

**The effects of community participation on sustainability in an ICT4D project: A  
Case of Vrygrond Community Lab in South Africa**

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Department of Information Systems  
University of Cape Town



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Supervised by Professor Wallace Chigona

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## **Abbreviations and Acronyms**

EU	European Union
ICT	Information and Communication Technology
ICT4D	Information and Communication Technology for Development
IS	Information Systems
IT	Information Technology
MDGs	Millennium Development goals
MOU	Memorandum of understanding
NGO	Non-governmental organisation
UCT	University of Cape Town
UN	United Nations
VCL	Vrygrond Community Lab

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## Abstract

**Background:** This study explores an ICT for development project in previously ‘underserved’ community of Vrygrond in Cape Town South Africa. Developing countries have embraced technology as a means to improve the pace of development in their countries. Several projects have been setup that allow communities to access skills training programmes within their communities. However, there is a challenge when considering the sustainability of projects implemented to achieve their developmental goals

**Purpose:** ICT for development initiatives are usually centrally planned without the involvement of the targeted communities. The targeted participants may be involved in the implementation phase only, and this may lead to sustainability failure. This study explores the how community participation affects sustainability of ICT for development projects in the context of South Africa.

**Research methodology:** The methodology in this study is qualitative. Exploratory and descriptive research methods were used to analyse how community participation affects sustainability. This study used the Stakeholder Theory to explore community participation and project sustainability. Data was collected using semi structured interviews, documents, observations and applied thematic analysis. The Vrygrond Community Lab in Cape Town South Africa was used as a case study.

**Key Findings:** Based on the analysed data, a number of key stakeholders were not involved in the project planning but were represented by the Vrygrond Community Trust. It was seen from the data that sustainability is dependent on closely working with existing community groups based within the community twenty-four seven. This research found positive relationship between participation and sustainability. Other findings indicated that there was an element of ‘tokenism’ and despite this the Vrygrond Community Lab seemed sustainable. This was attributed to the continued funding and operational support received from University of Cape Town and Pforzheim University. Finally, the study indicated that it was essential that socioeconomic and sociocultural issues are addressed quickly when they emerge.

**Value of the study:** The study broadly contributes to the existing literature on community participation and sustainability of ICT4D initiatives in South Africa. Secondly study makes recommendations for donors and Universities looking to implement initiatives similar to the Vrygrond Community Lab in addressing socio-economic challenges by equipping communities with computer skills that would assist them in their daily lives, either in finding work, studying, or running a business.

**Keywords:** Sustainability, ICT4D, Community Participation, Stakeholder Theory

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## Chapter 1: Introduction

### 1.1 Background and motivation for the study

South Africa is a dual economy with one of the highest levels of inequalities in the world (Keeton, 2014). “The top decile of the population accounts for 58% of the country’s income, while the bottom decile accounts for 0.5% and the bottom half less than 8%” (World Bank, 2017). Similar to other African countries and other parts of the world, South Africa faces massive development challenges, particularly informal settlements, rural areas and townships. There is a dire need to achieve socio-economic development. There is a wide recognition that information and communication technologies (ICTs) can play a critical role in resolving critical development challenges faced by Africa. New tools in Information and communication technology for development (ICT4D) are being used to facilitate development. These tools include electronic technologies such as computers, internet and wireless networks (McNamara, 2003). However, ICT4D literature indicates a worrisome trend of high failure rate for ICT4D projects in developing countries. The focus has been on providing software and hardware, however, inadequate attention has been paid to human and social systems. This leads to sustainability failure; an initiative may seem to have been successful but is later abandoned. The term ‘sustainability’ refers to the maintenance of an initiative by the community to lengthen benefits to society (Talib, 2015). Sustainability’ captures the idea of “...maintaining something that already exists over time” Jacobs et al., (2005, p.60). Internationally the debate of the failure rate of ICT4D project implementation remains high on the agenda. This debate has brought a limelight on the term participation (Mpazanje & Brown 2013).

Ideally for a community initiative to be sustainable, the community should participate in the establishment and running of the initiative. Currently, work that explores the how community participation affects project sustainability in the context of South Africa is limited. Secondly, researchers usually study project sustainability in ICT4D projects in

terms of influencing factors that are linked to sustainability (Best et al.,2008); Gordon et al., 2007; Pade-Khene et al., 2011). Thirdly, there are no adequate guidelines, theories or frameworks that assist practitioners in sustaining their ICT4D projects. Lastly, there is a lack of comprehensive normative guidelines, frameworks and theories that offer guidance to practitioners in sustaining such projects.

## **1.2 Context of the Study**

Vrygrond is located near Muizenberg, Western Cape South Africa. The community is home to about 40 000 people (University of Cape Town, 2014). The community members live in dire poverty. In effect, it is their everyday struggle. Unemployment is estimated to be as high as 80%. Different language groups live in the area dominated by Afrikaans speakers (coloured people) and isiXhosa speaking people. After the year 2000 other foreign nationals started moving into the area (Jensen, 2010). The community has low levels of trust and social capital with very high levels of crime (Jensen, 2010)

The University of Cape Town in South Africa and Pforzheim University in Germany collaborated to set up the Vrygrond Community Lab (VCL), an IT competence centre that has 20 computers. The aim of the VCL was to assist the community in improving their employability. The implementation of VCL presents an ideal case where communities participate in the planning phases all the way to implementation. Chapter 5 discusses the sample at great length.

## **1.3 Problem Statement**

ICT4D initiatives implemented often fail to impact communities for a long time. One of the identified issues is that many of these ICT4D initiatives are centrally planned without the involvement of the targeted communities. The targeted participants may be involved in the implementation phase only. This may lead to sustainability failure. If communities take full ownership of ICT4D initiatives, then they can profit from all of the benefits derived from the use of ICTs, and continue to do so for a significant period of time. Based on this, I wanted to understand whether community participation really influences sustainability, and if so, to what extent.

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## 1.4 Research question

This thesis addresses the following question: *How does community participation influence sustainability of an ICT4D project?* To answer the main question the following sub question was used:

1. To what extent does community participation influence sustainability of ICT4D initiative?

This study uses the stakeholder theory to explore community participation and project sustainability. Stakeholder theory approach allows the researcher to understand who are the key participants in the project and offers ways of managing them. “The advantage of stakeholder analysis is that it highlights conflicts and does not let decision makers make naïve assumptions” (Pouloudi & Whitley, 1997, P32).

In line with the theoretical view mentioned, the following objectives have been formulated and attained.

1. To determine the key stakeholders of project and how they are managed.
2. Investigate the extent to which Community participation in a skills development initiative affects its sustainability

The research methodology in this study is qualitative. I utilised both exploratory and descriptive research. The study adopts an interpretivist philosophical approach. This approach is appropriate because understanding how community participation influences sustainability in the context of ICT4D initiatives are phenomenon embedded within wider context. This approach facilitates gaining ‘*Holistic*’ overview of the context under study (Miles et al., 1994). I used a single case study to understand the relationship between participation and sustainability in the context of ICT4D initiatives. Single case studies help researchers develop a high-quality theory by gaining in-depth understanding of the subject within specific context (Dyer & Wilkins, 1991).

## **1.5 Significance of study**

This study is significant in that it broadly contributes to the existing literature in community participation, sustainability and project outcomes in ICT4D. This study also highlights key areas that development partners in the Western Cape should do to effectively embolden community participation. Audiences that can benefit from this study include funding agencies, as they are the project sponsors. The community as a whole will benefit as ways of sustaining the project will be demonstrated to them.

This thesis is important because it can assist and highlight the effect of community stakeholders on the sustainability of ICT4D initiatives in South Africa and demonstrate how these initiatives contribute to the development of the community. Prior research has been conducted on stakeholder influence on ICT4D initiatives, including focus on the impact of higher education stakeholders on these initiatives, however these studies are imprecise on the influence of community stakeholders on the sustainability of ICT4D initiatives. Some studies have used single theoretical frameworks to explain community participation, however have failed to explain reasons for the unimproved community participation over the years. This thesis will address the gap identified.

