; 5.57 per cent of people living in rural areas surveyed, accessed the Internet personally in the past twelve months from the survey date (South African Advertising Research Foundation, 2010).

Given this background, the challenge is to translate the needs for social services' assistance to the basket of services offered by Government and other stakeholders in an efficient way, to contribute to the dignity of the women and her community and to their experience of a good life.

The objective of this study is to:

- Understand the functionings of rural women in terms of their need for information about social support services
- Explore the capability set of rural women that can contribute to their ability to lead the kind of lives they want to, when adding access to information as a good with a social conversion factor
- Interpret the study in terms of the capability approach as explained by Robeyns (2003)

The problem addressed in this research is; how to effectively translate the needs of rural women for social support services, using ICT.

1.3 Research questions

1.3.1 Primary research question

This study seeks to examine the primary research question: How should the needs of rural women effectively be translated for social support services provided through the use of ICT?

1.3.2 Secondary research questions

In order to answer the primary research question, the following secondary research questions have been identified:

- What are the functionings of women living in rural communities?
- What capabilities can social support services enable?
- What are the previous experiences of the study participants in dealing with Government Departments?
- What are the ICT capabilities of the study participants?

1.4 Research methodology

ICT4D research primarily follows one of five types of research methods: acquisition of data from secondary sources; surveys; field studies (especially case studies); action research; and field experiments (Weber, 2009). This inquiry follows an interpretative research approach with a case study. Participant observation and focus group interviews are used as a qualitative method, to collect data to enable the understanding of the social and cultural context in which the research takes place. The interview questions are semi-structured. The study is done through the lens of Sen's capability approach.

Case studies have been extensively used as an ICT4D research method (Weber, 2009). Care must be taken to define the design decisions of the study and explain the reasons for these choices. The design of the case study for this inquiry follows Eisenhardt's (1989) major case study steps with careful consideration of the problems identified in ICT4D case study research by Weber (2009).

Table 1.1. Eisenhardt's (1989) case study design decisions, with considerations as recommended by Weber (2009), applied to this study

Design step	Considerations
Getting started	Research question and sub questions are defined.
Selecting cases	Careful consideration is given to the selection of the case study population. This study is limited to one case.
Creating instruments and protocols	Participant observation with focus group interviews is used. Due to the limited nature of the study for the mini-dissertation purposes, only one researcher is used to collect data.
Entering the field	The researcher follows the R.E.A.L. approach to community entry with the assistance of a cultural interpreter (Weyers, 2011a).
Analysing within-case data	The case is documented in detail with explanations of how the case study data has been analysed.
Searching for cross-case patterns	This study is limited to one case study. Searching for cross-case patterns could be part of the recommendations for future study.
Shaping hypotheses	The study must explain how constructs were identified and refined and their levels measured. Explaining how relationships among constructs were identified and evidence in support of these relationships was deduced, is also necessary.
Unfolding literature	Use conflicting and similar literature to strengthen internal and external validities.
Reaching closure	Explain the duration of the case study data collection and the process of analysis of the case study data.

Participant observation, also referred to as fieldwork, is the observation of people doing things while participating, to some extent, in these activities (Myers, 2009). In qualitative research, a focus group is a data gathering technique where the researcher participates in and observes people in their natural setting. The purpose of focus group interviews is to get collective views on a certain defined topic of interest from a group of people (between 7 and 12 participants) who are known to have had certain experiences (Myers, 2009). Semi-structured interviews involve the use of some pre-formulated questions, but there is no strict adherence to these questions (Myers, 2009).

The study focuses on the needs of rural women, a different culture and environment to that of the researcher. The researcher uses a cultural interpreter as an advisor and follows the R.E.A.L. approach

to community participation (Krauss, 2009a). Weyers (2011a) suggests the “R.E.A.L.” approach to community participation:

- R = Respect the people and their customs, protocol, knowledge, values, views and standards
- E = Encourage them to share their knowledge and ideas by using appropriate techniques
- A = Ask questions and give feedback
- L = Listen carefully

Participant observation consists of three phases as adapted from Jackson (1987) by Myers (2009). The phases are planning, collecting and analysing. In the planning phase the researcher has set the study goals, determined what equipment (such as a voice recorder) is required, determined the budget and identified other resources needed, planned and gained access to the participants’ community, and discovered what other research may already have been done on the same subject.

During the collection phase, the study participants must accept the researcher. Information is collected by asking questions, listening, watching and recording observations. The data will be observations captured in field notes and recorded conversations. As recommended by Payne and Payne (2004), cited by Meyers (2009), a qualitative researcher should record as much as possible in the field notes, including the researcher’s own reactions.

The final phase is analysing the collected information. The bulk of information from the interviews is unstructured text, gathered from the focus groups that comprised of rural women. A qualitative content analysis is used as an analytical method, to interpret the information collected during the study. Qualitative content analysis is a method for systematically describing the meaning of qualitative material (Schreier, 2012).

Key to participant observation is gaining access to the community and the study participants (Krauss, 2009a; Myers, 2009). The researcher benefits from existing relationships between her organisation and a rural community. A project manager from a previous research project in the community introduced the researcher to a community leader. The community leader has, in the past, been willing to act as the cultural interpreter and translator. A cultural interpreter and translator is crucial to the success of the study (Krauss, 2009a; Krauss, 2009b; Myers, 2009).

1.5 Limitations and bias

A limitation of this study is that participant observation can only focus on a small group at a time (Myers, 2009). It may also be a limitation that the idea of access to information through ICT is perceived as abstract and the participants need time to adjust to these types of conversation. The nature of this study (mini-dissertation) does not lend itself to a lengthy and in-depth research study. However, the researcher is committed to a quality study, given the limitations of time and scope.

The data collection method, focus group interviews, has been done in a combination of languages (English and seSotho). As the researcher cannot converse in seSotho, and relies on the translator, some content and intent may be lost in translation.

The research is viewed through the capability approach lens and may cause certain biases to emerge in the research findings.

1.6 The contribution to the field of Informatics

ICT for Sustainable Development is one of the three research focus areas of the Department of Informatics at the University of Pretoria. The Department recognises the importance of ICT to bring sustainable socio-economic development to impoverished communities. This study's research topic is relevant to this focus area and aligns with the Department of Informatics' research topics, for example: *“ICT for development: What are the difficulties and concerns of deep rural communities in SA and how do these issues affect community engagement and ICT4D research practice?”* and *“What is the potential role of emerging technologies (e.g. mobile technologies, internet technologies, social networking) in developing communities?”* (Department of Informatics, n.d.).

This research contributes to the ICT4D literature in a South African context as well as to the role of women in rural development. This study also highlights the need to access information and the use of technology as the bridge between organisations as information providers and citizens (customers) as information consumers. Organisations sometimes miss the opportunity to receive information from their customers, for example, quality or incident reports. The communication bridge between organisations and their customers can become a two-way channel where customers can create information for organisations to consume.

1.7 Structure of the research

1.7.1 [Chapter 1 – Introduction and background](#)

This chapter introduced the study and the research questions.

1.7.2 [Chapter 2 – Literature review](#)

This chapter describes the literature review conducted by the researcher. The method of finding the literature will be explained, followed by a discussion of the literature organised in the relevant categories supporting the research problem statement.

1.7.3 [Chapter 3 – Methodology](#)

This chapter discusses the research methodology applied during this study. The data sources, data collection procedures, collected data and data processing methods are described, as well as referring to other discourses on ICT4D research methodologies.

1.7.4 [Chapter 4 – Data analysis](#)

This chapter describes and presents the data analysis and interpretation of the data collected.

1.7.5 [Chapter 5 – Conclusion and recommendations](#)

This is the conclusion of the study. The chapter provides the response to the research question; discusses the contribution to the ICT4D field; and makes recommendations, based on the research findings, for possible future research.

1.8 Conclusion

This chapter presents the problem statement, research question, sub-questions, objectives and expected contributions. In the introduction, an overview of the reasoning behind the problem statement has been positioned, to explain why the focus is on rural women, access to information and ICT, as well as the importance of Sen's capability approach as the lens through which this study is viewed. The next chapter discusses the literature survey, including the preliminary literature review.

Chapter 2 – Literature review

“There is nothing like returning to a place that remains unchanged to find the ways in which you yourself have altered.” - Nelson Mandela

2.1 Introduction

The researcher discussed the problem statement that this study pursues, background and a general outline of the dissertation in [Chapter 1](#). This chapter describes the literature review conducted by the researcher. The method of finding the literature, including a preliminary search, is explained, followed by a discussion of the literature, organised in the relevant categories supporting the research problem statement.

The literature included in this study is by no means an exhausted list of available literature on the subject. As discussed in the preliminary literature review, the researcher limited the search to the keywords from the research question and sub-questions with anchor authors such as Sen, for the capability approach.

2.2 Preliminary literature review

The focus of the preliminary literature review was to identify current and ongoing research on the needs of women and ICT. The purpose of the review is to test the validity of the research questions and problem statement. The researcher used a number of prominent online databases such as ABI/Inform Proquest, Emerald, IEEE Explore, ISI Web of Knowledge, Science Direct and UP Space. Table 2.1 summarises the use of keywords in the preliminary searches and Table 2.2 presents the analysis of the results.

Table 2.1. Keywords used in the preliminary search

	Keywords
Search 1	“support services” AND women AND ICT
Search 2	women AND needs AND ICT
Search 3	“support services” AND women AND mobile
Search 4	women AND ICT4D

Table 2.2. Analysis of the preliminary search results

Database	Search	Results
ABI/Inform Proquest	1. “support services” AND women AND ICT	One relevant article.
	2. needs AND women AND ICT	Nothing relevant.
	3. “support services” AND women AND mobile	Nothing relevant.
	4. women AND ICT4D	Nothing.
Emerald	1. “support services” AND women AND ICT	One relevant article.
	2. needs AND women AND ICT	Two relevant articles.
	3. “support services” AND women AND mobile	One relevant article.
	4. women AND ICT4D	One relevant article.
IEEE Explore	1. “support services” AND women AND ICT	Two relevant articles.
	2. needs AND women AND ICT	Two relevant articles.
	3. “support services” AND women AND mobile	Nothing relevant.
	4. women AND ICT4D	Nothing.
ISI Web of Knowledge	1. “support services” AND women AND ICT	Nothing.
	2. needs AND women AND ICT	One relevant article.
	3. “support services” AND women AND mobile	Nothing relevant.
	4. women AND ICT4D	Nothing relevant.
Science Direct	1. “support services” AND women AND ICT	Many relevant articles.
	2. needs AND women AND ICT	Many relevant articles.
	3. “support services” AND women AND mobile	Many relevant articles.
	4. women AND ICT4D	Four relevant articles.
UP Space	1. “support services” AND women AND ICT	Nothing relevant.
	2. needs AND women AND ICT	One relevant article.
	3. “support services” AND women AND mobile	Nothing relevant; “mobile” is interpreted as “transport”.
	4. women AND ICT4D	Nothing relevant.

The preliminary literature search provided some useful articles such as Joseph and Andrew (2009), Gomez, Ambikar and Coward (2009), Verdegem and Verhoest (2009), Gilbert, Masucci, Homko and

Bove (2008), Morrell and Sterling (2006), and Kanungo (2004). The search gave the researcher an indication that a gap may exist in the existing literature for the proposed research problem statement and that the specific research question may not have been addressed yet. The researcher continued the literature search, following references used by the articles found in the preliminary search, books found on Google Scholar (ICT4D by Tim Unwin (2009) and Development as Freedom by Amartya Sen (1999)), as well as articles suggested by her study leader.

Following, is a discussion on the articles, conference proceedings, books and statistical reports used as reference for this study. The referenced literature is grouped in categories pertaining to the study: information and communication technology for development (ICT4D); Sen's capability approach; and rural women and community entry.

2.3 Information and communication technology for development (ICT4D)

It is a basic human trait to desire to help less fortunate people (Shermer, 2004, as cited in Weber, 2009). The human trait to help others is a visible theme in the research and described as "development", and more specifically, the use of technology to enable development, referred in research and in practice as information and communication technology for development (ICT4D). Development is a multidimensional concept with economic growth, participation and empowerment some of its dimensions (Sen, 1999; Unwin, 2009; Roode, Speight, Pollock, & Webber, 2004). Human development can be seen as a process of expanding the real freedoms that people enjoy (Sen, 1999).

The need exists for the effective application of ICT to positively influence the lives and livelihoods of poor people and marginalised communities (Unwin, 2009). In addition, the World Bank stated that ICT has an essential role to play in poverty alleviation and achieving the MDGs. To quote from the World Bank Working Paper: "*No longer are information and communication networks and services luxuries for developing countries – they are now a necessity*" (Guislain, Ampah, Besancon, Niang, & Serot, 2005). However, care must be taken during ICT4D projects, not to complicate progressive development agendas or exaggerate the contribution of ICT to development (Rubinoff, 2005).

The literature review on ICT4D is organised as follows. The first section offers a view on existing ICT4D literature. The nature of ICT4D projects leads itself to qualitative and interpretive research. The majority of early work was based on case studies and critiqued as opportunistic work, which raised questions regarding the research quality (Weber, 2009; Avgerou, 2009). The second section reviews discourses on ICT4D research. In addition, ICT4D projects must consider the local unique requirements (Avgerou, 2008; Thompson & Walsham, 2010), such as in Africa, for effective research and projects. ICT4D research also raised questions about the sustainability of the projects (Ali & Bailur, 2007; Madon, Reinhard, Roode, & Walsham, 2009) and is discussed in the third section, rural women and community entry.

2.3.1 A view on ICT4D literature

At the World Summit on the Information Society in 2003, Kofi Annan, in his capacity as the United Nations Secretary-General, described the digital divide as a collection of gaps. These gaps are the technological divide, the content divide, the gender divide and the commercial divide. He said that information and communication technologies are not a panacea or magic formula, but they can improve the lives of everyone on this planet.

The term “digital divide” was introduced in the 1990s to refer to the growing differences in access communities had to computers and the internet, signifying a new form of inequality and source of socio-economic disadvantage (Kvasny & Truex, 2001; Gilbert, Masucci, Homko, & Bove, 2008; Van Rensburg, Veldsman, & Jenkins, 2008; Avgerou, 2009; Unwin, 2009). Crampton (2004) defined the digital divide as the unequal access to knowledge in the information society, while Nederveen Pieterse (2010) argued that the divide is not digital, but socioeconomic.

Access to on-line computers, the increase of levels of information, knowledge, communication and other types of socially valued benefits through the use of ICT and where the absence of access and resulting computer illiteracy will create a dichotomous society of haves and have-nots, are the core of the digital divide discourse (Kvasny & Truex, 2001; Carpentier, 2003; Madon, Reinhard, Roode, & Walsham, 2009). Besides categorising the digital divide as those who have access to ICT connectivity and computing mechanisms, those who create content in digital format and those reduced to consuming this content is a third category of the divide (Van Rensburg, Veldsman, & Jenkins, 2008).

Digital divides can also exist within communities if ICT projects undertaken to promote digital inclusion missed the least-advantaged groups in the communities that they aim to serve. Missing some groups can produce a local form of digital divide within these communities. Often girls and women have less access to ICT than boys and men, causing the gendered digital divide (Huyer, 2005; Morrell & Sterling, 2006). Long-term value is only derived if the projects become institutionalised in a way that aids successive generations (Madon, Reinhard, Roode, & Walsham, 2009).

In South Africa, internet access is not common in rural areas, stunted by the high costs of telecommunications, broadband and home computers (Gillwald, Esselaar, Burton, & Stavrou, 2005; Calandro, Gillwald, Moyo, & Stork, 2010). Only 5.57 per cent of people living in rural areas, surveyed by the South African Advertising Research Foundation (SAARF), accessed the Internet personally in the past twelve months from the survey date (South African Advertising Research Foundation, 2010). However, in contrast to fixed line telecommunication access, South Africa experiences a growth in the use of cell phones (Calandro, Gillwald, Moyo, & Stork, 2010). According to SAARF, 9.4 million people in rural areas use cell phones, of which 56 per cent are

women older than 15 years. Although a low percentage of people living in rural areas access the Internet, the opportunity present itself through cell phones. In South Africa, more than five million cell phone users access the Internet through their cell phones (Calandro, Gillwald, Moyo, & Stork, 2010). ICT4D research and projects are relevant, even crucial, for the digital and social inclusion of communities in South Africa.