## **1.6 Explaining use of key terms**

This section defines the key terms used in this study. The definitions are relevant in the context of participation and sustainability. These terms are summarised as follows.

### **Stakeholders**

A stakeholder are individuals or organisations that are affected by a problem and/or may be the solution and they could influence the outcome of the initiative (Chartier, 2017). The perspectives of different stakeholders in view of their interest and the problem must be determined as this may determine the scope or problems in the initiative (Chartier, 2017).

## **Community Participation**

Community Participation refers to the procedures that enable the community to realise their right to access information and to be involved in the decision-making process that affects the way they live their lives (Maail 2011; Paul 1987).

## **Developing Country**

A developing country is a country with a low performance in the economic sector and limited combination of advanced technologies. South Africa is categorised to as a developing country because the economic performance and the level of livelihood for the majority of its citizens. Most people have limited income opportunities therefore unemployment is high, there is limited access to basic resources for the majority and there is still high level of illiteracy (Hassan, 2016).

### **1.7 Outline of thesis**

The thesis has eight chapters. The first chapter is the introduction followed by Chapter 2 that reviews the literature relevant to sustainability of ICT4D projects. Chapter 3 discusses the theoretical basis of the thesis. The theory used to explore the research question is discussed in this chapter. Chapter 4 looks at the research methodology and also discusses the philosophical assumptions of the study and the reasons thereof. Chapter 5 analyses the case for the study, VCL. It describes how the organisation started and general operation of the project. Chapter 6 discusses the results of the data analysis. This chapter looks at all the stakeholders of VCL and how they were managed. Chapter 7 is the discussion of the results. The findings of the study are discussed in great detail and indicates the contribution of this study to research. Chapter 8 is the conclusion. It summarizes contributions of the study and proposes key areas for further research.

## **Chapter 2: Literature review**

### **2.1 Introduction**

This chapter reviews the literature relevant to the thesis that helps to address the research question. This will be done by critically engaging with the literature in the fields of community participation and project sustainability in the context of ICT4D. Section 2.2 discusses South Africa as a developing nation and looks at key challenges it faces. It is followed by a discussion of how ICTs can become an enabler of development in the country. Section 2.4 defines sustainability and looks at the key challenges in project sustainability. Section 2.5 discusses participation by examining the different types of participations and methods of participations required for sustainability of ICT4D projects. Section 2.6 discusses typologies of participation by looking at their different characteristics. Section 2.7 discusses factors motivating and hindering participation. Section 2.8 looks at the factors influencing sustainability of ICT4D projects and concludes with a summary of the current understanding on the research topic while isolating knowledge gaps that will be addressed.

### **2.2 South Africa as a developing nation**

South Africa falls into the category of developing countries or least developed countries. Citizens of these countries continue to express a strong disapproval of their government's inability to diminish poverty. It is vital that governments devise strategies and procedures that empower people to engage in collective activities aimed at poverty alleviation and sustainable development (Prato & Longo, 2012).

Socio economic development is one of the significant challenges that confronts the South Africa (World Bank, 2017). People face poverty, limited access to safe drinking water, degraded environments and sanitation (Kates & Dasgupta, 2007). Also, unemployment is currently at 27% (Stats SA, 2017). This challenge is particularly grave in the previously underserved areas. The differences in income among races is

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also visible as shown in (table 2.1). Black African people continue to earn significantly less than white people. Although white people have received the least salary increment, their salaries are incomparable to that of other races.

**Table 2.1:** Mean and median monthly earnings by race: 2003 – 2012 (Businessteck, 2017)

Race	Median		Mean			
	2003	2012	Increase	2003	2012	Increase
White	14 468	16 581	15%	11 249	11 991	7%
Asian/Indian	7 825	11 701	50%	5 264	8 993	60%
Coloured	4 241	7 058	66%	2 437	3 897	60%
Black African	4 059	5 445	34%	2 437	2 998	23%

South Africa faces massive inequality between the wealthy and the poor. The richest 10% of the population own up to 95% of all the wealth. The poor population earn less than 10% of all income (Orthofer, 2016). Due to the legacy of apartheid those at the bottom of the income chain are African Black and coloured as shown in Table 2.1.

The government has struggled to grow the economy. The economy performed poorly in the first quarter on 2017, with a decrease of 0, 7% in GDP. Unemployment has also increased to 27.7%. Addressing the socio-economic problems remain a challenge for the government. Table 2.2 highlights key development challenges South Africa continues to face.

**Table 2.2:** South Africa’s 2017 Economic Indicators (Tradingeconomics, 2017)

<b>Overview</b>	<b>As of July, 2017</b>
GDP Growth Rate	-0.7 %
Unemployment Rate	27.7 %
Inflation Rate	5.1 %
Interest Rate	6.75 %
Balance of Trade	10672 ZAR Million
Government Debt to GDP	51.7 %

### **2.2.1 The digital divide in South Africa**

South Africa launched a National Development Plan in 2012 and it continued to demonstrate how ICTs can act as critical enabler of economic growth, productivity and communication (Bornman, 2016). To realise the development, the government must invest in high quality infrastructure that delivers wide range of ICT applications and services (Middleton, 2013). Compared to other developing countries, South Africa has lower internet usage rates as well as lower computer ownership (Lesame, 2013). The mobile broadband penetration is estimated at per 100 of the population is only 25.5. However, this number is much lower in ‘townships’, Villages or previously underserved areas (Broadband Commission, 2013). In the Western Cape particularly in the previously underserved areas, the ‘digital gap’ is a difficulty in addressing socio-economic issues (Western Cape Government, 2014). These communities lack widespread access to e-skills and effective use and adoption of technology for empowering themselves (Lorini et al., 2014).

### **2.3 ICTs an Enabler of development**

ICT has the potential to significantly change every aspect of today’s life; From how people communicate and retrieve information, to how people work and engage in business. The impact of ICT on communities around the world may be influenced by a number of factors, including culture, existing infrastructure, and government

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regulations. Development is defined as activities within a society either consciously or subconsciously set about at improving the community (Stec et al., 2014). Madon (2000) demonstrated how ICT and the internet may exert a supportive role on economic endeavours in a community. These endeavours may be in education, healthcare, business, agriculture etc. South Africa recognises the potential of ICTs and has embraced ICTs as an enabler for development. This commitment is indicated by the fact that several ICT Initiatives and projects currently underway are funded by the government together with private industry players (Assaf, 2014).

Although some of the living labs are not initiated by the South African government, they support several of them. These were an approach to innovation and ICT developed in the 1990s. The idea was to create an environment that allows users to create, innovate and specially focus on developing ICT products and services (ENoLL, 2011; Følstad, 2008). Examples of these living labs include, the Siyakhula Living Lab in Limpopo, SAP Research living Lab and North West Living Lab. These living Labs are considered as having the potential in helping address South Africa's socio-economic challenges. However, with all the success attained, a number of questions remain unanswered: - to what extent are ICTs contributing to development? Also, how can the benefits derived from ICTs be extended even further in marginalised parts of South Africa? Researchers in ICT4D should compellingly theorise the current contribution of ICTs to development.

Telecentres have also been used as a means to address South Africa's socio-economic challenges. Telecentres are "community centres that offer shared access to ... ICTs for the purpose of community-level development and poverty reduction" (Mukerji, 2013, p. 33). These telecentres offer access to variety of ICT services such basic computer access to send emails, web browsing, research for homework and general browsing for employment opportunities (Osman & Tanner, 2017). These telecentres are usually used by those in 'underserved' communities who are advanced in age as well as those with limited or basic literacy skills (Ngowi et al., 2015).

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## 2.4 Overview of sustainability

The term 'sustainability' refers to the upkeep of a project lengthen benefits to society (Talib, 2015). Kimaro et al., (2005, p.275) posit that 'sustainability' encapsulates the idea of "...maintaining something that already exists over time..." In general, sustainability conveys the idea of longevity, continuity and maintenance. In the context of ICT4D projects, "Sustainability for a project or an organization means being able to maintain or prolong the services with the means available" Jacobs et al. (2005, p.60). Heeks et al (1999) described four main different types of ICT project failures.

- *Total failure*: 'a system that never works'.
- *Partial failure*: A project where most of the goals are achieved or which has a lot of wanted outcomes.
- *Replication failure*: A pilot project that cannot be reproduced elsewhere. 'Sustainability failure' which he describes as 'an initiative that at first succeeds but then is abandoned after a year or so'.

Sustainability failure has been seen as a persistent issue. Marais (2011, p.100) identifies the sustainability of ICT4D projects as "an enduring concern." Sustainability of ICT4D initiatives is among the major problems that deserves the attention of the ICT4D community (Best, 2010). Furthermore, sustainability problem is widespread in all major developing countries mainly in Asia, Africa and South America. Although sustainability is recognised as a great concern, there is little understanding of the phenomena De Zoysa & Letch, 2013). Researchers and practitioners have expressed great concern that these failures are not receiving the attention they ought to be getting.

### 2.4. 1 Types of Sustainability

There are a number of ways of categorising types of sustainability; (Kumar, 2005; Mallinson & Sewry, 2011; Ali & Bailur, 2007; Proenza, 2001). For the purpose of this thesis five factors will be considered, namely; economic sustainability, social and cultural sustainability, technological sustainability, institutional sustainability and environmental sustainability.

### **2.4.1.1 Economic sustainability**

Economic sustainability refers to an initiative's ability to generate enough income that meets operational costs as well as maintenance costs (Pade-Khene, et al., 2011, Ali & Bailur, 2007). One of the greatest challenge in ICT4D projects remains economic sustainability, as these projects are largely funded by external organisations for a limited time only. The added difficulty is that the project must generate enough income while at the same time allowing equal access by those who are genuinely unable to pay for the services offered (Kumar, 2005; Ali & Bailur, 2007). However economic sustainability should always be adapted to the sociocultural context of the initiative (Steyn, 2011).

### **2.4.1.2 Social and cultural sustainability**

Social and cultural sustainability deals with the fact that when an ICT4D initiated is operationalised within a community, social and cultural consideration must be made. Social sustainability refers to the process of ensuring that local traditions are adhered to, no marginalisation takes place and differences among the community are considered (Ali & Bailur, 2007). Although Social sustainability occurs when the gap between the beneficiaries of the initiative and those that are not benefiting are irreconcilable (Kumar & Best 2006; Ali & Bailur, 2007).

### **2.4.1.3 Technological sustainability**

Technological sustainability focuses on the technology being used. This aspect seeks to find ways to extend the technology being used for a long time (Ali & Bailur, 2007; Pade, et al, 2006). To achieve technological sustainability, the technological tools used should be easy to use, flexible, maintainable and robust and the people with technical skills should be easily available should there be a need for their services (Pade, et al, 2006; Ali & Bailur, 2007).

#### 2.4.1.4 Institutional sustainability

Institutional actors may be private sector or public organisations (Kumar & Best, 2006, Pade, et al 2006). Due to the fact that implementation of ICT4D projects is a politicised process, the political actors must be involved and accept it in order to maintain legitimacy. Once the society accepts the initiative as a means to an end, irrespective of the outcome.

#### 2.4.1.5 Environmental sustainability

Environmental sustainability refers to the impact of a project on the environment; what happens to the used computers when they are no longer wanted, or simply too old for usage. Kumar and Best (2006, p.11) argued that this when a lot of computers are used “Without plans for their eventual disposal or reuse when they reach the end of their effective life”. VCL is situated in another organisation’s building and therefore would be easy to get rid of unwanted computers by either selling or giving them away. Table 2.3 summarises types of sustainability.

**Table 2.3:** Summary of different types of sustainability

<b>Sustainability type</b>	<b>Brief explanation</b>
Economic sustainability	The ability for the initiative to generate enough income for operative and maintenance costs.
Social and cultural sustainability	Ability to get buy-in and participation from the community. This requires adapting to evolving local needs.
Technological sustainability	Capacity for a technology to be available for an extended period of time without major modifications in hardware or software affecting its availability.
Institutional sustainability	Almost similar to social sustainability, requires buy-in of key institutional actors.
Environmental sustainability	Refers to the extent the computers are handled when no longer needed.

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## 2.4.2 Influencing factors in the sustainability of ICT4D projects

Various factors affect a project's sustainability. As previously mentioned, sustaining ICT4D projects is multifaceted. The various factors that affect the sustainability of an ICT4D projects are summarised in Table 2.4.

**Table 2.4:** A summary of CSFs of ICT project sustainability (Pade et al., 2007)

(1) Simple and clear project objectives	There needs to be clear objects, that are sensitive to the needs of the surrounding community James , (2004)
(2) Approaching the project in a holistic way:	Project should focus on long term goals of the project. Should seek ways to make it inclusive for the community Schwalbe (2006)
(3) Using ICT to enhance existing rural development activities:	The project should be part of wider development plans by the community Batchelor & Sugden, (2003); Ferguson & Ballantyne, (2002)
(4) Cultivating an influential project champion:	ICT champions essentially inspire, drive, create awareness, and encourage the targeted community to use ICT, James, 2004; Schwalbe, 2006;
(5) Incorporating socially excluded groups:	ICT projects should incorporate social cultural factors (i.e. gender awareness) Ferguson & Ballantyne, 2002;
(6) Awareness of specific ICT policy influencing the project:	There needs to be an understanding of the Policy regarding ICT tool implementation. This policy may be a policy of the government of the City in which the project takes place.
(7) An understanding of the local political context:	The local context politically should be understood. There should be no favouritism depending on
(8) Participation of community target groups in the project process:	The community should drive the initiative
(9) Focussing on local/demand-driven needs:	The project should offer specifically what the community wants
(10) Building on local information and knowledge systems:	Taking into consideration the local context associated with sharing knowledge created from social interactions between people.
(11) Appropriate training and capacity building:	Train the locals to maintain the service long after the project manager is gone
(12) Facilitating local content development:	The community needs to engage in local content development that is sensitive to the rural livelihood environment.
(13) Motivation and incentives for ICT job placement in the community:	Local ICT project training and capacity building should ensure that the skills acquired respond to the job market need.
(14) Focus on economic self-sustainability – entrepreneurship:	Sustainability is a very important consideration
(15) Encouraged local ownership:	Locals should own the project
(16) Building local partnerships:	There should be local partnerships to enhance the project needs
(17) Choosing appropriate technology:	Choose technology needed by community
(18) Building on existing public facilities:	Use facilities the locals are comfortable with
(19) Ongoing monitoring and evaluation of the project:	There should be mechanisms in place to monitor progress and to ensure sustainability

## 2.5 The Concept of participation

Since early 2000 the International Telecommunication Union (ITU) continues to view participation as an important factor in the success of any ICT4D initiatives. It is essential that as an information society, the principles of participation are adhered to all the time (ITU, 2004). Although the term 'participation' has been used several times, the core of the matter remains at hand. The failure rate of ICT4D initiative remains an issue warranting investigation (Hamel, 2010; Heeks, 2010). To address the failure rate issue, Bell and Harper (1990) suggest that large portion of the technology must be designed and developed with the environment in which the technology would be implemented and should not be simply used as plug and play gadget. Although

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participation is considered an essential aspect of ICT4D implementation, to date little benefits can be shown by the current literature (Hamel, 2010; Heeks, 2010).