It is clear that only focusing on access to computers will not address the digital divide (Kvasny & Truex, 2001; Crampton, 2004; Rubinoff, 2005). To cross the digital divide, three knowledge senses are required: to know with (access to the tools), to know what (access to information) and to know how (how to use the tools) (Crampton, 2004). Kvasny and Truex (2001) referred to Van Dijk and Hacker’s multifaceted framework for conceptualising access in terms of four hurdles that are in the way of the information and network society.

Table 2.3. Defining access (Kvasny & Truex, 2001)

Type of Access	Definition of the hurdle
Psychological	Lack of any digital experience caused by lack of interest, computer fear, and unattractiveness of the new technology
Material	Lack of possession of computers and network connections
Digital Skills	Lack of digital skills caused by insufficient user-friendliness and inadequate education or social support
Usage	Lack of significant usage opportunities

The structural divides will not subside with an increase in material access; once material access is more universal, structural divides concerning digital skills and usage will come to the fore (Kvasny & Truex, 2001). Part of the psychological access and usage access is to understand that ICT is not about networks and computers (the means to the end), but about information and communication (Roman & Colle, 2003). It is dangerous and naïve to follow a “field of dreams approach” by assuming that people will adopt the ICT project or use the provided content. It is important to raise awareness about the role of the ICT project while also exploring every opportunity to sensibly integrate into the existing local community structure (Roman & Colle, 2003).

ICT can make a tremendous contribution to human development for those that have access (Kozma, McGhee, Quellmalz, & Zalles, 2004). ICT contributes directly to human capabilities by increasing people’s ability to participate more actively in the social, educational, economic and political life of a community, as well as supporting economic growth through the productivity gains that is generated. A virtuous circle is created when the development of a highly skilled workforce contribute to technology development with the potential to reduce poverty and improve the human condition (Kozma, McGhee, Quellmalz, & Zalles, 2004). However, according to the United Nations Development Programme, the digital divide reduces the prospect that citizens of developing countries

will be able to participate in the growing global economy and minimises the potential that technology has for improving their health, educational, governmental, and cultural institutions (Kozma, McGhee, Quellmalz, & Zalles, 2004). Projects such as the World Bank's World Links program proved the dependency on government policy to promote the adoption of ICT in school curriculums and the success of combining teacher training with the classroom student experience. Students, teachers and administrators agreed that the World Links program contributed to student outcomes such as improved skills in reasoning with information, communication skills, knowledge of other cultures, better attitudes toward school and technology and improved technology skills (Kozma, McGhee, Quellmalz, & Zalles, 2004). The World Links program and other programs which aim to build the ICT infrastructure and teacher skills in developing countries can contribute to the improvement of education and the reduction of the digital divide, for their participants (Kozma, McGhee, Quellmalz, & Zalles, 2004).

Similar to the broader focus on people, development in the World Links program and addressing the digital divide as an outcome, Roode, Speight, Pollock and Webber (2004) proposed a different focus, from the digital divide to a socio-techno divide. They argued that the real problem concerns the divide between the socio-centric approach of human scale development, and the techno-centric approach of providing ICT and access to it. ICT4D projects must surpass being just about access to technology, but have a specific purpose (Roode, Speight, Pollock, & Webber, 2004; Gilbert, Masucci, Homko, & Bove, 2008).

An example of addressing the socio-techno divide is provided by Jain (2006), describing the knowledge management approach to empowering Africa's development. Knowledge management applications can be used to digitise indigenous knowledge. To use ICT as a catalyst in empowering Africa's development, the ICT conditions in Africa need to be addressed by ICT policy formulation, ICT literacy programs, legal and regulatory framework, manpower training, and empowerment of local people (Jain, 2006). The success of ICT4D programs rest on how well the needs of users are understood, with embedded technologies delivering on those needs (Unwin, 2009).

Although the focus proposed is on content and usability, many individuals do not own computers or have access to the Internet. This is where public ICT spaces such as libraries, tele-centres and cybercafés fulfil an important role. Important attributes of these public spaces are (Gomez, Ambikar, & Coward, 2009):

- equitable access (urban-centred);
- appropriateness of technology (availability of local content in local languages and cost to access the venue);
- human capacity and relevance (trained, knowledgeable workers);

- integration into daily routines;
- trust in technology (public access);
- social appropriation of technology;
- enabling environment; and
- local and macro-economic factors.

Bailey and Ngwenyama (2010) stressed the importance of basic literacy before computer literacy can be achieved, as well as the importance of social interaction, especially intergenerational interaction, in these public ICT spaces. To encourage the use of public ICT spaces, trust is one of the leading factors. Trust can be defined as perceived safety, relevance, reputation and coolness of the public access venues (Gomez & Gould, 2010).

Parallel to providing access to computers and the Internet, questions must be asked about user adoption and user resistance. One way of addressing this is by profiling the non-user, to understand if the non-users are hard to convince to use ICT and the Internet, under-skilled, or simply lacking the financial resources to afford connectivity. The findings from profiling the non-user suggested the need for a shift in focus of traditional inclusion away from “removing barriers” towards “adding value” (Verdegem & Verhoest, 2009). In summary, the principles required for effective ICT4D implementations are: a focus on needs; vision and commitment; infrastructure; effective partnerships; monitoring and evaluation; and accessibility (Unwin, 2009).

The question has clearly shifted from whether development can benefit from ICT, to how ICT can benefit development (Walsham & Sahay, 2006; Walsham, Robey, & Sahay, 2007). Bridging the digital divide should not be addressed as a technological fix, but as part of a capabilities approach and in terms of social capabilities (Nederveen Pieterse, 2010).

2.3.2 Discourses on research

ICT4D research emerged during the late 1980s. A landmark in this emergence was the first IFIP conference in New Delhi in 1988 (Avgerou, 2008). Due to the nature of ICT4D research, concerned with developing the freedoms of people and their communities, interpretive research is useful to understand human thought and action in social and organisational contexts (Klein & Myers, 1999). The fundamental principle of interpretive work of a hermeneutic nature is the hermeneutic circle, a meta-principle that is the foundation of six other principles. The idea of the hermeneutic circle suggests that insight into a complex whole is gained from the preconceptions about the meanings of its parts and their relationships (Klein & Myers, 1999). The six principles of the hermeneutic circle are: the principle of contextualisation; the principle of interaction between researchers and participants; the principle of abstraction and generalisation; the principle of dialogical reasoning; the principle of multiple interpretations; and the principle of suspicion.

The principles identified by Klein and Myers (1999) are useful to evaluate the quality of existing ICT4D research. Much of the ICT4D literature that uses qualitative analysis methods within an interpretive paradigm fail to satisfy the principles for high-quality interpretation of qualitative data. Walsham and Sahay (2006) agreed with this sentiment with a request for more studies to be explicitly critical, purely quantitative studies and more action research. They proposed a conceptual framework based on four questions (Walsham & Sahay, 2006):

1. What is the “development” to which ICTs aim to contribute?
2. What are the key issues being studied related to ICTs?
3. What is the theoretical and methodological stance?
4. What level and focus of analysis is being adopted?

The rapid expansion of ICT4D research is advocated (Walsham & Sahay, 2006; Walsham, Robey, & Sahay, 2007). Walsham and Sahay (2006) and Walsham, Robey and Sahay (2007) suggested a wider geographical spread, locally based research with researchers from the developing country, type of organisations and level of analysis as dimensions for research expansion with topics for future work scalability (most research projects were small-scale pilot projects), in-depth studies of particular technologies, society-wide critical issues and gender studies. The focus of the gender studies should be the role of women in connection with ICT in developing countries (Walsham, Robey, & Sahay, 2007; Gillard, Howcroft, Mitev, & Richardson, 2008).

Avgerou (2008; 2009) contributed to the discourse by arguing for the understanding of ICT innovation in relation to the social context and the recognition of the ICT4D research contribution to the expansion of the ICT research agenda. Avgerou (2008) identified three discourses in the current ICT4D research. The first discourse is the concern that ICT4D innovation is mainly concerned with catching up with the technologically advanced rich economies through transferring their technologies and emulating their institutions. Catching up is a process of technology and knowledge transfer and adaptation to local social conditions. The second discourse is about constructing new techno-organisational structures within a given local social context, with research emphasis on exploring local meanings and working out locally appropriate techno-organisational change, that is a process of socially embedded action. The third discourse is about creating possibilities for the improvement of life conditions in a particular locality amidst the global socio-economic order and considers ICT4D innovation as a transformative socio-economic process. Creating possibilities is therefore a process of transformative techno-organisational intervention associated with global politics and economics. There is a distinctive ICT4D research agenda comprising of failure, outsourcing and the strategic value of ICT. One of the contributions of the ICT4D research is the potentially significant theoretical contribution of ICT4D research for understanding ICT innovation in relation to social context and in relation to socio-economic development theories and policies (Avgerou, 2008).

ICT innovation is further explored by Avgerou (2009). Avgerou defined ICT4D innovation as the application of technologies that are common and widespread elsewhere, in an ICT4D context. The experience may be considered as innovation for the organisation undertaking the implementation, as well as in its socio-economic context. Seeing ICT4D project implementations as innovation sensitises the researcher to consider the effort of technology and associated organisational change and the value of such change in relation to an organisation's context. Avgerou (2009) argued that this is particularly important in ICT4D research and recognised that development is a contested notion due to conflicting interests and power relations. There are two perspectives on addressing issues of context of ICT innovation in ICT4D research, firstly transfer and diffusion and secondly, social embeddedness. Transfer and diffusion assume ICT technology and associated practices are independent from social circumstances. Social embeddedness is about constructing new techno-organisational structures within a given local social context and considers transfer and diffusion over-simple. It is a process of innovation in situ, tracing cognitive, emotional and political capabilities that individuals nurture. ICT4D research has the potential capacity to contribute towards the improvement of many different aspects of life – from alleviating poverty to strengthening the democratic polity.

Avgerou (2009) further distinguished between two perspectives of ICT-enabled development as the progressive transformation perspective and the disruptive transformation perspective, and four discourses in ICT4D research concluding that ICT4D research faces two major challenges. The first challenge is methodological/theoretical and the second is related with the legitimacy of discourses that openly address contemporary political issues and urged that theoretical strengthening is needed (Avgerou, 2009). Only through rigorous research can models of reality that provide the basis for a discourse where matters of agreement and disagreement, frame effective policies and actions, and potentially resolve matters of disagreement, be formulated (Weber, 2009).

Brown and Grant (2010) argued that there is confusion in the research agenda between ICT for Development and ICT in developing countries and proposed a framework to partition the existing research literature into two distinct streams of research. The first stream contains the studies that focus on understanding technology “for development” and the second stream for studies that focus on understanding technology in “developing” countries. Brown and Grant (2010) urged that increased attention should be placed on the “for development” stream, which is critically underrepresented within the literature, but imperatively important within the practitioner and donor agency environment, similar to Walsham, Robey and Sahay (2007) and Avgerou (2009).

Africa brings its own challenges where there are many competing demands for scarce funding and infrastructure challenges. There is currently a lack of papers with an explicit focus on ICT as strategic developmental enabler in Africa (Thompson & Walsham, 2010). Developmental ICT can be defined as the conception, development, implementation, and use of ICT as an explicit vehicle for furthering

developmental aims – where ICT functions both as enabling artefact and enabled set of social behaviours (Thompson, 2008). Thompson and Walsham (2010) identified four strategic dimensions where ICT has potential as a significant enabler for transformational development in Africa namely: institutional infrastructure; governance, accountability and civil society; service production and economic activity; and access to global markets and resources. They warned against the naïve attempts to “transfer in” ICT to African contexts regardless of cultural relevance or sustainability and recognised the political challenges of driving a developmental agenda. However, African developmental research intertwined with African ICT research deserves commitment from a body of research (Thompson & Walsham, 2010).

Weyers (2011a) recommended a practical strategy for conducting research in communities following the community development model. The strategy will be:

- To first negotiate entry into the community,
- then mobilise community members into different task groups,
- then enable these groups to identify, prioritise and take ownership of their own and/or the community’s problems and needs, and
- then help them to develop the will and ability to eliminate these impediments.

2.3.3 Sustainability and measurability

The shadow side of ICT4D studies and projects is the challenges around sustainability and measurability to benchmark the success of ICT4D projects. Traditionally, sustainability is divided into five types: financial/economic, social/culture, political/institutional, technological and environmental, with ICT4D projects focussing on economic sustainability (Ali & Bailur, 2007; Van Rensburg, Veldsman, & Jenkins, 2008; Madon, Reinhard, Roode, & Walsham, 2009). Sustainability is one of the key measurements, together with context and community participation, to benchmark successful ICT4D projects (Ali & Bailur, 2007) as well as long-term value and scalability (Madon, Reinhard, Roode, & Walsham, 2009). However, questions are asked about what can be done differently on ICT4D projects to either improve the chance of sustainability or to redefine the sustainability measurement (Braa, Monteiro, & Sahay, 2004; Ali & Bailur, 2007; Van Rensburg, Veldsman, & Jenkins, 2008; Madon, Reinhard, Roode, & Walsham, 2009).

Different approaches that start with the design of research projects, such as building sustainable networks of action, are called for (Braa, Monteiro, & Sahay, 2004). The concern is how to facilitate politically charged changes and build capacity to sustain the changes when most ICT4D projects are small-scale pilot projects (Braa, Monteiro, & Sahay, 2004; Walsham, Robey, & Sahay, 2007). To counter the problems experienced by researchers on small-scale projects such as scalability and isolation, Braa, Monteiro and Sahay (2004) promoted the networks of action approach. This approach

is characterised by abandoning single, one-site action research projects in favour of a network of research sites, generating local self-sufficient learning processes, nurturing a robust, heterogeneous collection of actors, and aligning interventions with the surrounding existing institutions.

The challenges with measuring sustainability is firstly conceptual in that sustainability implies stability, yet undergoes movement, therefore making it impossible to define what may be essential for sustainability and what might not (Fowler, 2000). The second challenge is that of operationalising sustainability, more so in sustainable development (Ali & Bailur, 2007). Understanding these challenges, Ali and Bailur (2007) offered bricolage as an alternative to sustainability. Bricolage is the process of improvisation and unintended consequences of technology. The bricolage process allows people at the local level to apply known tools and routines at hand to solve new problems (Ali & Bailur, 2007). In addition, Ali and Bailur (2007) recommended that the ICT4D field should differentiate more clearly between the sustainability of a concept and sustainability of the artefact. The challenge of sustainability is that it tries to achieve a tenuous balance between progress and stability, satisfaction and dissatisfaction of the artefact (Fowler, 2000). The balance is an impossible task as nothing has ever been sustainable and nothing will ever be (Ali & Bailur, 2007). This viewpoint needs to be balanced by the theory of unintended consequences, as the need exists to anticipate the unintended but predictable consequences. Any action has very many consequences, and only some of the consequences could have been intended by the actors (Sen, 1999). One may not know beforehand the exact unintended consequences but can assume or predict that unintended consequences will occur; causing benefits on both sides of the relationship and therefore contribute to sustainability (Sen, 1999).

Van Rensburg, Veldsman and Jenkins (2008) argued that sustainability is achievable but requires a more socially responsible approach to business development through the enhancement of the service delivery channel by a coordinated approach to ownership and to channel support promoting community-based businesses. The approach requires a changed mindset, one that sees the creation of ICT-enabled service-orientated entrepreneurs focused on using ICT in “production” mode as well as creating local content. These entrepreneurs are trusted members of the community selected through a process testing a variety of skills, personality, and consideration for their position within and relationships with the community. The entrepreneurs render services that benefit the community, at the same time generate sustainable livelihoods for themselves, and require ongoing skills development beyond the ICT enablement. Skills include business skills and soft skills such as conflict resolution and negotiation. Important to the success of such an ICT4D initiative is the local ownership, local service needs assessment and local participation by suitable entrepreneurial-minded individuals. Ongoing mentoring is required to counter the more serious challenges where long-term poverty had diminished the belief in a better and improved life (Van Rensburg, Veldsman, & Jenkins, 2008).