### **2.5.1 Meanings associated with Participation**

In everyday use of the term participation refers to the processes that enable the community to be involved in the decision-making process that affects the way they live their lives (Maail 2011; Paul 1987). Other researchers in information systems define participation as the 'behaviours and activities performed by the target users or their representatives during information systems development process' (Maail 2011, Barki & Hartwick, 1989). A number of researchers and Information Systems practitioners use the term 'participation' and 'involvement' interchangeably. However, Hartwick and Barki (1989) argue that these terms are different. They argue that in ICT related fields any personal relevance that is attached to any activity is 'involvement'. On the other hand, 'participation' refers to assignments, behaviours and activities done within a cycle of an IS implementation inclusive of system development process.

User involvement was coined in from the 1980s by ICT professionals, the term has been simplified to mean 'consultation'. For example, a department director may be involved in contribution to the development of a project by finances. However, this does not mean that they participated in the project, they carried out their duty (De Cindio, et al., 2007). User involvement does not equate to participation. As in most cases, involvement is for mere formality has no influence on the design, development and implementation. On the other hand, participation involves collaboration with the decision-making team with regards to project initiation. Participation can take a variety of forms, consider the types of participation and meaning as defined by (Cheetham, 2002)

### **2.5.2 Different dimensions of participation**

There are different aspects and degrees of participation. Firstly, participation can be differentiated based on whether it is direct or indirect. Direct participation, where

stakeholders immerse themselves fully and participate in a process that affects them. On the other hand, indirect participation refers to whereby representatives participate in a process. Each type allows a form of influence in the decision making of the process (Luyet, et., 2012).

Participation can also be viewed in terms of the extent of influence stakeholders may actually have on the final product. The degree of participation is a continuum of having no influence at all to having complete control over the artefact or outcome (Mpazanje & Brown 2013). Participation may range from simply giving an opinion, being present, taking part to stakeholders making decisions on a given issue (Franklin & Slopper, 2004). Participation may take other forms, from actual to perceived (in this case decision is made based on anticipated participation). Participation may be formal or informal, performed alone at one stage or during many stages of a problem-solving process.

Due to the concept of participation continually changing, the high failure rate of participatory ICT4D projects still prevailing (Franklin & Slopper 2004). Project managers may easily stamp any interventions as participatory although there was indirect participation and this leads to lack of local ownership, and identity crises between the implementers and the community (Brunello, 2010).

Other researchers like Pretty (1995) have suggested that participation may range from a meaningless participation also referred to as manipulation where participation is simply pretense, to highest level of participation referred to as self-mobilisation participation. In this instance the community takes control on the project, and may seek external advice from time to time, however they fully own the outcome and the sustainability is dependent on them (see Table 2.5)

**Table 2. 5: Pretty's typology of Participation (Pretty, 1995)**

Typology of Participation	
Typology	Characteristics
Manipulative participation	Participation is simply pretence, with 'people's' representatives on official boards but who are not elected and have no power.
Passive participation	People participate by being told what has been decided or has already happened. It involves unilateral announcements by an administration or project management without listening to people's responses. The information shared belongs only to external professionals.
Participation by consultation	People participate by being consulted, and external people listen to views. These external professionals define both problems and solutions, and may modify these in light of the people's responses. Such a consultative process does not concede any share in decision-making, and professionals are under no obligation to take on board people's views.
Participation for material incentives	People participate by providing resources, for example labour, in return for food, cash or other material incentives. Much on-farm research falls into this category, as farmers provide their land but are not involved in the experimentation or the process of learning. It is very common to see this called participation. People have no stake in prolonging activities when the incentives run out.
Functional participation	People participate by forming groups to meet predetermined objectives related to the project, which can involve the development or promotion of externally initiated social organisation. Such involvement does not tend to be at early stages of project cycles or planning, but rather after major decisions have been made. These institutions tend to be dependent on external initiators and facilitators, but may become self-dependent.
Interactive participation	People participate in joint analysis, which leads to action plans and formation of new local institutions or the strengthening of existing ones. It tends to involve interdisciplinary methodologies that seek multiple perspectives and make use of systematic and structured learning processes. These groups take control over local decisions, and so people have a stake in maintaining structures or practices.
Self-mobilisation	People participate by taking initiatives independently of external institutions to change systems. They develop contacts with external institutions for the resources and technical advice they need, but retain control over how resources are used. Such self-initiated mobilisation and collective action may or may not challenge existing inequitable distribution of wealth and power.

Literature examined classifies participation into either passive or active participation. The differences are summarised in (Table 2.6). Scheyvens (2002) sees it as two sides of one continuum. On the lowest side the external agents only inform the community to give themselves legitimacy. However, the community are merely recipients of whatever is on offer. While with active participation means that those concerned are actively involved in the decision-making process. In this type of participation, stakeholders are always actively engaged in collaboration, interaction and involved in discussion of needed changes, concerns, conflicts or any other concerns. Both parties should equally consider each other's needs (Scheyvens, 2002).

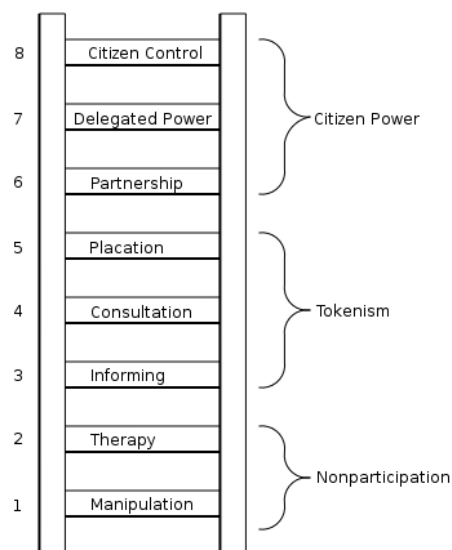
**Table 2.6:** Differences between passive and active participation

Passive Participation	Active Participation	Author
Manipulation Therapy Informing Consultation Placation	Partnership Designated power Citizen Control	Arnstein (1971)
Nominal Instrumental	Representative Transformative	White (1996)
Participation as evolving	Participation as empowerment	Lyons et al (2001)
Participation as a mean	Participation as an end	Brigdon & Korf (2002)
Instrumental Nominal Cosmetic Pseudo-participation	Transformative Developmental Educative Genuine	Vos (2005)

### 2.5.3 Participation as steps of a ladder

In democratic politics, the term participation is common and continues to spread to institutions such as universities that have similar inclination in terms of their democratic processes (Mpazanje & Brown 2013). Participation refers to the redistribution of power among those with power and those without power. Holding power in this instance may be in terms of education, governance, technical knowhow, knowledge and other cases where those without knowledge would benefit from associating themselves with the experts (Luyet et al, 2012; Moules & O'Brien, 2012).

Those with power claim to want to share knowledge, research suggest otherwise. Most power holders with good intentions may not be familiar and are insensitive to the needs of those without power (Mpazanje & Brown 2013). Arnstein (1969) developed the rungs of the ladder of participation as he recognised the lack of agreed upon all-encompassing definition of participation. The ladder of participation illustrates different stages of participation. The rungs are arranged in the pattern of a ladder, this shows the extent of power the ‘have nots’ (those without power) have in determining the resulting artefact in any given circumstances. The rungs are manipulation, therapy, informing, consultation, placation, partnership, delegated power and citizen control. Figure 2.1 represents the ladder.

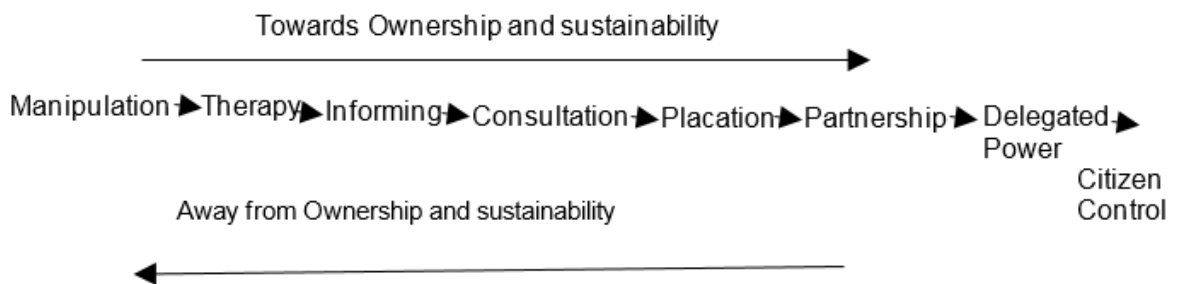


**Figure 2.1:** The ladder of citizen participation (Arnstein, 1991)

At the bottom of the ladder is manipulation and therapy; these are considered no participation. In these forms of participation those with power merely inform those without power of possible intervention. In the therapy section, those living in the community are considered incapable of knowing what is good for them. Those leading the project initiative do not consult nor require the community's input (Luyet et al, 2012).

The next steps on the ladder are Informing, consultation and placation which together make participation as a token. During the informing and consultation steps, those without power listen to the power holders. The have nots are allowed an opportunity to express their opinion however this does not translate into any meaningful actioning of the views of the have nots (Bishop & Davis, 2002; Luyet et al, 2012). During the placation step, the have nots may advise the powers holders, however this does not obligate the power holders to act on the advice.

The last steps on the ladder are partnership, delegated power and citizen control and all translate into citizen power. Step 6 those without power negotiate with the power holders and this ends with a trade-off. The last two steps are where the have nots control everything. They have managerial powers in any intervention and control the outcome of the intervention (Buchey & Hoverman, 2000; Bishop & Davis, 2002; Luyet et al, 2012). In reference to development, community participation means a process where the community members (beneficiaries) have a say in the planning and execution of the project. Instead of merely being handed a project. This will be the definition guiding this study. Figure 2.2 illustrates what sort of participation leads to sustainability as indicated by the arrows.



**Figure 2.2:** The ladder of citizen participation (Adapted from Arnstein, 1991)

Critics argue that the ladder is simplistic and presents a mere linear progression. The ladder presents the relationships between the steps as if they are hierarchical and static. Other authors suggest participation should be presented as spokes of a turning wheel. This would mean that participation is considered as having different degrees

yet with equal forms contributing to the same goal (Treseder, 1997). Each context should choose from whatever best suits them. There is not an overriding form of participation that should be enforced. Participation should change with time and context.

## **2.6 Factors Motivating Participation**

Community participation is facilitated by community organisations and by non-governmental organisations (NGOs) as they become an institutional bridge. Participation in the context of a developing country like South Africa, focuses on the primary stakeholders responsible for decision making at local level. Greater community participation leads to reduced poverty within a community (Thakur, 2009). The capacity of a community to participate in any initiative is depended on many factors. These are discussed in the following section

- *Economic resources and community poverty* - This refers to financial resources as well as the human and public facilities available to the participants. Based on the availability of these the participants may consider it (Thakur, 2009).
- *Cultural factors* - Deciding on who would be involved in what process and what kind of interaction are allowed and with who. The perception towards the project sponsor and potential partner groups and any other important stakeholder within the community. The attitude towards the use of technology is also an important consideration (Mutenda et al., 2011).
- *Community organisation* - The capacity of the community to mobilise others based on interest. The level of cohesion within the community may become tested. In this instance, their ability to manage arising conflicts. Managing the relationships among stakeholders in the community becomes important (Chigona, et. al., 2010).

## **2.7 Challenges in Realising Community Participation**

There are several problems in that influence the wish to participate in ICT4D initiatives. The interaction between primary and secondary stakeholders, sponsors as well as the ICT artefact may be the reason for these problems (Mutenda et al.,2011). These

problems include Human agency, lack of relevance, organisational complexities and power relations.

### **2.7.1 Human agency**

Human agency is ability of human beings to make a difference in an attempt to resolve one's problem. In participatory initiative the powerful stakeholders have a duty to assist the less powerful stakeholders to participate meaningfully in the planning and implementation of an initiative (Mutenda et al., 2011). This is not always the case as the powerful stakeholders do not necessarily act fairly or in the best interest of the less powerful stakeholders. It then becomes "an act of faith in development discourse" (Cleaver, 2001 p. 36).

### **2.7.2 Difficulty in Seeing Relevance of ICT4D Projects**

Members of the community participate in ICT4D initiatives that they see as valuable to them. They look for pragmatic solutions to their short term problems and if the initiative addressed them, they most likely participate. At times they may not perceive the relevance of the ICT project. This may be due to various reasons, lack of ICT knowledge, marketing, or incompatibility given the environment (Mutenda et al., 2011).

### **2.7.3 Organisational Difficulties of Developing Communities**

Managing of ICT4D initiative is dependent on relationships that have been created voluntarily. This would be among different stakeholders and beneficiaries (Chigona, et. al., 2010). Among these voluntary relationships some stakeholders may have different interests and agenda that is not aligned with those of the initiative.

#### **2.7.4 Power Relationship Challenges**

The reason community stakeholder should be involved in the planning of the ICT4D initiatives because the intended beneficiaries should be empowered (Chambers, 1992). Power struggles among these stakeholders may arise in negotiating their vested interests (Cecez-Kecmanovic, 2005). In this power struggle meaningful participation may become a challenge and therefore the powerful stakeholder may be required to give up some of their power to the weaker stakeholders. (Mutenda et al., 2011).

#### **2.8 Summary of the chapter**

The literature review has demonstrated how ICTs have been utilised as an enabler for development in South Africa and other developing countries. The South African governments and other organisations invests substantial amount of money in ICT projects. However, the failure rate of ICT4D projects remains high, sustainability of these projects remains a pressing issue.

Ideally all stakeholders in the development of ICT4D projects however, community participation is still largely not properly understood and in most cases wrongly applied in the ICT4D domain (Chigona et al.,2010). Participation defined as ‘behaviours and activities performed by the target users or their representatives during information systems development process’ (Barki & Hartwick, 1989, p. 59). Some may confuse participation with ‘user involvement’. These concepts are different, in that one may be involved but does not mean they have participated. On the other hand, participation involves collaboration with the decision making a team with regards to project initiation, implementation and follow up.

The concept of sustainability has been discussed. Heeks et al (1999) described four main different types of ICT project failures. Different factors that affect sustainability have also been discussed.

## Chapter 3: Theoretical framework

### 3.1 Introduction

This chapter discusses the theoretical foundations for this study and provides the justification for selection. The importance of theory is best summarised by the following quote

*“Theories are formulated to explain, predict, and understand phenomena and, in many cases, to challenge and extend existing knowledge within the limits of critical bounding assumptions. The theoretical framework is the structure that can hold or support a theory of a research study. The theoretical framework introduces and describes the theory that explains why the research problem under study exists”* (Swanson, 2013, P.1).

The purpose of this chapter is to explain the gestalt (worldview) that shaped the enquiry. This chapter begins by briefly discussing community participation as well a project sustainability and then outlining the theoretical frameworks considered for this study. The last section discusses the chosen lens for the study, the stakeholder theory.

### 3.2 Theories considered for the study [Meta- theoretical view]

The search for the theoretical framework appropriate for this thesis began within the community participation and project sustainability field of study in the context of ICT4D. There are two main theories that were evaluated as potential frameworks for the study Actor Network Theory (Collon, 1991; Latour, 1992) and sustainable livelihood framework (Chambers & Conway, 1991).