The three issues that are critically important to digital inclusion projects are; determining the value and beneficiaries of these projects, sustainability and scalability (Madon, Reinhard, Roode, & Walsham, 2009). In order to improve the chances of long-term value, sustainability and scalability, Madon, Reinhard, Roode and Walsham (2009) identified four key processes of institutionalisation based on institution theory. These four key processes are: getting symbolic acceptance by the community; stimulating valuable social activity in relevant social groups; generating linkage to viable revenue streams; and enrolling government support. Crucial to the sustainability discourse is that ICT4D initiatives can only be sustainable or effective if the embedded technologies deliver on the demands of users in appropriate ways (Unwin, 2009).

2.4 Capability approach

2.4.1 An introduction to the capability approach

Development can be seen as a process of removing unfreedoms and of extending the substantive freedoms of different types, that people have reason to value (Sen, 1999). Sen (1999) argued that there are two distinct reasons for the crucial importance of individual freedom in the concept of development related to evaluation and effectiveness. Firstly, to evaluate the success of a society by the substantive individual freedoms that the members of that society enjoy, as opposed to traditional normative approaches that focus on other variables such as utility, procedural liberty or real income. Secondly, freedom is also a principal determinant of individual initiative and social effectiveness. Greater freedom enhances the ability of people to help themselves and also to influence the world – central to the process of development (Sen, 1999). Development is therefore the expansion of the capabilities of persons to lead the kind of lives they value, and have reason to value. Sen (1999) defined capability as “*A person’s capability refers to the alternative combinations of functionings that are feasible for her to achieve. Capability is thus a kind of freedom: the substantive freedom to achieve alternative functioning combinations.*” Functionings are defined as the various things a person may value doing or being. This approach to development as freedom is referred to as Sen’s capability approach.

The capability approach is a broad normative framework for the evaluation and assessment of individual well-being and social arrangement. The framework was developed and refined over three decades after the Tanner lectures in 1979, in a number of books and journal articles across disciplines (Zheng, 2009). The focus is on what people are effectively able to do and to be – their capabilities (Robeyns, 2003; 2005). Capability in this approach reflects the real opportunities (environmental opportunities and individual abilities) that a person has, to lead a valued life (Zheng, 2009).

The capability approach distinguishes between achieved functionings and capabilities as the realised and the effectively possible, or between achievements and freedoms (Robeyns, 2003). As explained

by Robeyns (2003), what is ultimately important is that people have the freedoms (capabilities) to lead the kind of lives they want to lead, to do what they want to do and be the person they want to be. They have the freedom to choose whether to act on those freedoms in line with their own ideas of the kind of life they want to live, or not: their own definition of the good life.

The capability approach can be used to measure poverty or inequality, or can be used as an alternative for traditional utilitarian cost-benefit analysis (Robeyns, 2003). The distinction between commodities and functionings is another distinction in the capability approach.

Commodities are goods and services (means) and are of interest when they enable a functioning (ends) as illustrated by Figure 2.1. Only the ends have intrinsic importance and the means are only instrumental to reach the goal (Robeyns, 2005). The conversion of a capability to a functioning, by means of a commodity, is influenced by a possibility of three conversion factors namely personal conversion factors such as physical conditions; gender; intelligence; or literacy, social conversion factors such as public policies; social norms; or gender roles, and environmental conversion factors such as climate; or geographic location (Robeyns, 2003).

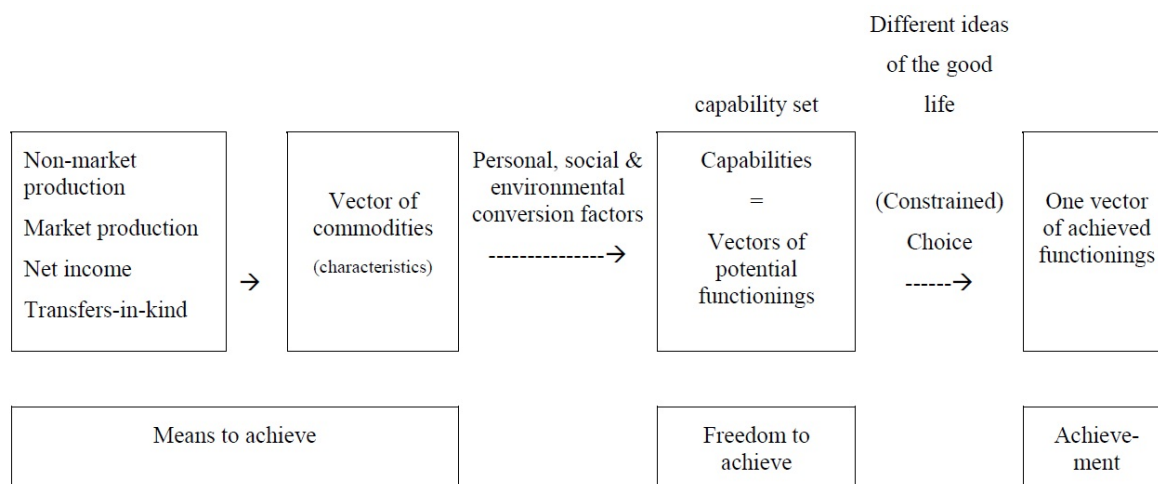


Figure 2.1. The capability approach and the role that commodities play (Robeyns, 2003)

The capability approach differentiates between standard of living, well-being and agency. Sen used the term “agent” as someone who acts and brings about change. The capability approach is particularly concerned with the agency role of the individual as a member of the public and as a participant in economic, social and political actions (Sen, 1999). Robeyns (2003; 2005) explained the main differences between these concepts as standard of living is “*personal well-being related to one’s own life*”, well-being as standard of living with the outcomes resulting from sympathies (such as from helping another person and thereby feeling oneself better off), and agency as well-being supplemented with commitments (such as an action which is not beneficial to the person herself).

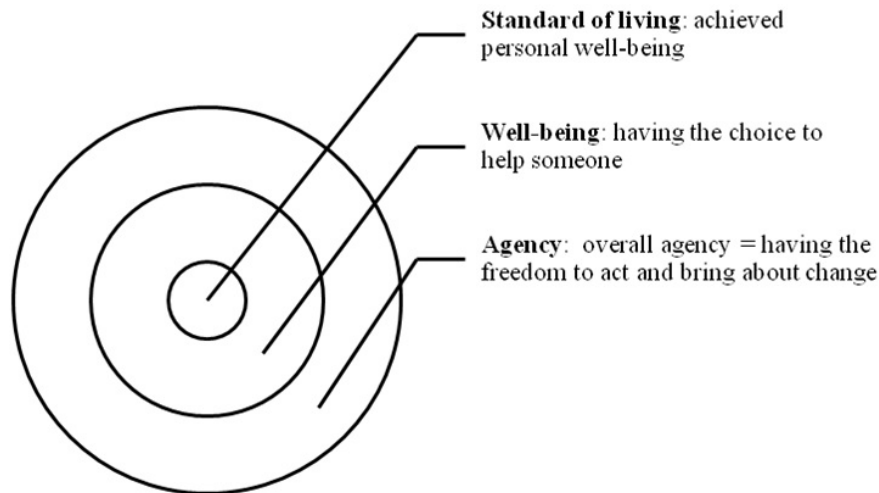


Figure 2.2. Relationship between standard of living, well-being and agency

The capability approach recognises the importance of human diversity and can account for interpersonal variations in conversion of the characteristics of the commodities into functionings. Two different persons have quite divergent opportunities of quality of life even when they share exactly the same commodity bundle (Sen, 1999; Robeyns, 2003; Zheng & Walsham, 2008).

It is important to view the capability approach as a framework and not a fully specified theory. There are three different levels at which the capability approach is used (Robeyns, 2003):

1. As a framework of thought for the evaluation of individual advantage and social arrangement
2. As a critique of other approaches to the evaluation of well-being and justice
3. As a formula or algorithm to make interpersonal comparisons of welfare or well-being

Table 2.4. Summary of terminology referred to in the capability approach literature (Sen, 1999; Robeyns, 2003)

Terminology	Comments
Capability approach	A broad normative framework for the evaluation and assessment of individual well-being and social arrangements
Development	A process of expanding the real freedoms that people enjoy
Freedom	Greater freedom enhances the ability of people to help themselves and also to influence the world – central to the process of development
Capability	Valuable options from which one can choose Potential achievements
Functionings	The beings and doings of people Realised achievements
Commodity	Goods and services that enable functionings
Means and ends	Only the ends have intrinsic importance; means are instrumental to reach the goal

Terminology	Comments
Conversion factor	The conversion of a capability to a functioning by means of a commodity is influenced by a possibility of three conversion factors: personal, social, environmental
Standard of living	Personal well-being; achieved well-being
Well-being	Personal well-being supplemented with outcomes from sympathies Well-being freedom: having the choice to help someone
Agency	Well-being supplemented by commitments Agency freedom: freedom to make a difference in the world
Agent	Someone who acts and brings about change
Good life	Freedoms (capabilities) to lead the kind of lives they want to lead, to do what they want to do and be the person they want to be. Freedom to live the kind of life, which, upon reflection, they find valuable.

2.4.2 Application of the capability approach

Sen (1999) argued that development starts with the individual promoting freedom as both the means and end to development. Sen's capability approach urges for a participatory approach to development, but most development practices and evaluations are still based on ideas of modernisation, evolutionism and the need for modern market systems where economic growth is considered the most important measure of development (Andersson, Grönlund, & Wicander, 2012). Researchers and policy makers are increasingly turning to the capability approach as an alternative to prioritise and measure development projects, for example using the United Nations Development Programme's Human Development Report that is in part based on the capability approach (Robeyns, 2006).

The capability approach provides concepts and a framework that can help conceptualise and evaluate poverty, inequality and well-being; although it is not a theory that can explain these phenomena and the approach is radically underspecified (Robeyns, 2006). Researchers have found that the focus on the individual and the open-endedness of the capability approach make it challenging to operationalise, but agree on the usefulness of the capability approach as alternative to the traditional economic measurement (Robeyns, 2006; Kleine, 2010; Andersson, Grönlund, & Wicander, 2012; Hatakka & Lagsten, 2012). Sen's capability approach urges for a participatory approach to both the means and the ends of development (Andersson, Grönlund, & Wicander, 2012; Johri & Pal, 2012).

Part of the digital divide debate is the notion of social exclusion. Sen (2000) argues that social exclusion can be seen as capability deprivation. Similarly, the freedoms defined in the capability approach, such as physical, digital, human and social resources, are used to promote social inclusion. Zheng and Walsham (2008) applied the principles of the capability approach to define questions to explore social exclusion in the e-society:

- What capabilities have become essential under the defining conditions of the e-society?
- Who may be disadvantageded by the deprivation of these capabilities?
- What are the relations between different types of capability deprivations?

Zheng (2009) generated e-development research questions from the capability approach grouped by the four elements of the capability approach: means and ends of development; commodities, capabilities and human diversity; agency and restricted agency; and evaluative spaces. This provided a shift in space in studying e-development, focusing on human development.

Kleine (2010; 2011) identified controllability and operationalisability as two key stumbling blocks preventing the capability approach from being more widely used. The Choice Framework was designed in response to these challenges. The Choice Framework is presented as a way of operationalising the capability approach and visualising the elements of a systemic conceptualising of the development process (Kleine, 2010; 2011). Choice is both the aim and principal means of development and can be seen as the primary development outcome (Sen, 1999). According to the capability approach, people themselves identify the capabilities they value. The advantage of this approach in an ICT4D context is that it reduces the risk of forcing a technology on people without the existence of the need (Kleine, Light, & Montero, 2012).

The Choice Framework is based on the capability approach and on Alsop and Heinsohn's Empowerment Framework while taking elements from the Sustainable Livelihood Framework used by the UK Department for International Development (Kleine, 2010; 2011; Kleine, Light, & Montero, 2012). Increased freedom of choice for people can be attained using the Choice Framework to:

- Deconstruct embedded ideologies
- Analyse the appropriateness of development goals
- Map development as a systemic process
- Plan interventions

The Choice Framework offers a suggestion as to how the capability approach could be applied in practice – both in analysis and planning of projects (Kleine, 2011; Kleine, Light, & Montero, 2012).

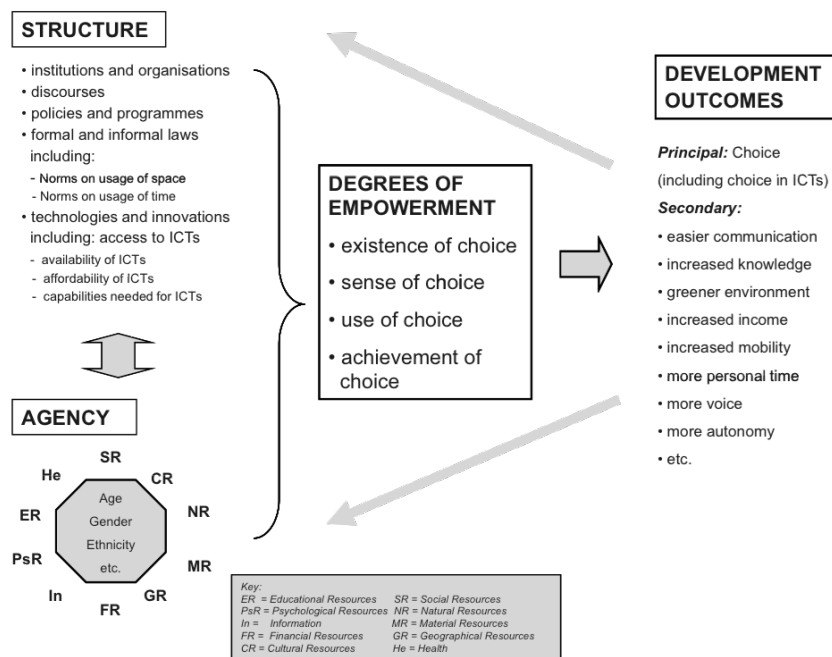


Figure 2.3. Choice Framework (Kleine, 2010)

Sen’s five freedoms, namely transparency guarantees, protective security, political freedoms, social opportunities and economic facilities, highlight areas in which ICT might reasonably be expected to make an enabling contribution. The areas of enabling contribution are defined as four enabling dimensions for ICT in development (Thompson & Walsham, 2010):

- ICT as institutional enabler
- ICT as enabler for governance, accountability, and civil society
- ICT as enabler in service production and economic activities
- ICT as enabler for access to global markets and resources

These four enabling dimensions form a model with Sen’s five freedoms and the United Nations Development Programme developmental constraints. The four dimensions model is a model for assessing the explicitly developmental relevance of ICT research (Thompson & Walsham, 2010). ICT in itself cannot be seen as an end to development efforts, but more as enabling sets of social behaviours (Thompson & Walsham, 2010; Qureshi, 2011). Applying Sen’s capability approach, ICTs appear to have provided people with the means by which they may take actions and make decisions that lead them towards a better quality of life (Qureshi, 2011).

The capability approach is the foundation of the Capability Approach Framework designed in an attempt to answer how ICT can lead to development (Hatakka & De', 2011; Hatakka & Lagsten, 2012). The framework focuses on the difference between potential and achieved functionings and the importance of context, as well as including a role for technology as a commodity. Hatakka and De' (2011) found that the capability approach allowed them to go beyond superficial variables of

technology implemented and focus on actual outcomes. The capability approach can be applied to empirical data so that the benefits outweigh the methodological difficulties associated with Sen's capability approach using the Capability Approach Framework (Hatakka & Lagsten, 2012).

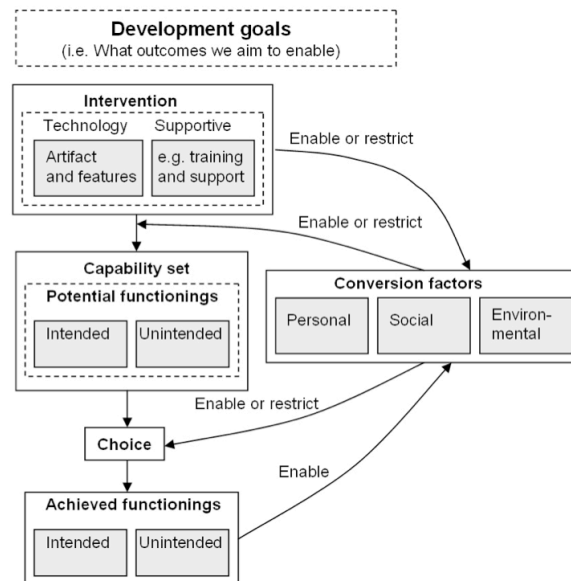


Figure 2.4. The Capability Approach Framework (Hatakka & De', 2011)

Johri and Pal (2012) applied the principles of the capability approach and Illich's notion of the conviviality approach to designing an ICT design framework. The underlying theory of letting the users "take charge" of their own development or design brings together the conviviality and capabilities approaches (Johri & Pal, 2012).