ANT was initiated by Michel Callon, Bruno Latour and John Law in the 1980s (Stanforth, 2006). Although it was initially developed for research fields such as anthropology, sociology, and science and technology studies it has been gradually adopted by other researchers in different fields, including information systems. ANT attempts to understand technological innovation and scientific knowledge creation. It

attempts to understand the impact of technology on a social setting and the manner in which technology is influenced over time within the very social setting and how this theory pays little attention to broader social structures that influence locality. Winner (1993) says there is an almost total disregard for the social consequences of technical choice. Too much attention is paid on details of choice made for development of certain technology but no moral or political consequence of this choice (Walsham, 2016). ANT does not explain the actor's behaviours and reasons, but only to find the procedures which render actors able to negotiate their ways through one another's world-building activity" (Latour, 1999, p. 20).

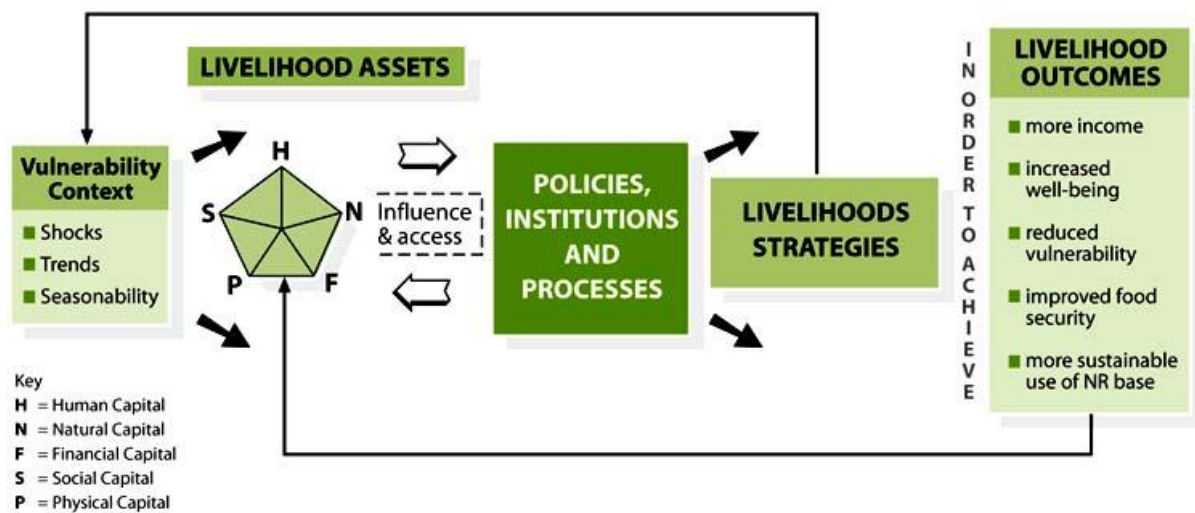
Based on the conclusions above, this encouraged an alternative theory that does not disregard the broader social structures and clearly considers the aspect of development.

Sustainable livelihoods framework has been used by development practitioners for some time since the 1980s. The theory is mainly used for analysing policy, evaluations and monitoring initiatives that affect low income households. Chambers and Conway (1991) defined a livelihood as follows:

*'A livelihood comprises the capabilities, assets ... and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term'* (Chambers & Conway, 1991, P.7).

This approach has been put to use by using a framework that includes the following elements; vulnerability context, assets and capabilities, transforming structures and processes and livelihood outcomes. The role of ICTs was an added contribution by Duncombe (2006) to the sustainable livelihood framework. He highlighted two roles distinguishing the use of information and ICTs. The first role is an analytical role, where

one uses information to conduct research and assess vulnerabilities, identify and measure assets, and investigate structures and processes. The second role is a functional one, looking at how information and ICTs can be used within a livelihood strategy to create a favourable outcome. The interactions between the different elements is demonstrated by Figure 3.1.



**Figure 3.1:** Sustainable Livelihoods Analytical Framework (DFID, 2003)

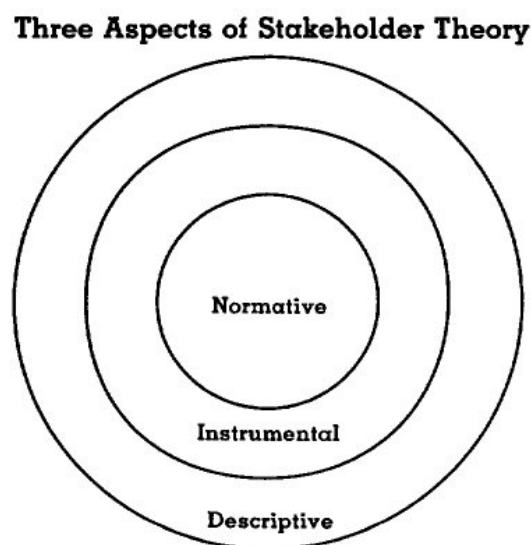
The SL framework allows one to assess the whole poverty/vulnerability context of a community to be taken into account, as well as the interaction between the livelihood factors and ICT needs to be understood. The downside is that it is a costly and time consuming. For the purpose of this thesis, the available time is limited and therefore this theory is inappropriate for this study.

### 3.3 A theoretical lens based on Stakeholder Theory

Freeman (1984, p.46) defined stakeholders as “a stakeholder in an ICT4D project is any group or individual who can affect or is affected by the achievement of the project’s objectives” when adapted to an ICT4D context (Renken, 2013).

Stakeholder theory has a history in business ethics and organisation management. Stakeholder theory addresses, managerial mind set, capitalism, value creation and

trade (Parmar et al., 2010, P.405). There are three different perspectives to look at the stakeholder theory: instrumental, descriptive and normative. Stakeholder approaches (Donaldson & Preston, 1995; Jones & Wick, 1999). Some researchers argue that the normative aspect is the core of the stakeholder theory and therefore favour pursuing this approaching in their research. They suggest that it should be viewed via three nested circles demonstrated in Figure 3.2 (Donaldson & Preston, 1995).

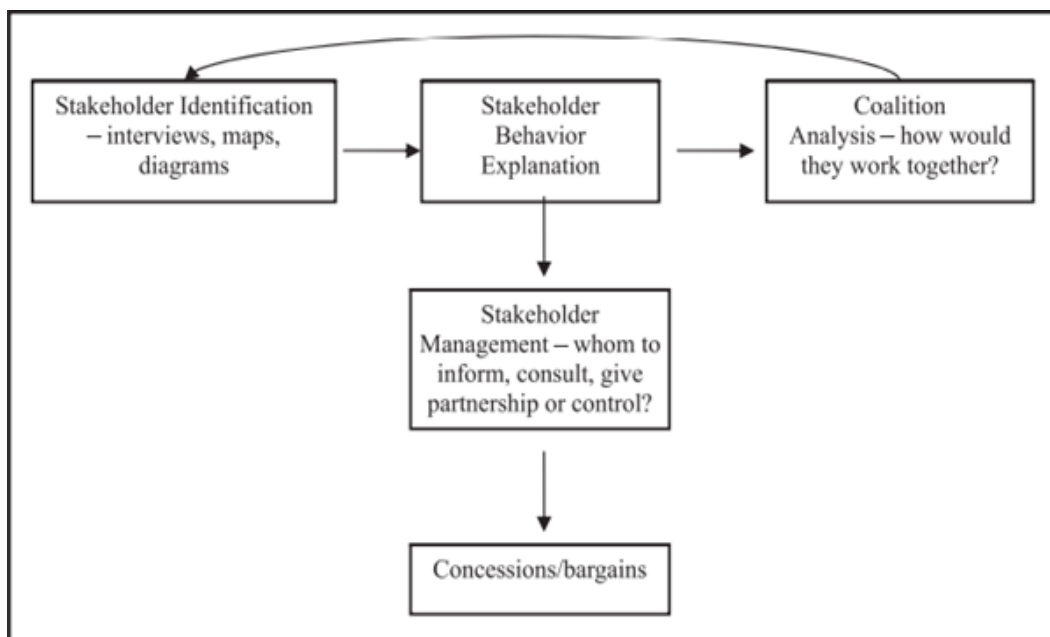


**Figure 3.2:** Aspects of stakeholder theory (Donaldson & Preston, 1995).

In the instrumental perspective, the organisation in question needs to consider the primary stakeholders as this gives them competitive advantage. On the other hand, the normative perspective considers the ethical responsibility of the organisation towards stakeholders (Chigona et al., 2010). The descriptive stakeholder theory perspective focuses on the relationship between an organization and its stakeholders (Bailur, 2006). There are critics to this aspect who say that this aspect is simply descriptive and lacks objective (Treviño & Weaver, 1999).