One of the criticisms often expressed against Sen's capability approach is the focus on the individual (Robeyns, 2006; Zheng, 2009; Thapa, Sein, & Sæbø, 2012). Thapa, Sein and Sæbø (2012) extended Sen's view by incorporating collective capabilities. They introduced a conceptual framework that links an ICT initiative to human development by building collective capabilities using social capital as a possible mechanism to foster collective action.

In summary, Robeyns (2006) identified nine different types of capability applications: general assessments of the human development of a country; the assessment of small scale development projects; identification of the poor in developing countries; poverty and well-being assessments in advanced economies; an analysis of deprivation of disabled people; the assessment of gender inequalities; theoretical and empirical analyses of policies; critiques on social norms, practices and discourses; and the use of functionings and capabilities as concepts in non-normative research.

2.5 Rural women and community entry

Research has found that when women use ICTs they increase their productivity, gain confidence and status in the community, and use the information to improve their lives and well-being (Huyer, 2005; Morrell & Sterling, 2006). Women-friendly approaches to development benefit women, their families, communities, productivity and the nation as a whole (Huyer, 2005; Gillard, Howcroft, Mitev, & Richardson, 2008). However, in many of the developing communities, gender inequalities are embedded deeply in the culture (Morrell & Sterling, 2006; Krauss & Turpin, 2010). The Millennium Development Goals reflected this by defining the third MDG as “Promote gender equality and empowerment of women” (Sachs & McArthur, 2005; Statistics South Africa, 2010). The Heads of States of the African Union announced 2010-2020 as the decade for the African Woman, in recognition of her role in combating poverty and stimulating sustainable development (Government Communications, 2010).

One of the challenges in the ICT4D field is that the true depth of the gendered digital divide remains unknown due to the lack of clear data on gender access, content, employment, education, and related areas (Morrell & Sterling, 2006). Research areas have been identified as: the long term cultural and socioeconomic impact of ICTs on women; the aspects of software and hardware design that best serves the needs; and the cultural factors that influence girls' and women's interest in the adoption of ICTs (Morrell & Sterling, 2006). In addition, Mbarika, Payton, Kvasny and Amadi (2007) argued that most of ICT4D studies that portray a positive view of ICT in Sub-Saharan Africa, tells the story of the urban African "elites" and future studies should concentrate on rural "forgotten" parts of developing countries (quotation marks from the original text).

The failure of many ICT4D projects can be attributed to the failure of the project adoption by the community (Avgerou, 2009; Krauss, 2009b). An ICT approach alone is not enough as there are other complicated factors, such as poverty and health that influence the success of an ICT4D project. Community participation is required for success (Krauss, 2009b). It is crucial not to see the community as just a reservoir of unfulfilled needs and unsolved problems, but rather as a pool of assets, strengths and abilities, waiting to be tapped (Weyers, 2011b).

2.5.1 The importance of being woman

The importance for research on the role of women in connection with ICT in developing countries has been identified (Huyer, 2005; Morrell & Sterling, 2006; Walsham, Robey, & Sahay, 2007; Gillard, Howcroft, Mitev, & Richardson, 2008).

Fact:

- Women make up a substantial portion of the lowest income groups in most countries
- Women play a central role in the well-being of family and community

- Women engage in 60-90 per cent of agricultural production activities
- Women tend to be responsible for the gathering and use of energy for cooking as well as for the water and sanitation needs in their communities
- Women are holders of much of the world's indigenous knowledge about medicinal and agricultural uses and processing of plants and seeds
- Women are the providers of family health care

Therefore:

- The value of information to women is enormous and affects all aspects of their lives (Huyer, 2005).

Given the background of the role of women in communities and families, the existing gender-digital divide is counter-productive to the contribution women aided by ICT, can make to society. Women are being left behind in the information society because they have lower levels of literacy and education, less time available to use ICT, with more commitments in the household, less money, less control, fewer learning opportunities and are restricted by socio-cultural and religious customs that restrict travel, restrict interactions with men and created preconceptions about the ability of females to understand ICT (Huyer, 2005; Goyal, 2011). Another contribution to the low adoption of ICT by women is that ICTs and their content are overwhelmingly designed by men, in English, and do not reflect the interest, concerns, perspectives and information needs of women (Huyer, 2005).

Women in developing regions stand to benefit from well-executed ICT initiatives in a variety of ways: healthcare, distance education, vocational and technical training, rural productivity, commercial opportunities, access to credit, participation in public policy, activism and social connectivity (Morrell & Sterling, 2006; Mbarika, Payton, Kvasny, & Amadi, 2007; Goyal, 2011). To realise these benefits, ICT initiatives should adopt strategies to increase access to ICT education for women, such as promoting social and political capabilities; coordinating efforts of women's groups; creating networks of community-based ICT learning centres; overcoming barriers such as language and local content; providing professional development for teachers; creating an enabling environment; and redefining ICT skills for women (Dlodlo, 2009; Goyal, 2011).

Research has found that there is a link between gender equality and economic growth. The reason for this is the instrumental role women can play in lifting their families out of poverty by participating in the labour force, enabled by ICTs. Women are more likely to invest their earnings in their children and to assume critical, life-sustaining responsibilities (Mbarika, Payton, Kvasny, & Amadi, 2007).

Although ICT is not the solution to all the socioeconomic problems women face, it is a skill-seeking, potential income-earning alternative (Mbarika, Payton, Kvasny, & Amadi, 2007) and has the potential to increase the equity and efficiency of female participation in the labour force (Goyal, 2011). ICTs

help restore flexibility in female external labour supply since it facilitates distance work, flexitime, and location activity (Goyal, 2011). ICT is uniquely suited to help women acquire vital economic capabilities and functionings, but supporting social and political capabilities are required first (Goyal, 2011).

2.5.2 Community entry

Sen (1999) highlighted the intrinsic value of participation as a freedom by individuals to influence the decisions that affect them. Participation by community members is both a means and an end of development (Moens, Broerse, Gast, & Bunders, 2010). Working in developing communities and specifically Africa, requires a paradigm shift from the Eurocentric researcher. Working in Africa requires an approach described as the African Renaissance management systems by Jackson (2002) and consists of sharing; deference to rank; sanctity of commitment; regard for compromise and consensus; and good social and personal relations. This approach corresponds to Habermas' theory of communicative action that covers issues related to participation, empowerment, and dignity (Kanungo, 2004). Weyers (2011a) suggested the "R.E.A.L." approach to community participation as described in the Research Methodology section in [Chapter 1](#).

Research has shown that ICT4D projects in collaboration with the community are more successful (Madon, Reinhard, Roode, & Walsham, 2009). An example of community collaboration is the introduction of infopreneurs on a project in South Africa (Van Rensburg, Veldsman, & Jenkins, 2008). Infopreneurs are established and trusted community members with good track records in their communities and entrepreneurial interest (Van Rensburg, Veldsman, & Jenkins, 2008).

Often the researcher and the community represent different cultural groups and economic realities. Inter-cultural communication and sensitivity towards poverty and hope are important aspects to consider when engaging with ICT4D projects (Krauss, 2009a; Krauss, 2009b). Community participation is required for success and the role of a cultural interpreter is indispensable. A cultural interpreter is a member of the community who can translate the culture, customs, existential understanding, social structures or any cultural aspect that might be unique and might help to gain understanding and enable the researcher to act appropriately (Krauss, 2009b). Cultural interpreters play an integral role in deciphering meaning and interpreting social phenomena in the ongoing process of community entry (Krauss & Turpin, 2010).

Krauss (2009a; 2009b) followed Weyers' indirect route for negotiating entry into a community:

- Identify community leaders
- Visit the community leaders and explain the reasons for the involvement in the community
- Use the snowball technique (asking for referrals) to get new contacts
- Make more informal contact with 'ordinary' community members

- Give community leaders and members the opportunity to express any negative feelings
- Give the community leaders and members hope for a better future
- Help community leaders and members to realise that they should accept responsibility to deal with their own needs and to become involved in the process
- Work towards mutual trust and being accepted by the community
- Encourage and enable community leaders to start working towards a plan for future action

The community development model is based on the perception that community members are ultimately in the best position to develop themselves and their communities and to eliminate the obstacles that impede this process. Development should be a community driven and owned process, actively involving the local power structure and leadership, following democratic procedures and promoting self-help and the participation of the community in their own affairs (Weyers, 2011a). The researcher should fulfil the role of catalyst, motivator/supporter, enabler/facilitator, consultant and guide, and view the role of community members as that of participants in an empowerment process (Weyers, 2011a).

An interesting observation of participants in ICT4D research is the emancipation of both sides of the development divide (Krauss & Turpin, 2010). Researchers should accept that community members are experts on their own situations (Weyers, 2011b).

Most important, researchers should explain to the community that before outsiders can provide assistance, they need to understand the community and their impediments. Researchers first have to learn from the community. As explained by participants in a participatory rural appraisal workshop:

“During introductions it is important to give a full account of who you are, where you are from, why you are there and what you plan to do while you are there. The community should know ... what is going to be done with the outcome of your visit, what you expect from the community and what they can expect from you ...” (Weyers, 2011a).

2.6 Conclusion

This chapter presented the literature review conducted across various literature sources, focussing on academic papers, conference proceedings and academic books. Although the literature review is by no means an exhaustive study, the presented study confirmed the need for ICT4D research with a focus on rural women in Africa and therefore confirming the problem statement. The literature review is classified in three sections: information and technology for development; capability approach; and rural women and community entry.

In the information and technology for development section the current literature on ICT4D is reviewed focusing on the current ICT4D themes, discourses on research and commentary on

sustainability and measurability. The nature of ICT4D projects leads itself to qualitative and interpretive research. The majority of early work, based on case studies, was critiqued by others as opportunistic work and raised questions regarding the research quality (Weber, 2009; Avgerou, 2009). ICT4D projects must consider the local unique requirements (Avgerou, 2008; Thompson & Walsham, 2010), such as in Africa, for effective research and projects. ICT4D research also raised questions about the sustainability of the projects (Ali & Bailur, 2007; Madon, Reinhard, Roode, & Walsham, 2009).

The capability approach section is divided into two sections. Firstly, an introduction to the capability approach with a summary of the vocabulary used by the capability approach and secondly, applications of the capability approach. The capability approach provides concepts and a framework that can help conceptualise and evaluate poverty, inequality and well-being; although it is not a theory that can explain these phenomena and the approach is radically underspecified (Robeyns, 2006). Researchers have found that the focus on the individual and the open-endedness of the capability approach make it challenging to operationalise, but agree on the usefulness of the capability approach as alternative to the traditional economic measurement designing models such as the Choice Framework and the Capability Approach Framework to contribute to the implementation of the capability approach in ICT4D projects (Robeyns, 2006; Kleine, 2010; Andersson, Grönlund, & Wicander, 2012; Hatakka & Lagsten, 2012).

The rural women and community entry section review literature confirming the importance of focusing and developing women in collaboration with communities. Research has found that, when women use ICTs they increase their productivity, gain confidence and status in the community, and use the information to improve their lives and well-being (Huyer, 2005; Morrell & Sterling, 2006). An ICT approach alone is not enough as there are other complicated factors such as poverty and health that influence the success of an ICT4D project. Community participation is required for success (Krauss, 2009b). It is crucial not to see the community as just a reservoir of unfulfilled needs and unsolved problems, but rather as a pool of assets, strengths and abilities waiting to be tapped (Weyers, 2011b).

The next chapter describes the research methodology.

Chapter 3 – Methodology

“The greatest glory in living lies not in never falling, but in rising every time we fall.” - Nelson Mandela

3.1 Introduction

The researcher has discussed the problem statement that this study pursues, background and a general outline of the dissertation in [Chapter 1](#), followed by the literature review in [Chapter 2](#). The methodologies followed in selected ICT4D studies were discussed in Chapter 2. This chapter describes the methodology followed by the researcher to find an approach to effectively translate the needs for information for social support services through the use of technology by rural women that can enhance their experience of the good life, as defined by the capability approach (Sen, 1999).

The study follows an interpretative research approach with a case study to gain an understanding of the functionings of rural women in terms of their need for information about social support services. The researcher aims to explore the capability set of rural women that can contribute to their ability to lead the kind of lives they want to, when adding access to information as a good with a social conversion factor. The study is interpreted in terms of the capability approach as explained by Robeyns (2003).

3.2 Research design

This study follows an interpretative research approach with a case study. Participant observation is used as a qualitative method to collect data to enable the understanding of the social and cultural context in which the research takes place.

The focus of the study is to find an approach to effectively translate the needs for information about social support services delivered through ICT to women living in rural areas. The area selected for the study is five hours by car, north of Johannesburg. The participants' ICT access is limited to cell phones and some of the women in the participant group cannot read English. Participant observation and focus groups are selected as methods to collect data for the match to the conversational culture of the participants and to negate the challenge of reading or completing surveys. As it is, the use of surveys is not seen as successful in ICT4D research and described as opportunistic and lacking rigor (Weber, 2009). Interpretative research is appropriate as the context of the rural environment and the lifestyle of the participants are important windows through which to view the study.

3.2.1 Interpretative research

Interpretative researchers focus on meaning in context (Myers, 2009). A study can be classified as interpretive if it is assumed that the knowledge of reality is gained only through social constructions such as language, consciousness, shared meanings, documents, tools, and other artefacts (Klein & Myers, 1999).

The majority of ICT4D studies claim to be interpretive, but need methodological precision about the nature of interpretive studies (Walsham & Sahay, 2006). Weber (2009) argued that much of the existing ICT4D literature that uses interpretative research provided some explanation of the historical and social context, but provided little careful reflection on how this context impacted on the case study findings.

3.2.2 Case study

A case study is a detailed study of a single social unit and can be of a social process, an organisation or any collective social unit (Myers, 2009). Case studies can be used to describe, test or build theories (Eisenhardt, 1989). Furthermore, case studies assist researchers to gain a deep understanding of the phenomena of interest as a basis for their subsequent theory-building efforts (Weber, 2009). Archives, interviews, questionnaires and observations are typical sources of data used in case studies (Eisenhardt, 1989).

The disadvantages of case study research are that it can be difficult to gain access to the relevant people, the researcher has no control over the situation she is observing, it could be difficult to focus on the most important issues, and it is time consuming (Myers, 2009). Case studies have been used extensively as a research method in the ICT4D field, but lack rigorous design and clearly stating choices made, and the reasons for these choices (Weber, 2009). The table below contains a summary of Eisenhardt's (1989) major case study steps as it relates to this study.

Table 3.1. Eisenhardt's (1989) case study design decisions, with comments to the considerations as recommended by Weber (2009), applied to this study

Design step	Decisions	Application
Getting started	<ul style="list-style-type: none"> • Have a well-defined research question. • Have some a priori constructs to help focus the research 	<p>Primary research question:</p> <p>How should the needs of rural women effectively be translated for social support services provided through the use of ICT?</p> <p>Secondary research questions:</p> <ul style="list-style-type: none"> • What are the functionings of women living in rural communities? • What capabilities can social support services enable? • What are the previous experiences of the study participants in dealing with Government Departments? • What are the ICT capabilities of the study participants?
Selecting cases	<ul style="list-style-type: none"> • Population from which cases are to be chosen is defined carefully. • Cases chosen purposefully because they help to build or extend theory or replicate prior cases. 	<p>A rural community with an existing relationship to the researcher's organisation is selected. The community leader is accustomed to research projects and willing to act as the cultural interpreter and translator.</p>

Design step	Decisions	Application
Creating instruments and protocols	<ul style="list-style-type: none"> • Design multiple data collection methods to triangulate evidence. • Pilot test data collection methods. • Use multiple researchers to engage divergent perspectives and strengthen validity and reliability of findings. 	Participant observation with focus group interviews is used. Due to the limited nature of the study for the mini-dissertation purposes, only one researcher is used to collect data.
Entering the field	<ul style="list-style-type: none"> • Iterate between data collection and data analysis. • Use opportunistic data collection if data bears on theory construction. 	The researcher follows the R.E.A.L. approach to community entry with the assistance of a cultural interpreter (Weyers, 2011a). Data collection is done using voice recording, notes and observation with reflection after each data collection event.
Analysing within-case data	<ul style="list-style-type: none"> • Ensure individual cases are documented in detail. • Develop structure iteratively for analysis of individual cases. 	The case is documented in detail with explanations of how the case study data are analysed.

Design step	Decisions	Application
Searching for cross-case patterns	<ul style="list-style-type: none"> • Look for within-group similarities and inter-group differences. • Undertake pair wise-comparison of cases and list similarities and differences. • Analyse data by data source and then compare. 	<p>This study is limited to one case study. Searching for cross-case patterns could be part of the recommendations for future study.</p>
Shaping hypotheses	<ul style="list-style-type: none"> • Iterate between data and analysis to sharpen definition of constructs. • Evaluate data to measure level of constructs. • Iterate between data and analysis to identify relationships among constructs. • Evaluate data for evidence of relationships among constructs. 	<p>The study explains how constructs are identified, refined and their levels measured and how relationships among constructs are identified and evidence in support of these relationships is deduced.</p>

Design step	Decisions	Application
Unfolding literature	<ul style="list-style-type: none"> • Compare findings with conflicting literature to sharpen definition of constructs and strengthen internal validity. • Compare findings with similar literature to strengthen external validity. 	Conflicting and similar literature are used to strengthen internal and external validities.
Reaching closure	<ul style="list-style-type: none"> • If possible, continue collection of case-study data until theoretical saturation is reached. • Continue analysis of case-study data until theoretical saturation is reached. 	The fieldwork for the data collection occurred during a week of living with the community. A qualitative content analysis is used as an analytical method to interpret the information collected during the study.

3.2.3 Participant observation

Participant observation is a data gathering technique where the researcher participates in and observes people in their natural setting; similar to fieldwork (Myers, 2009). Participant observation, also referred to as fieldwork, usually involves observing people who have a different culture or sub culture from the researcher and therefore involves a period of enculturation, a time where the researcher learns to become a member of another culture or sub culture (Myers, 2009).

3.2.4 Focus groups

In qualitative research, a focus group is a data gathering technique where the researcher interviews a group of people to get collective views on a defined topic (Myers, 2009). The purpose of a focus group interview is to get collective views on a certain defined topic of interest from a group of people who are known to have had certain experiences (Myers, 2009).

The focus group interview can be structured where a prepared script is followed or unstructured (or semi-structured) where some questions are prepared beforehand, but improvisation is required (Myers

& Newman, 2007). Most often, group interviews are unstructured or semi-structured (Myers & Newman, 2007).

One of the disadvantages of a focus group interview is that some members of the group may dominate the discussion. Myers and Newman (2007) summarises the problems and pitfalls of interviews as follows:

- Artificiality of the interview
- Lack of trust
- Lack of time
- Level of entry
- Elite bias
- Hawthorne effects (the interviewer may intrude upon the social setting and potentially interfere with peoples' behaviour).
- Constructing knowledge
- Ambiguity of language
- Interviews can go wrong

3.3 Methodology

3.3.1 Research instruments

Myers and Newman (2007) depicted the qualitative interview as a drama. Using their descriptions of the elements of the drama, the description of the study and research instruments can be directed as follows:

a. Drama

As in a drama, the interviewer has to give stage directions and pay attention to stage management (Myers, 2009). The fieldwork is conducted in a rural community in the Limpopo province of South Africa. Arrangements have been made with a community leader who is also the manager of a community centre. The community leader has agreed to act as the cultural interpreter and translator. The researcher has explained the purpose of the study and the profile of the focus group to the community leader. The community leader has recruited the focus group participants based on these directions.

b. Stage

The stage is the location in which the interview takes place (Myers & Newman, 2007). The stage for the study is the community centre and surrounding community areas such as a crèche, high school and health clinic. The researcher has lived at the community centre for

the duration of the study, interacted with the staff at the community centre and shared meals with the community leader.

c. Actor

Both the interviewer and the interviewees can be seen as actors (Myers & Newman, 2007). At the start of the focus group interviews, the roles of the researcher and the participants have been explained. The discussions have been lead in turn by the researcher and the community leader, depending on the language preference of the participating group. The researcher has encouraged active participation by making the participants feel at ease in a respectful manner.

d. Audience

Both the interviewer and the interviewees can be seen as the audience as the interviewer should listen intently while interviewing and the interviewee should listen to the questions or other participants' responses (Myers & Newman, 2007). The participants in the focus group interviews are all women and varied in age groups and employment status. Most of the women are not employed in the formal sector and depend on volunteer work (community centre, community crèches), Government social grants, or contributions from family members, for income. All of the women in the study group own cell phones.

e. Script

The interviewer has a research instrument of questions to put to the interviewees, to guide the conversation. The interviewee normally has no script and has to improvise (Myers & Newman, 2007). The researcher has prepared questions to guide the interviews. The purpose of the questions is to determine if there is a need for social services, the current perception of dealing with Government Departments and to determine the current capability of interacting with information technology. The researcher has used all of the prepared questions in the focus group interviews at the community centre and some of the questions in the interviews at the high school, crèche and health clinic. The prepared questions are:

Table 3.2. Questions in the interview script

Question	Purpose	Research question	Analysis Category
Do you receive social grants?	To determine the need for social services. Social grants are prevalent in rural communities and a frequent engagement point with Government.	Overall input to set the context of the conversation and determine the interaction frequency with Government.	Relevancy to the study

Question	Purpose	Research question	Analysis Category
		What capabilities can social support services enable?	
Have you applied for services at any Department?	To determine previous experiences with dealing with Government Departments as well as the current functionings (capability of dealing with Government Departments).	What are the functionings of women living in rural communities? What are the previous experiences of the study participants in dealing with Government Departments?	Previous experiences dealing with Government
Which Departments have you dealt with?	To determine previous experiences with dealing with Government Departments.	What are the functionings of women living in rural communities? What are the previous experiences of the study participants in dealing with Government Departments?	Previous experiences dealing with Government
What was your experience with the application?	To determine previous experiences with dealing with Government Departments.	What are the functionings of women living in rural communities? What are the previous experiences of the study participants in dealing with Government Departments?	Previous experiences dealing with Government
What type of information would be useful?	To understand the information needs of the group.	What capabilities can social support services enable?	Information needs of the group
Do you have a cell phone?	To determine access to ICT and the existence of the required commodities for the focus of this study.	What are the ICT capabilities of the study participants?	Access to ICT

Question	Purpose	Research question	Analysis Category
What are the uses of your cell phone?	To determine access to ICT and their current functionings (capability of interacting with a cell phone).	What are the functionings of women living in rural communities? What are the ICT capabilities of the study participants?	Access to ICT
Have you used your cell phone to engage or interact with Government?	To determine access to ICT.	What are the functionings of women living in rural communities? What are the ICT capabilities of the study participants?	Access to ICT
Will you use your cell phone to interact with Government?	To determine attitude towards the concept.	What are the functionings of women living in rural communities? What are the ICT capabilities of the study participants? What are the previous experiences of the study participants in dealing with Government Departments?	Attitude towards the concept

f. Entry

Impression management is important, particularly first impressions, and it may be important to dress appropriately to the situation (Myers & Newman, 2007). The researcher has relied on the community leader acting as the cultural interpreter for guidance on the various interactions and for acceptance by the community.

g. Exit

The exit involves leaving the stage, possibly preparing the way for the next performance or another performance at a later date (Myers & Newman, 2007). The researcher has returned to Johannesburg after the week of fieldwork and is still in contact with the community leader.

The researcher intends to return to the community to pursue further research after completion of this study.

h. Performance

All of the above, together, produce a good or a bad performance. The quality of the performance affects the quality of the disclosure that in turn affects the quality of the data (Myers & Newman, 2007). The participants in the focus group interviews have engaged and shared information. Once they have grasped the concept of accessing information through ICT using cell phones as an illustration, they have suggested interesting applications. The participants in the main focus group at the community centre performed a song of blessing at the end of the session that touched the researcher deeply.

3.3.2 Data collection

The data have been collected during a week of fieldwork at a rural community in the Limpopo province in South Africa. A community leader supports the study and facilitates access to community members for the focus group interviews. The data sources for this study are:

- A focus group interview with 12 women, at the community centre
- An interview with a teacher at a community crèche
- Interviews with three teachers at a high school
- An interview with staff at the health clinic

The interviewees have given their consent for the interviews. The interviews are recorded when possible and with the consent of the participants. The researcher has taken additional notes during the interviews as well as noting observations afterwards. The researcher has had additional conversations with staff at the community centre and with the community leader. Although these conversations are insightful, they have not been recorded and will not be used during the process of analysis.

3.3.3 Analysis

A qualitative content analysis is used as an analytical method to interpret the information collected during the study. Qualitative content analysis is a method for systematically describing the meaning of qualitative material (Schreier, 2012). The following chapter describes the process followed to analyse the data in detail.

3.4 Limitations

The study is limited to one community and conducted within a limited time frame. The focus group interviews have been done in a combination of languages (English and seSotho) with the seSotho conversation translated to the researcher by the cultural interpreter. Some of the nuances and intent of the conversation may be lost in the translation. The idea of accessing information through ICT has

been perceived as abstract by the participants and they need time to adjust to the thought and possibilities that it could offer. The researcher is also aware of her own limitations for academic research due to her limited experience.

3.5 Ethical considerations

As stated in the Code of Ethics Research, privacy and safeguarding of the participants' information enjoy a high priority (University of Pretoria, n.d.). In addition, the proposed Protection of Personal Information Bill emphasise the importance of using personal information with consent and purpose (South African Parliament, 2009).

The participants have been provided with a consent form to agree on participation in the study. The purpose of the study has been clearly explained. A cultural interpreter has been consulted to ensure clear understanding of the study and the interpreter has assisted with conducting the interviews.

The participants' identities are protected in the following ways:

- a. The participant details and consent forms are kept separately from the interview notes and voice recordings.
- b. The consent forms are stored in a sealed envelope in a locked storage container for the duration of the study.
- c. The interview notes and voice recordings do not refer to the identity of the participants. Pseudonyms, only known to the researcher, are used. The pseudonym association is stored separately, to minimise the risk of identifying the participants.
- d. The identity of the participants will not be disclosed without consulting with the University of Pretoria Ethics Committee.

The study's data will be safeguarded in the following ways:

- a. The paper copies of the interview and other field notes are taken using archival quality paper and pens.
- b. The paper copies of the interview and other field notes are stored in a sealed envelope in a locked storage container.
- c. The interview and other field notes and voice recordings are transcribed using a computer with PGP full disk data encryption.
- d. A backup copy of the transcribed notes and voice recordings are stored in an encrypted format using online storage.
- e. The analysis work for the study is conducted on a single computer in a room with limited access and the necessary security system in place.

- f. The folder containing the research material, analysis work in progress and the dissertation document is backed-up regularly to online storage and an encrypted external hard drive.

The information related to the study, that includes the interview and field notes, digital voice recordings and the analysis of the data will be provided to the University of Pretoria.

3.6 Conclusion

This chapter presents the research design and methodology. The various elements of the research design, such as the case study and participant observation has been discussed. The metaphor of a drama has been used to discuss the focus group interviews. Some limitations and ethical considerations have been mentioned. The next chapter discusses the data analysis.

Chapter 4 – Data Analysis

“A good head and a good heart are always a formidable combination.” - Nelson Mandela

4.1 Introduction

The researcher discussed the problem statement that this study pursues, background and a general outline of the dissertation in [Chapter 1](#) followed by the literature review in [Chapter 2](#). The methodologies followed in selected ICT4D studies were discussed in Chapter 2. [Chapter 3](#) discussed the research design and methodology followed by this study. This chapter describes the analysis of the data collected during the fieldwork for the study.

4.2 Approach and process

The approach followed in the data analysis of the focus group interviews is qualitative content analysis. Qualitative content analysis is a method for systematically describing the meaning of qualitative material (Schreier, 2012). Three approaches are used for qualitative content analysis namely conventional, directed and summative (Hsieh & Shannon, 2005). Given the fact that this study uses open-ended questions in conducting the focus group interviews, the directed approach to the qualitative content analysis is used where the codes are defined before and during data analysis based on the interview questions (Hsieh & Shannon, 2005; Schreier, 2012). Schreier (2012) describes the directed approach as following a concept-driven strategy. Figure 4.1 describes the process followed in analysing the data, with the research question, sub-questions and interview questions already defined.

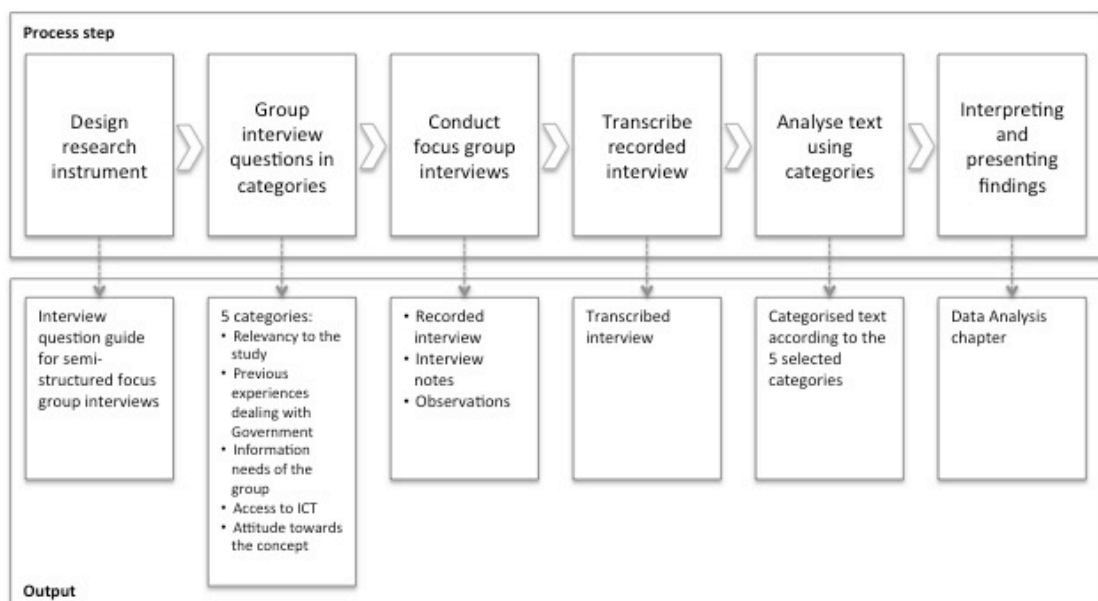


Figure 4.1. Data analysis process with reference to Qualitative Content Analysis steps (Schreier, 2012)

4.3 Analysis of the interviews

“We have slate for tiles. We have clay for pots. We make traditional grass mats, brooms. It’s some of the things we need for the market [website].” – Cultural Interpreter

The cultural interpreter has participated in other research projects and is familiar with the process of arranging interviews and acting as language interpreter. She fully supports the field study and, as seen from the quote above, believes that ICT can deliver benefits to the community.

Three sources of data are used in this analysis namely:

- the transcribed interview of the 12-member focus group at the community centre, with additional notes and observations;
- the notes from three interviews with teachers at the high school in the community; and
- the notes from the interview with seven staff members at the health clinic in the community.

Following the Qualitative Content Analysis directed approach; five categories are used to group the data for analysis. The categories are:

- Relevancy to the study
- Previous experiences dealing with Government
- Information needs of the group
- Access to ICT
- Attitude towards the concept

The cultural interpreter who is a respected leader in the community arranged all the interviews.

4.3.1 Relevancy to the study

Question: Do you receive social grants?

Purpose: Social grants and other social services are prevalent in rural communities and a frequent engagement point with Government.