In applying stakeholder theory, researchers typically use Freeman (1984) suggestions. The first stage on the any stakeholder analysis is to determine who the project affects,

what their interests are, how they behave and the reason thereof as well as what their history is and to proceed with coalition analysis. This is to understand to what level engagement is taking place with other groups. Different stakeholders may exert influence be it technological, political, social or managerial to varying levels. The second stage of stakeholder analysis seeks to understand the required organisational strategy to manage the stakeholders identified in stage one, see Figure 3.3. The last stage seeks to understand the required actions should conflict arise among stakeholders (Freeman, 1984).



**Figure 3.3:** Stakeholder-related steps adapted from (Bailur, 2006)

Figure 3.3 Bailur, (2006) summarizes all of the stakeholder-related steps just described:

- Stakeholder identification, understand how they behave and anticipate how they will work together and see what conflicts may arise. This step should be repeated many times.
- Plan ways to manage the identified stakeholders. Who holds what responsibility, who should be informed, consulted, involved or given control.

- See whether concessions are need and if previous management strategies don't work.

An illustrative example is a study of telecentres by Bailur (2007). The Gyandoot project in India began in 2000. The aim was to install telecentres. It was also referred to as village information kiosks. The kiosks were equipped with modems, printers, furniture and uninterrupted power supply.

Stakeholder theory was chosen as the framework of analysis for the study as it allowed the researchers to identify the stakeholders, manage them in a way that would help Gyandoot to be sustainable. Based on the study, both normative and instrumental approaches were taken. Looking at normative approach, the project had a social responsibility to the possible stakeholders and particularly to generate income that would allow all stakeholders especially primary stakeholders to fully benefit (Reed et al, 2009). Looking at it from instrumental perspective, it was evident that the project would be sustainable if all stake stakeholders are identified and managed in a way that helps maximise the number of users of the telecentre.

Other studies have used stakeholder theory as a theoretical framework. Kroczek and van Stam (2013) discusses LinkNet Project, an ICT initiative in Zambia aimed at connecting communities using the internet networks and sensitizing locals on the benefits of ICT. The project offers hardware, software, and infrastructure at low cost. The project also helps the locals acquire certificate in computer literacy and ICT engineering. The paper uses the instrumental normative stakeholder theory to analyse the project. The researchers were able to identify the stakeholders and determined that involvement of all community members had a noticeable contribution to the success of the project. Although the study does not mention the degree of participation by the community, it is clear that they had influence over the outcome of the project. Table 3.1 summarises other studies that have used stakeholder theory as a research framework. The study by Kroczek and van Stam (2013) focuses on the four levels of stakeholder involvement by (Bailur, 2006) namely;

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1. Inform stakeholders
2. Consult with stakeholders
3. Partner with stakeholders
4. Give control to stakeholders

**Table 3.1:** Synopsis of studies that used stakeholder theory

<b>Author</b>	<b>Project</b>
Bailur (2006)	Gyandoot project, India
KroczeK and van Stam (2013)	LinkNet Project, Zambia
Chigona et al (2009)	Smart Cape Project, South Africa
Tanner and du Toit (2015)	Vrygrond Community Lab, South Africa

The paper focused on the community stakeholders in the project, a similar stance taken by this study.

However, stakeholder theory has been criticized for a few reasons. Some of these reasons include vague features and confusion of purpose. Argenti (1993) argues that any organisation that attempts to be all things to all stakeholders may end losing focus. This may also constitute competitive disadvantage. Further, argue that determining actual stakeholders is difficult as theory do not offer a normative foundation in identifying stakeholders. The next section describes the key elements that make the stakeholder theory a lens for this thesis.

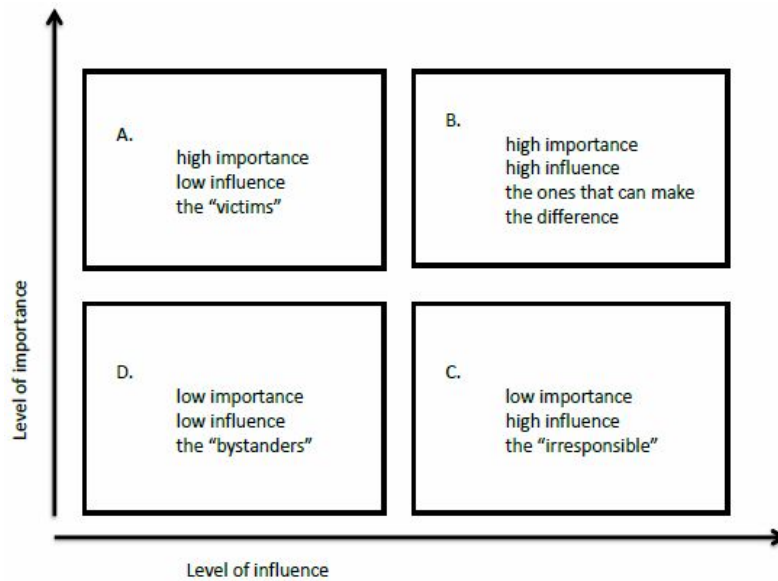
### **3.4 Key elements of the theoretical lens**

The theoretical lens used for this thesis consists of three main stages as suggested by Bailur (2006). This approach is legitimised by the fact that it has been adopted in previous stakeholder theory based ICT4D studies mentioned above.

#### **3.4.1 Stakeholder Identification**

In this phase the researcher identifies the stakeholders of a project and conducts the coalitions analysis (Freeman, 2010; Chigona et al.,2010; Bailur, 2006). Determining the community stakeholders can be done by meeting the different stakeholders and cross-checking their perceptions.

Stakeholders can be classified as either primary or secondary. Primary stakeholders refer to those “without whose continuing participation the corporation cannot survive as a going concern” (Freeman, 2010, P.106). If these primary stakeholders withdraw or become dissatisfied with the system, the corporation will be seriously damaged or unusable to continue (Clarkson, 1995). On the other hand, secondary stakeholders are those with “capacity to mobilize public opinion in favour of or in opposition to a corporation's performance” (Clarkson, 1995, P.107). Stakeholders may also be classified as either internal or external and in accordance to their category of interest and power (Freeman, 2010), or importance vs influence as demonstrated in Figure 3.4.



**Figure 3.4.** Example of stakeholder importance-influence map.

On the other hand, Gavin and Pinder (1998) categorize stakeholders based on their influence and importance. Stakeholders can be managed by using some of the principles suggested by Bailur (2006, P.67)

*“perhaps the most common method used (particularly in development literature) to distinguish between stakeholders is that of importance versus influence, whereby importance illustrates a stakeholder whose problems, needs, and interests are the priority of the intervention, and influence is how powerful the stakeholder is”.*

### 3.4.2 Stakeholder Management

Stakeholder management refers to the effort made in understating ways required to manage the deferent stakeholders (Bailur, 2006). Based on sliding scale developed by Gavin and Pinder (1998) as well as Gosling and Edwards (2003) the stakeholders involved in accordance to their importance to the project. The scale allows one to decide whether to inform, consult, offer partnership or give control to a stakeholder group. This scale can be determined during different stages of the initiative.