Nine of the 12 women in the focus group receive either old age pension grants or child support grants. They are unemployed and rely on the grants, contributions from family and infrequent earnings from volunteer work and craft sales, as their income. This is similar to [other studies](#) based in rural settings, focusing on women (Dlodlo, 2009).

The women at the high school and at the health clinic are employed by Government and do not qualify for grants. It is interesting to note that everyone interviewed knew people in the community who do receive social grants and can relate to those who receive grants’ experiences.

The response of the women established that most of the participants in the study have a frequent interaction with Government through grants or employment. These women's participation is therefore relevant to this study.

4.3.2 Previous experiences dealing with Government

Question: Have you applied for services at any Department?

Question: Which Departments have you dealt with?

Question: What was your experience with the application?

Purpose: To determine previous experiences in dealing with Government Departments as well as the current functionings (capability of dealing with Government Departments).

All of the participants have experiences interacting with various Government Departments. They identified the following entities:

- Department of Home Affairs
- Department of Agriculture, Forestry and Fisheries
- South African Social Security Agency (SASSA)
- Department of Health
- Department of Social Development
- South African Police Services (SAPS),
- Office of the Premier in Limpopo
- Government Communication and Information System (GCIS)
- Local and District Municipalities
- Department of Education
- Department of Water
- Department of Economic Development
- Department of Housing (through Local Development)
- Department of Environment and Tourism
- Eskom
- Telkom
- Post Office
- Skills Education Training Authorities (SETA)

“The whole of Government and it’s so difficult to get information. From the Province, the people who work.” – Participant #1

“They should send us SMS. They just tell them at the moment when they get pension they tell them the next date of coming to get another pension.” – Participant #4

This is representative of Government. According to one of the participants in the focus group, they deal with the whole of Government and find it extremely difficult to get information. The closest circuit office is at Leboeng, 35 km away. A circuit office is described as a one-stop centre of Government services and information and known as Thusong Service Centres (Government Communications, n.d.). Not all of the Thusong Service Centres are efficient as it depends on the community needs to drive service provisioning (Government Communications, n.d.).

“It’s a long way to do that [avoid frustration dealing with Government] because if I want to shop [deal] now in the Local Government I had a bad experience. I faced 11 persons.” – Participant #1

Participants in the focus group suggested that Government should use an SMS to communicate with citizens, similar to their experience with Eskom. They described their experience with Eskom as positive and a good example of interaction. The most frequent experience of interaction with Government is with SASSA. SASSA mostly communicates verbally with the grant recipients, usually when the grant recipient collects the grant, for example informing the recipients when the next grant collection date will be. If a recipient misses a grant collection, she also misses receiving information.

“What she was saying is that Government has agencies. Agencies or parastatals. Like Eskom, Telkom, Post Office, SETAs. So Eskom is very good because every time the information is coming through the cell phone.” – Participant #9 (translated by the interpreter)

The participants at the crèche, high school and health clinic shared similar experiences of frustration trying to find information relating to Government in their particular fields. The lack of access to ICT at the Government high school and health clinic clearly adds to frustration and hinders both the reporting of problems and access to relevant information that could provide solutions.

The teachers at the high school shared their frustration on the difficulty to find information such as advice on dealing with topical problems that the learners experience. Teachers described their situation as isolated.

The health clinic has no telephone or fax machine and the nurses have to rely on their personal cell phones. This leads to frustration because calls to Government Departments and State Hospitals tend

to be long, with the individual responsible for the cost of the call. Furthermore, the health clinic is responsible for reporting on key health indicators, such as number of patients with chronic sicknesses and disease outbreaks. The report must be faxed to the district hospital. As the health clinic does not have a fax machine, the report is written by hand and taken to the district hospital when the opportunity arises. This contributes to incorrect reporting up the reporting line and impacts the inventory at the health clinic.

Based on the discussions, the current experiences of dealing with Government entities is overwhelmingly frustrating and, in most instances, consist of verbal conversation.

4.3.3 Information needs of the group

Question: What type of information would be useful?

Purpose: To understand the information needs of the group.

The participants in the focus group identified information they would find useful as consumers of information as well as information they could provide to Government. The focus group identified the following requirements:

- Reporting problems such as building material and water issues.

“Like RDP houses. If they didn’t deliver proper materials I could give information to the Government by cell phone.” – Participant #4

“We’ve got also a problem of water. There are some taps over around the villages. But those taps, the Government gave us some money so they can serve the community with water. Those taps didn’t give us water. They just put it on the street but we don’t get water from it. Those were for decoration, we don’t drink water.” – Participant #5

- Receive information on water treatment; adult education programs; working with disabled people; early childhood development programs and guidance on educational tools; ideas for products using recycled materials; promote the village for tourism; market their traditional craft products.

“I’m just teaching the children according to my mind and even go to the town to buy some books. Those books I really don’t know if it’s the exact ones that can teach those children. But if through the cell phones we could receive such message to guide us.” – Participant #5

“Let me say for example, let me say, I’m teaching the disabled. Then from the cell phone there is that message that gives me a direction to ... can teach them and even to handle them in a proper way.” – Participant #5

The requirements of the teachers at the high school are for information to deal with learners’ problems such as teenage pregnancy, as well as information on the curriculum (organisational process).

The participants at the health clinic listed the ability to order stationary; request information about workshops; register for workshops (organisational process); submit reporting information (organisational process).

Table 4.1. Summary of information needs by field study participants

Group	Report	Request Information	Shop	Organisational Process
Focus group	X	X	X	
High school teachers		X		X
Health clinic staff			X	X

The suggestions of the participants indicate that they have a specific purpose for information and the use of mobile technology is regarded as purely a means to an end. [Research has shown](#) that ICT4D projects must surpass being just about access to technology, but have such a specific purpose (Roode, Speight, Pollock, & Webber, 2004; Gilbert, Masucci, Homko, & Bove, 2008). Similarly, a focus on needs is one of the six principles required for effective ICT4D implementations as described by Unwin (2009).

The researcher observed that the dual directional flow of information, where the participant is both a consumer and a creator of this flow of information, indicates a positive level of understanding of the concept of accessing information through ICT.

4.3.4 Access to ICT

Question: Do you have a cell phone?

Question: What are the uses of your cell phone?

Question: Have you used your cell phone to engage or interact with Government?

Purpose: To determine access to ICT and the existence of the required commodities for the focus of this study as well as the group's current functionings (capability of interacting with a cell phone).

All the participants owned a prepaid cell phone with Internet capability. Some facts on the focus group cell phones:

- 11 participants use Vodacom as a service provider and one use MTN.
- Seven handsets are Nokia, two LG, one Samsung, one Vodafone and one Halo.
- All the participants can send an SMS.
- All the participants use prepaid airtime.

All the interviewees (focus group, high school and health clinic) use cell phones to SMS and call. No one uses it to access the Internet or use mobile applications. During the discussions, the researcher asked if any of the participants use computers. Only one participant uses a computer for email. The community centre has computer facilities with Internet connectivity, but most of the participants cannot see an application or reason for using the computers. Verdegem and Verhoest (2009) explained similar behaviour of the non-user as the participants and suggested the need for a shift in focus of traditional inclusion, away from "removing barriers" (access to computers and the Internet) towards "adding value" (relevant content and applications).

This observation is similar to the findings in [studies done in South Africa](#), that Internet access is not common in rural areas (Gillwald, Esselaar, Burton, & Stavrou, 2005; Calandro, Gillwald, Moyo, & Stork, 2010). The need for a shift in focus also confirms that the digital divide cannot be crossed with providing only computers without meeting the needs of individuals (Kvasny & Truex, 2001; Crampton, 2004; Rubinoff, 2005).

The only way that focus group participants have used their cell phones to engage with Government, is by telephone call.

In summary, the participants' exposure to ICT can be described as unconscious as they are unaware of the capability of mobile technology. All the participants own a cell phone and are competent in using the cell phone to load airtime; send and receive SMS; and make calls.

4.3.5 Attitude towards the concept

Question: Will you use your cell phone to interact with Government?

Purpose: To determine attitude towards the concept.

All the participants in the study agree that they will use their cell phones to interact with Government as they believe it will make a difference in their lives if Government is aware of their problems and if they can receive helpful information to make better choices.

“The use of the cell phone can help us because if we got some problems we could communicate with Government.” – Participant #1

“Oh, you can report so that they know what is happening.” – Participant #4

“It will be useful cause we can get information we want.” – Participant #5

“If they can show us which chemicals to use in order to clean that water.” – Participant #5

The researcher is convinced about the positive attitude towards the concept of using cell phones to consume and create information, but is conscious of the socio-economic challenges such as affordability, usability and adoption of such an application by the community, and the participation by Government organisations.

4.3.6 Summary of responses

The principles required for effective ICT4D implementations are: a focus on needs; vision and commitment; infrastructure; effective partnerships; monitoring and evaluation; and accessibility (Unwin, 2009). Three of the principles are mapped in Table 4.2 as indicators to the responses grouped by the question categories. All the indicators have a positive value, improving the possibility of a successful ICT4D project. Infrastructure, effective partnerships and monitoring and evaluation will be relevant once the ICT commodity is introduced.

Table 4.2. Summary of interview responses reflecting required principles for successful ICT4D implementations as indicators (Unwin, 2009)

Question Category	Response	Indicator (- Negative; + Positive)	
Relevancy to the study	Yes (direct and indirect frequent interaction with Government)	Need	+
Previous experiences dealing with Government	Frustrating and most often verbal	Motivation	+
Information needs of the group	Reporting problems and receiving information	Vision	+
Access to ICT	Everyone has a cell phone; only one person uses a computer for email	Access	+
Attitude towards the concept	Positive	Commitment	+

4.4 Sub-conclusions

In order to answer the primary research question, the following secondary research questions were identified:

- What are the functionings of women living in rural communities?

The study did not attempt to define all the functionings of women living in rural communities. Functionings are the various things a person may value doing or being (Sen, 1999). Relevant functionings of the participants, identified in the interviews, are:

Table 4.3. Selected functionings of the women in the study group

The participants value [doing] ...	The participants value being ...
... community activities.	... valued members of the community.
... activities to supplement income.	... able to support their families.
... engaging with tourists.	... respected.
... creating traditional craft products.	... educated (ability to read, use cell phones).
... participating in Government events.	... informed members of society.

- What capabilities can social support services enable?

A person’s capability refers to the alternative combinations of functionings that are feasible for her to achieve, the freedom to achieve various lifestyles (Sen, 1999). Social support services can enable capabilities such as dignity, health, better nutrition, education, and choice.

- What are the previous experiences of the study participants in dealing with Government Departments?

Most of the previous experiences of the study participants are in the context of in-person verbal communication that they described as “frustrating”. An example was discussed where a query involved speaking to eleven different people at the Local Government office.

- What are the ICT capabilities of the study participants?

All of the study participants are competent cell phone users who can load prepaid airtime, send SMS messages and make phone calls. One participant uses a computer for email.

Hatakka and De' (2011) developed the [Capability Approach Framework](#) to operationalise Sen’s capability approach in an attempt to answer how ICT can lead to development. The capability approach enables the researcher to go beyond superficial variables of technology implemented and focus on actual outcomes (Hatakka & De', 2011; Hatakka & Lagsten, 2012).

In the Figure 4.2, the field study attributes are mapped, using the Capability Approach Framework.

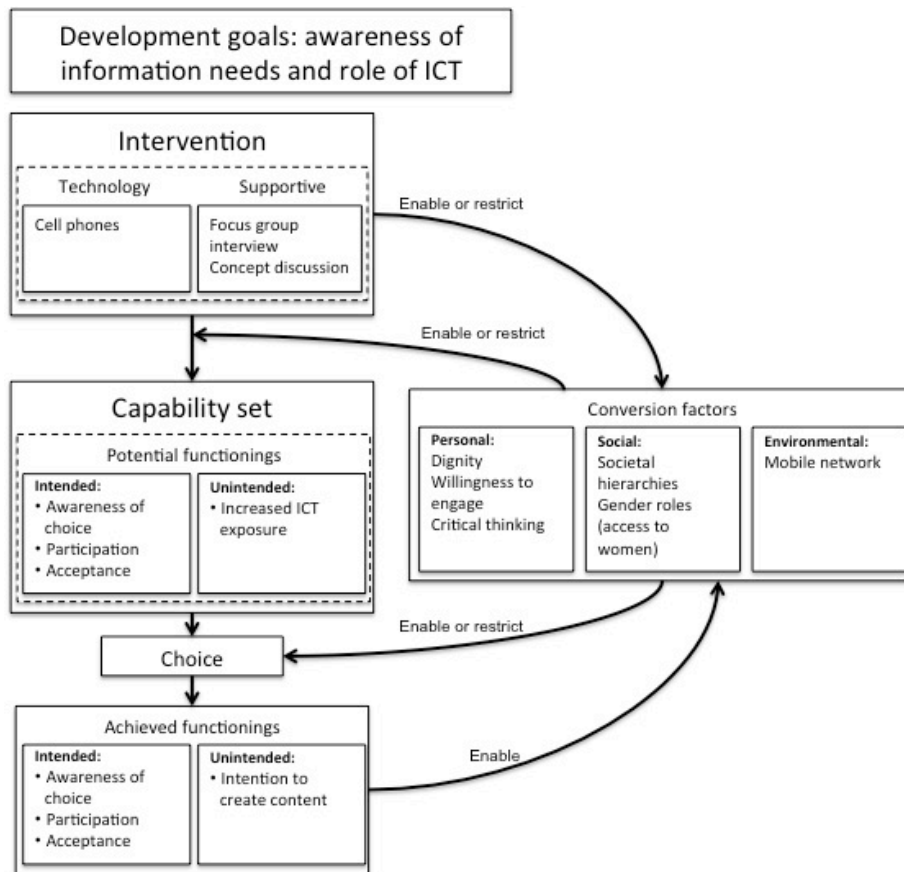


Figure 4.2. The field study mapped to the Capability Approach Framework (Hatakka & De', 2011)

The framework assists in focussing attention on (Hatakka & Lagsten, 2012):

- Intervention: technology and supportive. This study is not dependent on technology, but enquires if the participants would be willing to use their cell phones in order to gain access to information. The technology focus is therefore implied as cell phones. The supportive interventions are the interviews and discussions to explain the concept and record the responses to the interview questions.
- Functionings: discover which potential and achieved functionings can be enabled by the results of this study.
- Conversion factors: which personal, social and environmental conversion factors restrict or enable participants to engage in the study.

The researcher found that, applying the study experience to the Capability Approach Framework, clarity on the purpose and scope of the study is improved and a deeper understanding of the research participants is reached by focusing on their capabilities and conversion factors.

A focus on agency could be introduced at the beginning and the conclusion of the study, depicted by the Capability Approach Framework. The capability approach is fundamentally about contributing to an individual's freedom to live the life she considers good. Agency, as defined in Chapter 2, [Figure](#)

2.2, shows the transformation of an individual, from experiencing a standard of living through achieved well-being; to well-being through exercising the choice of helping someone; and finally to agency where the individual has the freedom to act and bring about change (Robeyns, 2003; 2005).

Figure 4.3 depicts the amended Capability Approach Framework with the agency role inserted in the intervention section and after the achieved functionings section. The intervention section is planned at the beginning of the study, with the technology and supportive interventions designed and applied. As part of the intervention preparation, an assessment should be done, to determine the agency role of the study participants. At the conclusion of the study, following the recording of the achieved functionings, analysis should be done to gather if any transition in the agency role occurred. A change in the agency role should be an indication of the impact of the study on the participants.

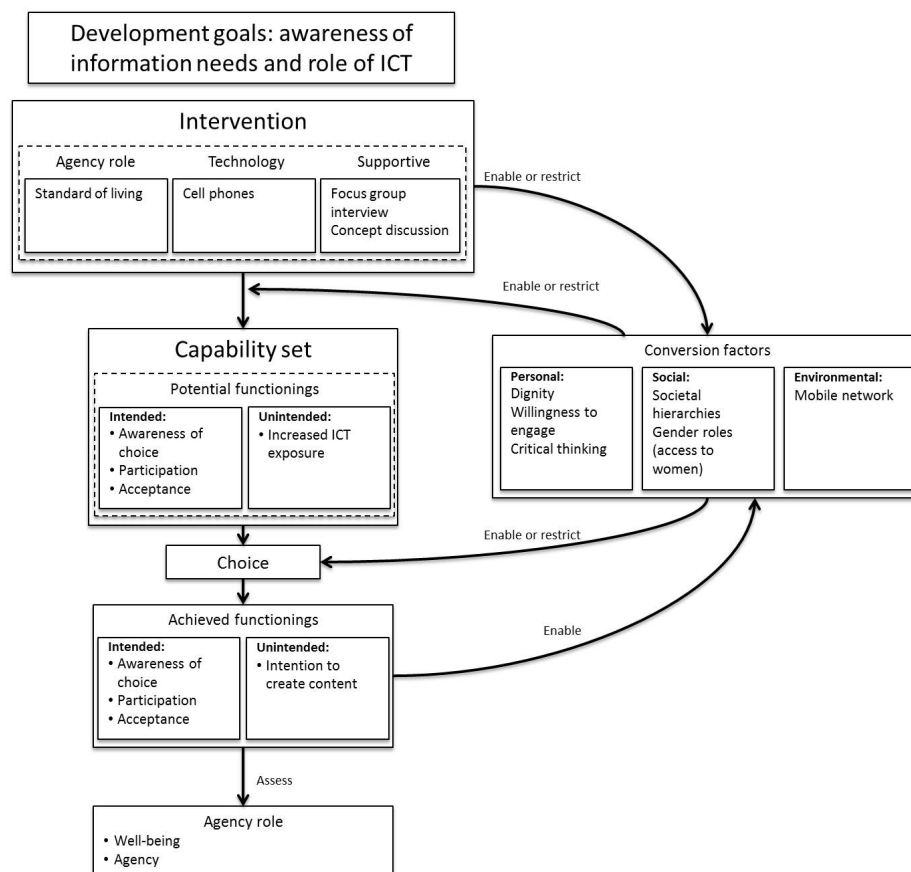


Figure 4.3. The Capability Approach Framework amended with the agency role

The concept of exploring agency to extend the Capability Approach Framework will be further discussed in the next chapter.

The researcher notes that the limited time spent with the participants and the restricted nature of this study are not supportive of a detailed and comprehensive map to the Capability Approach Framework; there is still much to be discovered.

4.5 Conclusion

This chapter describes the data analysis and process that resulted from the research methodology described in [Chapter 3](#). It describes how qualitative content analysis with a concept-driven strategy is used to analyse the data created by the focus group interviews using open-ended interview questions. The results of the data analysis answered the secondary research questions. The Capability Approach Framework is applied to further enrich the data analysis and interpretation and a suggestion made to include agency in the Capability Approach Framework.

The next chapter presents the conclusions with reference to the research question, the contribution made to the ICT4D field and recommendations supported by this study.

Chapter 5 – Conclusion and Recommendations

“But I have discovered the secret after climbing a great hill, one only finds that there are many more hills to climb.” - Nelson Mandela

5.1 Introduction

The researcher discussed the problem statement that this study pursues, background and a general outline of the dissertation in [Chapter 1](#) followed by the literature review in [Chapter 2](#). The methodologies followed in selected ICT4D studies were discussed in Chapter 2. [Chapter 3](#) discussed the research design and methodology followed by the study. [Chapter 4](#) described the analysis of the data collected during the fieldwork and answered the [secondary questions](#) examined by the study.

This chapter discusses firstly the findings in terms of the purpose of the study to find an approach to effectively translate the information needs of rural women for social support services accessed through ICT, in order to enhance their experience of the good life, as defined by the capability approach (Sen, 1999); secondly, the contribution to the field of ICT4D research; and thirdly, recommendations for further research.

5.2 In answer to the question

The study examines the primary research question: How should the needs of rural women effectively be translated for social support services provided through the use of ICT?

In order to answer the question, study objectives have been defined and explored in the secondary research questions answered in the previous chapter.

5.2.1 The study objectives

The study objectives are:

- Understand the functionings of rural women in terms of their need for information about social support services
Social support services are used to determine the interaction with Government entities and to provide the vocabulary for the discussion. The [data analysis](#) shows that the things the study participants value being and doing are in support of their community and to contribute to their experience of a good life (Sen, 1999).
- Explore the capability set of rural women that can contribute to their ability to lead the kind of lives they want to, when adding access to information as a good with a social conversion factor
The participants demonstrate cell phone literacy; a willingness to participate both as consumers and generators of information; frustration with their current experience dealing with Government organisations; and acceptance of the concept of accessing information

through ICT. The [Capability Approach Framework](#) (Hatakka & De', 2011) is used to map the study experience and gain a better understanding of the impact of the study. The Capability Approach Framework focuses on the intervention; capabilities and functionings; and the conversion factors. As the focus of this study is to assess the need for information and acceptance of the concept, access to information is not added as a social conversion factor in the framework. However, agency types are considered to assess the impact of the study. The framework is further interpreted below.

- Interpret the study in terms of the capability approach as explained by Robeyns (2003)

As discussed in [Chapter 2](#), the capability approach is a broad normative framework for the evaluation and assessment of individual well-being and social arrangements (Robeyns, 2003; 2005). Researchers have found that the capability approach is difficult to operationalise and developed models and frameworks in an attempt to apply the capability approach more effectively (Robeyns, 2006; Kleine, 2010; Andersson, Grönlund, & Wicander, 2012; Hatakka & Lagsten, 2012). One such example framework is the Capability Approach Framework (Hatakka & De', 2011). This researcher combined the components of the Capability Approach Framework with the agency role to analyse the answer to the research question. The capability approach is particularly concerned with the agency role of the individual as a member of the public and as a participant in economic, social and political actions (Sen, 1999).

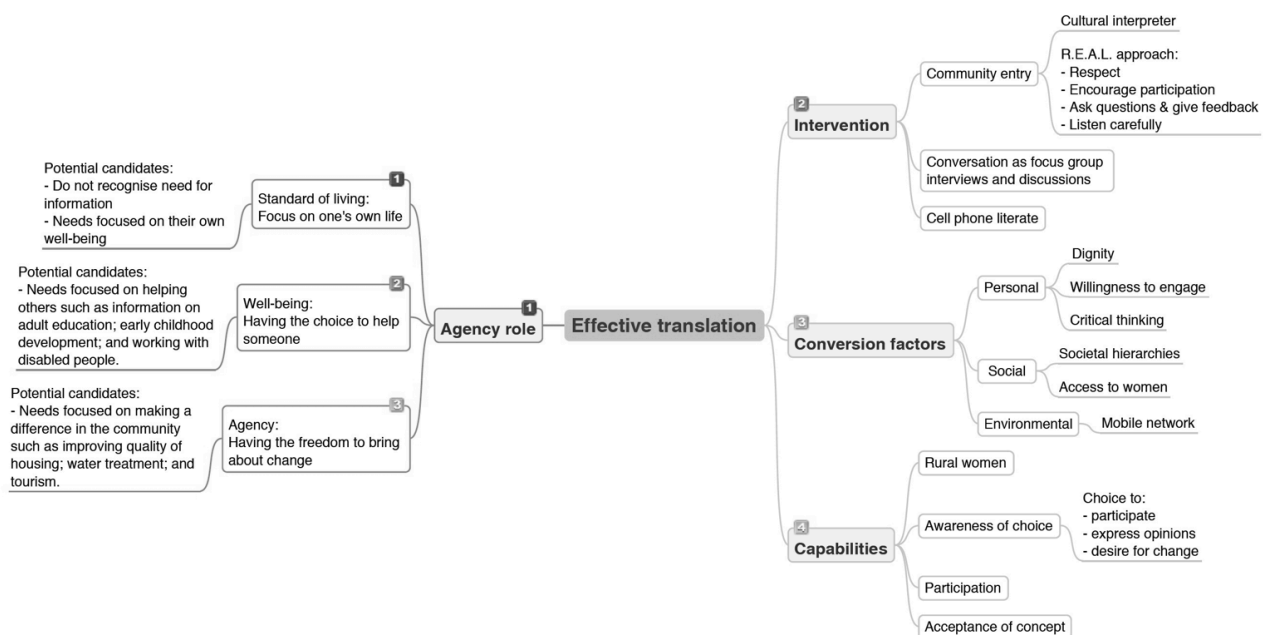


Figure 5.1. Unpacking the answer to the primary research question using an adapted Capability Approach Framework

Agency role

Robeyns (2003; 2005) explained the differences between the agency types as depicted in Figure 5.1. The agency types can be seen as a transition from self-focus on personal well-being to external-focus on affecting positive change in the world. Access to information can benefit all agency types, but as research has shown, when women use ICTs they tend to increase their productivity, gain confidence and status in the community, and use the information to improve their lives and well-being (Huyer, 2005; Morrell & Sterling, 2006). Women-friendly approaches to development benefit women, their families, communities, productivity and the nation as a whole (Huyer, 2005; Gillard, Howcroft, Mitev, & Richardson, 2008), a finding that shows that women tend to reach agency in their communities given the opportunity of development.

In this study, the participants were not aware of the potential choice to access information using ICT, specifically through cell phones. They [described their experiences](#) as frustrating, isolated and unable to be efficient in their duties. Once the concept of accessing information through ICT was understood, they exercised the choice to explore the possibility, and moved from a self-focused standard of living (unable to affect change), to well-being, as demonstrated by Participant #5 (*I'm just teaching the children according to my mind and even go to the town to buy some books. Those books I really don't know if it's the exact ones that can teach those children. But if through the cell phones we could receive such message to guide us.*). Participant #5 uses examples where she will access information to act to benefit other people (such as young children, disabled people, and adult learners). Participant #4 uses examples of generating content (reporting on poor quality RDP houses) to benefit the community and therefore exercise agency. Similarly, Participant #5's example of improving water quality benefits the community and will affect positive change. All the participants in the focus group [agreed that they would use their cell phones](#) to access information that would benefit their community, showing a tendency towards agency.

The study participants made the conceptual journey from self-focus (unaware of the choice) before the study, to agency, once the concept of accessing information through ICT was understood and discussed.

The role of agency is important and assessing the agency role before and after the study can contribute to the overall assessment of the study. Assessing the agency role is the first input to the answer of how to effectively translate the needs of rural women provided through the use of ICT.

Intervention

Sen's capability approach urges for a participatory approach to development and argued that development starts with the individual promoting freedom as both the means and end to development (Sen, 1999). The participatory approach applied by this study includes a cultural interpreter (Krauss, 2009b; Krauss & Turpin, 2010), follows the R.E.A.L. approach to [community entry](#) (Weyers, 2011a), and uses research instruments [appropriate to the participants](#).

The focus of the study is to find an approach to effectively translate the needs to information requirements and test the concept of accessing information through ICT, and is not reliant directly on ICT. The concept is to access information through the use of cell phones and as all the participants are cell phone literate, the concept was easier understood. The examples provided by the participants indicate a focus on their ability to act once informed and not a focus on the artefact. It is in agreement with other research that ICT in itself cannot be seen as an end to development efforts, but more as enabling sets of social behaviours (Thompson & Walsham, 2010; Qureshi, 2011).

Designing and applying the appropriate intervention is the second input to the answer to how to effectively translate the needs of rural women, provided through the use of ICT.

Conversion factors

The conversion of a capability (potential) to a functioning (achieved) by means of a commodity (ICT) is influenced by a possibility of three conversion factors namely personal conversion factors such as physical conditions, gender, intelligence or literacy; social conversion factors such as public policies, social norms, or gender roles; and environmental conversion factors such as climate or geographic location (Robeyns, 2003). The conversion factors for this study are:

- Personal: Dignity, willingness to engage, critical thinking
- Social: Societal hierarchies, access to women
- Environmental: Mobile (ICT) network

The support of the community leader, who acted as the cultural interpreter and secured the participants, supported the social conversion factors. All the personal conversion factors have been met. The participants demonstrated dignity in their frustration with the current situation and wish for change. They engaged in the conversations and provided examples of their information needs applying critical thinking. The environmental conversion factor, the existence of a mobile network (ICT), has been met, although not critical for this study.

The collection of conversion factors is the third input to the answer to how to effectively translate the needs of rural women provided through the use of ICT.

Capabilities

The focus of the capability approach is on what people are effectively able to do and to be – their capabilities (Robeyns, 2003; 2005) as discussed in [Chapter 2](#). The achieved capabilities are referred to as functionings. The capabilities relevant to the study are:

- The participant must be a rural woman
- The participant should be aware of choice to participate in the study and in the discussions; express opinions; and have a desire for change
- The participant should engage in the conversation
- The participant should be willing to consider acceptance of the concept

The collection of capabilities is the fourth input to the answer to how to effectively translate the needs of rural women provided through the use of ICT.

5.2.2 And the answer is

To effectively translate the needs of rural women for social support services provided through the use of ICT the following approach is presented:

- a) Assess the agency role of the participants at the beginning and conclusion of the study
- b) Build the appropriate interventions
- c) Consider the conversion factors
- d) Define the capabilities applicable to the study and affected through the study

As explained by Robeyns (2003), what is ultimately important is that people have the freedoms (capabilities) to lead the kind of lives they want to lead, to do what they want to do and be the person they want to be. By effectively translating the needs of the rural women in the study group, the agency roles of the women are strengthened, and their capability set is altered, to assist them in leading the lives they consider good.

5.3 Found in translation

The contribution to sustainable development, by this study, is found in the translation of the study to the recommendations in the literature review, with the research focus areas of the Department of Informatics at the University of Pretoria.

ICT for Sustainable Development is one of the three research focus areas of the Department of Informatics at the University of Pretoria (Department of Informatics, n.d.). The Department

recognises the importance of ICT to bring sustainable socio-economic development to impoverished communities. This study contributes to the body of work on ICT for Sustainable Development.

The literature review gave the researcher an indication that a gap may exist in the existing literature for the proposed research problem statement and that the specific research question may not have been addressed yet. Table 5.1 summarises the study contribution, grouped by similar recommendations found in the literature review.

Table 5.1. Contributions from the study translated to recommendations from the literature review in Chapter 2

Recommendation found in literature survey	Reference	Contribution
<p>For development</p> <ul style="list-style-type: none"> Increased attention should be placed on the “for development” stream, which is critically underrepresented within the literature. 	<p>(Walsham, Robey, & Sahay, 2007) (Avgerou, 2009)</p>	<p>The study is categorised as “for development”. It explores the potential use of cell phones to provide access to information to women living in rural communities. ICT4D research and projects are relevant, even crucial, for the digital and social inclusion of communities in South Africa.</p>
<p>Capability approach</p> <ul style="list-style-type: none"> The capability approach is difficult to operationalise with models and frameworks proposed, but few studies designed are based on it. Research is needed to evaluate the appropriateness of the capability approach in different situations and context. 	<p>(Robeyns, 2006) (Kleine, 2010) (Hatakka & De', 2011) (Andersson, Grönlund, & Wicander, 2012) (Hatakka & Lagsten, 2012)</p>	<p>The study is viewed through the lens of Sen’s capability approach. The Capability Approach Framework (Hatakka & De', 2011) is applied to the study and a suggestion is made to include agency in the framework.</p>

Recommendation found in literature survey	Reference	Contribution
<p>Out of Africa</p> <ul style="list-style-type: none"> • ICT4D projects must consider unique local requirements. • Locally based research is needed with researchers from the developing country. • Lack of papers with an explicit focus on ICT as strategic developmental enabler in Africa. 	<p>(Walsham & Sahay, 2006) (Walsham, Robey, & Sahay, 2007) (Avgerou, 2008) (Thompson & Walsham, 2010)</p>	<p>This research contributes to the ICT4D literature in a South African context. The researcher is South African.</p>
<p>Role of women and rural communities</p> <ul style="list-style-type: none"> • Research on the role of women in connection with ICT4D. • Effective application of ICT to positively influence the lives and livelihoods of poor and marginalised communities. 	<p>(Morrell & Sterling, 2006) (Mbarika, Payton, Kvasny, & Amadi, 2007) (Walsham, Robey, & Sahay, 2007) (Gillard, Howcroft, Mitev, & Richardson, 2008) (Unwin, 2009)</p>	<p>The focus of this study is on rural women. By effectively translating the needs of the rural women in the study group, the agency roles of the women are strengthened, and their capability set is altered, to assist them in leading the lives they consider good.</p>

This study highlights the need of access to information by rural women and the use of technology as the bridge between organisations as information providers and rural women as information consumers. The study participants are willing to report issues relevant to Government organisations, thereby becoming information generators for the organisation to consume and improve service delivery.

5.4 Recommendations

The principles required for effective ICT4D implementations are: a focus on needs; vision and commitment; infrastructure; effective partnerships; monitoring and evaluation; and accessibility (Unwin, 2009). Three of these principles are met, as shown in the [summary of the data analysis](#). The study participants demonstrated [acceptance of the concept](#) of accessing information through ICT and

[defined needs for information](#). The researcher is confident that this study is the foundation to build future research on. Suggested focus areas are:

- **Capability Approach Framework**
As indicated, the limited time spent with the participants and the restricted nature of this study are not supportive of a detailed and comprehensive map to the Capability Approach Framework. Further research, with the study design based on the Capability Approach Framework, adapted with the agency role, is recommended.
- **ICT as a commodity**
This study is not dependent on technology, but enquires if the participants would be willing to use their cell phones in order to gain access to information. The technology focus is therefore implied as cell phones. A further study is required to include the ICT application as a commodity.
- **ICT, the role of agency and women**
The study participants made the conceptual journey from standard of living (self-focus) to agency (external-focus: willing to act to improve their community). A study is required to test if the introduction of ICT as a commodity will impact the agency role of women.

5.5 Conclusion

This chapter firstly discusses the objectives of the research study in an attempt to answer the primary research question. The primary research question “How should the needs of rural women effectively be translated for social support services provided through the use of ICT?” is found in translating the data analysis using the amended Capability Approach Framework with the resulted approach:

- a) Assess the agency role of the participants at the beginning and conclusion of the study
- b) Build the appropriate interventions
- c) Consider the conversion factors
- d) Define the capabilities applicable to the study and affected through the study

Secondly, the contribution made by this study is discussed as a translation from the study to the recommendations found in the literature review and the research focus of the Department of Informatics of the University of Pretoria.

Thirdly, recommendations for future research are suggested, building further on the foundation set by this study.

References

- Ali, M., & Bailur, S. (2007). The Challenge of "Sustainability" in ICT4D - Is Bricolage the Answer? *9th International Conference on Social Implications of Computers in Developing Countries*. São Paulo, Brazil.
- Andersson, A., Grönlund, Å., & Wicander, G. (2012). Development as freedom – how the Capability Approach can be used in ICT4D research and practice. *Information Technology for Development, 18*(1), pp. 1-4.
- Asante, M. K. (1983). The Ideological Significance of Afrocentricity in Interculture Communication. *Journal of Black Studies, 14*(1), pp 3-19.
- Avgerou, C. (2008). Information systems in developing countries: a critical research review. *Journal of Information Technology, 23*, pp. 133-146.
- Avgerou, C. (2009). Discourses on Innovation and Development in Information Systems in Developing Countries' Research. *Proceedings of the 2009 IFIP WG 9.4 conference*.
- Bailey, A., & Ngwenyama, O. (2010, January). Bridging the Generation Gap in ICT Use: Interrogating Identity, Technology and Interactions in Community Telecenters. *Information Technology for Development, 16*(1), pp. 62-82.
- Braa, J., Monteiro, E., & Sahay, S. (2004, September). Networks of Action: Sustainable Health Information Systems Across Developing Countries. *MIS Quarterly, 28*(3), pp. 337-362.
- Brown, A. E., & Grant, G. G. (2010, April). Highlighting the Duality of the ICT and Development Research Agenda. *Information Technology for Development, 16*(2), pp. 96-111.
- Calandro, E., Gillwald, A., Moyo, M., & Stork, C. (2010). *Comparative Sector Performance Review 2009/2010*. Research ICT Africa. Cape Town: Acacia.
- Carpentier, N. (2003). Access and participation in the discourse of the digital divide. The European perspective at/on the WSIS. In J. Servaes (Ed.), *The European information society* (pp. 99-120).
- Crampton, J. W. (2004). *The Political Mapping of Cyberspace*. University of Chicago Press.
- Department of Informatics. (n.d.). *Department of Informatics, Research*. Retrieved May 19, 2012, from University of Pretoria:
<http://web.up.ac.za/default.asp?ipkCategoryID=2034&subid=2034&ipklookid=7>

- Dlodlo, N. (2009). Access to ICT education for girls and women in rural South Africa: A case study. *Technology in Society*, 31, pp. 168-175.
- Educational Support Services Trust. (2007). *Batho Pele*. Retrieved August 13, 2011, from Department of Public Service and Administration: <http://www.dpsa.gov.za/batho-pele/servicerights.asp>
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), pp. 532-550.
- Fowler, A. (2000). The virtuous spiral: a guide to sustainability for NGOs in international development. *Earthscan*.
- Gilbert, M. R., Masucci, M., Homko, C., & Bove, A. A. (2008, March). Theorizing the digital divide: Information and communication technology use frameworks among poor women using a telemedicine system. *Geoforum*, 39(2), pp. 912-925.
- Gillard, H., Howcroft, D., Mitev, N., & Richardson, H. (2008). "Missing Women": Gender, ICTs, and the Shaping of the Global Economy. *Information Technology for Development*, 14(4), pp. 262-279.
- Gillwald, A., Esselaar, S., Burton, P., & Stavrou, A. (2005). Chapter 9: South Africa. In A. Gillwald (Ed.), *Towards an African e-Index: Household and individual ICT Access and Usage across 10 African countries* (pp. 130-152).
- Gomez, R., & Gould, E. (2010). The "cool factor" of public access to ICT. *Information Technology & People*, 23(3), pp. 247-264.
- Gomez, R., Ambikar, R., & Coward, C. (2009). Libraries, telecentres and cybercafés: An international study of public access information venues. *Performance Measurement and Metrics*, 10(1), pp. 33-48.
- Government Communications. (2010, August 3). *Women's Month*. Retrieved August 4, 2010, from South African Government Information: <http://www.info.gov.za/events/national/womensmonth.htm>
- Government Communications. (n.d.). *Thusong Service Centre*. Retrieved August 4, 2012, from Thusong Service Centre - Government Services: www.thusong.gov.za
- Goyal, A. (2011). Developing women: why technology can help. *Information Technology for Development*, 17(2), pp. 112-132.

- Guislain, P., Ampah, M. A., Besancon, L., Niang, C., & Serot, A. (2005). *Connecting Sub-Saharan Africa: a World Bank Group strategy for information and communication technology sector development*. World Bank Publications.
- Hatakka, M., & De', R. (2011). Development, capabilities and technology – an evaluative framework. *Paper presented at the 11th International Conference on Social Implications of Computers in Developing Countries*. Kathmandu, Nepal.
- Hatakka, M., & Lagsten, J. (2012). The capability approach as a tool for development evaluation – analyzing students' use of internet resources. *Information Technology for Development*, 18(1), pp. 23-41.
- Hsieh, H.-F., & Shannon, S. E. (2005). Three Approaches to Qualitative Content Analysis. *Qualitative Health Research*, 15(9).
- Huyer, S. (2005). Women, ICT and the information society: global perspectives and initiatives. In C. Morrell, & J. Sanders (Ed.), *Proceedings of the international symposium on Women and ICT: creating global transformation (CWIT '05)*. New York: ACM.
- Jackson, T. (2002, November). Reframing human resource management in Africa: a cross-cultural perspective. *The International Journal of Human Resource Management*, 13(7), pp 998-1018.
- Jain, P. (2006). Empowering Africa's development using ICT in a knowledge management approach. *The Electronic Library*, 24(1), pp. 51-67.
- Johri, A., & Pal, J. (2012). Capable and convivial design (CCD): a framework for designing information and communication technologies for human development. *Information Technology for Development*, 18(1), pp. 61-75.
- Joseph, M. K., & Andrew, T. N. (2009). Information and Communication Technology policy imperatives for rural women empowerment: focus on South Africa. *IEEE Africon 2009*. Nairobi, Kenya: IEEE.
- Kanungo, S. (2004). On the emancipatory role of rural information systems. *Information Technology & People*, 17(4), pp. 407-422.
- Klein, H. K., & Myers, M. D. (1999, March). A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quarterly*, 23(1), pp 67-88.
- Kleine, D. (2010). ICT4WHAT? - using the Choice Framework to operationalise the Capability Approach to development. *Journal of International Development*, 22(5), pp. 674-692.

- Kleine, D. (2011). The Capability Approach and the 'Medium of Choice': Conceptualising Information and Communication Technologies for Development. *Journal of Ethics and Information Technology*, 13(2), pp. 119-130.
- Kleine, D., Light, A., & Montero, M.-J. (2012). Signifiers of the life we value? – considering human development, technologies and Fair Trade from the perspective of the capabilities approach. *Information Technology for Development*, 18(1), pp. 42-60.
- Kozma, R., McGhee, R., Quellmalz, E., & Zalles, D. (2004, July). Closing the digital divide: evaluation of the World Links program. *International Journal of Educational Development*, 24(4), pp. 361-381.
- Krauss, K. (2009a). Ethical research practice for community entry: using ICT4D in a deep rural context. *Proceedings of the 3rd International IDIA Development Informatics Conference*, (pp. 246-262). Kruger National Park.
- Krauss, K. (2009b). The collision between international ICT policy and a deep rural Afrocentric community in South Africa: assumptions, interpretation, implementation and reality. *Proceedings of Second Annual SIG GlobDev Workshop*. Phoenix, USA.
- Krauss, K., & Turpin, M. (2010). Towards the emancipation of the ICT4D researcher: reflecting on a case study in deep rural South Africa. *ICT and Development - Research Voices from Africa. International Federation for Information Processing (IFIP), Technical Commission 9 – Relationship Between Computers and Society. Workshop at Makerere University*. Uganda.
- Kvasny, L., & Truex, D. (2001). Defining away the Digital Divide: A Content Analysis of Institutional Influences on Popular Representations of Technology. In N. Russo, B. Fitzgerald, & J. DeGross (Ed.), *IFIP TC8/WG8.2 Conference on Realigning Research and Practice in Information Systems Development: The Social and Organizational Perspective* (pp. 399-415). Kluwer Academic Publishers, Boston.
- Landman, J. P., Bhorat, H., Van der Berg, S., & Van Aardt, C. (2003, December). *SARPN publications*. Retrieved August 9, 2011, from Southern African Regional Poverty Network: <http://www.sarpn.org.za/>
- Madon, S., Reinhard, N., Roode, D., & Walsham, G. (2009). Digital Inclusion Projects in Developing Countries: Processes of Institutionalization. *Information Technology for Development*, 15(2), pp. 95-107.
- Mbarika, V. W., Payton, F. C., Kvasny, L., & Amadi, A. (2007). IT Education and Workforce Participation: A New Era for Women in Kenya? *The Information Society*, 23(1), pp. 1-18.

- Moens, N. P., Broerse, J. E., Gast, L., & Bunders, J. F. (2010). A Constructive Technology Assessment Approach to ICT Planning in Developing Countries: Evaluating the First Phase, the Roundtable Workshop. *Information Technology for Development*, 16(1), pp. 34-61.
- Morrell, C., & Sterling, R. (2006). ICT Strategies for Gender Empowerment: Actionable Approaches and Recommendations. *ICTD 2006* (pp. 325 - 330). IEEE.
- Myers, M. D. (2009). *Qualitative Research in Business & Management*. London: SAGE Publications.
- Myers, M. D., & Newman, M. (2007). The qualitative interview in IS research: Examining the craft. *Information and Organization*, 17(1), 2-26.
- Nederveen Pieterse, J. (2010). *Development Theory* (2nd ed.). Sage Publications Ltd.
- Qureshi, S. (2011). Information technology for development in expanding capabilities. *Information Technology for Development*, 17(2), pp. 91-94.
- Robeyns, I. (2003). The Capability Approach: An Interdisciplinary Introduction. *3rd International Conference on the Capability Approach*. Pavia, Italia.
- Robeyns, I. (2005, March). The Capability Approach: a theoretical survey. *Journal of Human Development*, 6(1), pp. 93-114.
- Robeyns, I. (2006). The Capability Approach in Practice. *The Journal of Political Philosophy*, 14(3), pp. 351-376.
- Roman, R., & Colle, R. D. (2003). Content creation for ICT development projects: Integrating normative approaches and community demand. *Information Technology for Development*, 10, pp. 85-94.
- Roode, J. D., Speight, H., Pollock, M., & Webber, R. (2004). It's not the Digital Divide - it's the Socio-Techno Divide! *12th European Conference on Information Systems*. Turku, Finland.
- Rubinoff, D. D. (2005). Life histories in cyberspace: life writing as a development tool for rural women. *Geoforum*, 36, pp. 59-75.
- Sachs, J. D., & McArthur, J. W. (2005, January 22). The Millennium Project: a plan for meeting the Millennium Development Goals. *Lancet*, 365, 347-353.
- Schreier, M. (2012). *Qualitative Content Analysis in Practice*. Sage Publications Ltd.
- Sen, A. (1999). *Development as Freedom*. Oxford: Oxford University Press.

- Sen, A. (2000). *Social Exclusion: Concept, Application and Scrutiny*. Manila: Asian Development Bank.
- South African Advertising Research Foundation. (2010). Retrieved August 21, 2011, from SAARF: <http://0-www.saarf.co.za.innopac.up.ac.za/>
- South African Parliament. (2009, August 25). *Protection of Personal Information (B9 - 2009)*. Retrieved September 19, 2010, from Bills before Parliament: http://www.parliament.gov.za/live/content.php?Item_ID=216&DocumentNumber=207372
- Statistics South Africa. (2010). *Millennium Development Goals Country Report 2010*.
- Thapa, D., Sein, M. K., & Sæbø, Ø. (2012). Building collective capabilities through ICT in a mountain region of Nepal: where social capital leads to collective action. *Information Technology for Development, 18*(1), pp. 5-22.
- Thompson, M. (2008). ICT and development studies: Towards development 2.0. *Journal of International Development, 20*(6), pp. 821-835.
- Thompson, M., & Walsham, G. (2010). ICT Research in Africa: Need for a Strategic Developmental Focus. *Information Technology for Development, 16*(2), pp. 112-127.
- United Nations Development Programme. (2010). *The Human Development Index (HDI)*. Retrieved August 21, 2011, from Human Development Reports: <http://hdr.undp.org/en/statistics/hdi/>
- University of Pretoria. (n.d.). *Code of Ethics for Research*. Retrieved February 27, 2011, from Research Ethics: <http://web.up.ac.za/default.asp?ipkCategoryID=4294&subid=4294&ipklookid=7>
- Unwin, T. (2009). *ICT4D: Information and Communication Technology for Development*. Cambridge University Press.
- Van Rensburg, J., Veldsman, A., & Jenkins, M. (2008). From Technologists to Social Enterprise Developers: Our Journey as “ICT for Development” Practitioners in Southern Africa. *Information Technology for Development, 14*(1), pp. 76-89.
- Verdegem, P., & Verhoest, P. (2009, November-December). Profiling the non-user: Rethinking policy initiatives stimulating ICT acceptance. *Telecommunications Policy, 33*(10-11), pp. 642-652.
- Walsham, G., & Sahay, S. (2006). Research on information systems in developing countries: Current landscape and future prospects. *Information Technology for Development, 12*(1), pp. 7-24.

- Walsham, G., Robey, D., & Sahay, S. (2007, June). Foreword: Special Issue On Information Systems in Developing Countries. *MIS Quarterly*, 31(2), pp. 317-326.
- Weber, R. (2009). Research on ICT for Development: Some reflections on rhetoric, rigor, reality, and relevance. *Proceedings of the 3rd International IDIA Development Informatics Conference*. Kruger National Park.
- Weyers, M. L. (2011a). *The Theory and Practice of Community Work: A Southern African Perspective* (2nd Edition ed.). Potchefstroom, South Africa: Keurkopie.
- Weyers, M. L. (2011b). The habits of highly effective community development practitioners. *Development Southern Africa*, 28(1), pp. 87-98.
- 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., & Walsham, G. (2008). Inequality of what? Social exclusion in the e-society as capability deprivation. *Information Technology & People*, 21(3), pp. 222-243.