### **3.4.3 Concessions/Bargains**

The last part of stakeholder analysis looks at the possible conflict that may arise (Freeman, 2010). When this happens, one should look at the bargains made or that should be made in order to resolve the challenges and the concessions made. When previous management strategies do not work, determine if concessions are needed.

Determine whether concessions are needed if the previous management strategies do not work.

### **3.5 Conclusion**

This study uses stakeholder theory to understand how community stakeholders influence sustainability of ICT4D initiative in a developing country. Stakeholder theory was chosen as the framework of analysis for the study as it allowed the researcher to identify the stakeholders, manage them in a way that would help VCL to be sustainable. On top of that, the stakeholder theory was chosen for a number of reasons. The first reason was ability to comprehensively assist in identifying all stakeholders involved in the project and the contributions to the initiative. The second reason is the fact that the stakeholder goes hand in hand with social responsibility that means at the core of the initiative is to focus on promoting the development of the participants. This is to say the initiative should run to benefit all stakeholders. The third reason is that stakeholder theory allows the research to see exactly how appropriately managing all stakeholders and the conflict that may arise would be beneficial in sustainability of the initiative.

## **Chapter 4: Research methodology**

### **4.1 Introduction**

The research approach for this study is qualitative. I utilised both exploratory and descriptive research. The study adopts an interpretivist philosophical approach. The researcher is presumed to enact the social reality he/she is studying (Orlikowski et al, 1991). The social process encompasses being part of the world of those generating it. The principal attempt is to define, deduce, evaluate, and comprehend the societal world from the participant's viewpoint (Orlikowski et al, 1991).

Data is presented directly from field notes hence allowing the readers to interpret the data and determine for themselves the capability of the interpretation. Above mentioned is dependent on interpretations and experience of participants therefore is heavily dependent on these understandings. The study draws heavily on participants' experiences and interpretations, and hence is very dependent on these interpretations. The fieldwork for the study was conducted between June and July 2017, using inductive exploratory approach.

### **4.2 Qualitative research**

A qualitative approach adopted for this study helped me to widely understand the impact of community participation on sustainability of the VCL Initiative. Data in qualitative research is collected using interviews, documents and observations (Myers, 2013). An important element of using qualitative research questions is that one is able to go above the evidence of causal relationships, to seeing the 'how and why' in the relationship. This is unlike quantitative research where phenomena are observed and measured using numerical methods and hypothesis. Qualitative approach was appropriate for this study because it suited the aims and objectives of the study in examining qualitative data from previous studies of the VCL and the stakeholders of the Lab. I am the primary agent for the gathering and analysing the data collected. The general characteristics of qualitative research is summarised in the Table 4.1.

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The effects of community participation on sustainability in an ICT4D project: A Case of Vrygrond Community Lab in South Africa

**Table 4.1:** General characteristics of qualitative research Adapted from (Van Niekerk, 2009)

<b>Characteristics</b>	<b>Description</b>
<b>Concern for content</b>	➤ Reality is socially constructed and constantly evolving
<b>Purpose</b>	➤ To understand social phenomena of multiple realities from participants' perspectives
<b>Rich narrative description</b>	<ul style="list-style-type: none"> <li>➤ Data are in the form of words</li> <li>➤ Subjects' experiences and perspectives</li> <li>➤ Rich in depth information</li> </ul>
<b>Sample</b>	➤ Small, non-random and purposeful
<b>Method</b>	➤ Interviews
<b>Natural setting</b>	<ul style="list-style-type: none"> <li>➤ Takes place in natural setting</li> <li>➤ No attempt to manipulate behaviour</li> <li>➤ No artificial constraints or controls</li> </ul>
<b>Human instrument</b>	<ul style="list-style-type: none"> <li>➤ Researcher collects and analyses the data</li> <li>➤ Becomes involved in social setting</li> <li>➤ Data is collected from fieldwork</li> </ul>
<b>Emergent design</b>	<ul style="list-style-type: none"> <li>➤ Design emerges as the study proceeds</li> <li>➤ Flexible and evolving</li> <li>➤ Interaction and developmental</li> </ul>
<b>Inductive analysis</b>	<ul style="list-style-type: none"> <li>➤ Data collection and data analysis take place simultaneously</li> <li>➤ Holistic form of analysis</li> <li>➤ Identification of recurring patterns</li> </ul>

There is criticism on either qualitative or quantitative methods. The goal of case studies is to “*overcome dichotomies between generalizing and particularizing, quantitative and qualitative, deductive and inductive techniques*” (May, 2011, P.226). Both approaches have limitations, however any weakness of qualitative approach can be reduced and continues to offer great deal in the contribution to theory and research in general.

### **4.3 Research strategy**

This part deals with the selected strategy for this thesis and gives reasons for selecting a case study approach. This part also touches on the unit of analysis and a discussion on the sample of participants.

#### **4.3.1 Research strategy options**

Although case study research has been selected, there are other various interpretive methodologies that can be used for a similar study. These are summarised briefly;

- Ethnography - “Ethnographers immerse themselves in the lives of the people they study and seek to place the phenomena studied in their social and cultural context” (Meyers, 1997, P.12). Ethnography comes from the Greek root “ethnos” which means “ethnic group”, while “graphy” denotes “a form of writing, drawing or representation.”
- Action Research - “Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework” (Meyers, 1997).
- Grounded Theory - “Grounded theory is a research method that seeks to develop theory that is grounded in data systematically gathered and analysed” (Meyers, 1997).

Utilizing interpretive paradigm require the researcher to assume the reality experienced by people is different. Reality is constructed by the participants involved in the research phenomena. I took an interpretive stance in order to gain in-depth understanding of effects of community participation on sustainability in an ICT4D

project. The understanding can be expressed through social constructions such as language and shared meaning ((Creswell, 1994; Myers, 2009).

Importantly, this study was conducted considering the principles of interpretive research suggested by Klein and Myers (1999). A summary of the mentioned principles are included in **Appendix B**.

Case study research approach was selected for this study. Case studies are utilised when studying groups, events and individuals (Gig, 2009). Case studies show real life events that involve decision making by the participants by using open ended discussion, or set of questions. Advantages of using case studies include;

- (i) Case studies simplify complex situations
- (ii) Allow for multiple solutions to be generated
- (iii) Case studies support current theories and can assist to generate new theory

There are three main different type of cases studies (Yin, 1994; Creswell, 2007).

Exploratory – Investigate circumstances where there could be a number of outcomes.

Descriptive – Describes the theory, the case study carried out to generate theory or validate the existing theory

Explanatory - Explains causal relationships.

The research uses exploratory case study to understand the relationship and the outcomes may be different from what is expected.

#### **4.3.2 Single-case or multiple-case study**

A case study can either be single case or multi case. In multi case studies, the researcher studies multiple cases to understand similarities and differences (Baxter & Jack, 2008). Secondly the researcher is able to analyse data within a situation and across situations (Yin, 2003). Multiple case studies also produce convincing theory as they base their suggestions on several empirical evidence (Gustafsson, 2017). On the

other hand, multiple case studies are expensive and difficult to implement (Baxter & Jack, 2008).

Single case studies focus on context and holistically allow the researcher to gather insights about the phenomena (Walsham, 2006). When the researcher intends to study a single group, single case study is appropriate in this instance (Yin, 2003).

Single case studies are not without limitations. Critics often criticized on inter-related issues of research subjectivity, methodological rigour and external validity. Suggesting that *“the use of the case study absolves the author from any kind of methodological considerations. Case studies have become in many cases a synonym for freeform research where anything goes”* (Maoz, 2002, P.164-165). The second criticism of single case studies refers to issues of construct validity. The explicit knowledge on ways data is interpreted, the reasoning and understanding. However, on the defense it is argued that *“quantitative measures appear objective, but only so long as we don’t ask questions about where and how the data were produced... pure objectivity is not a meaningful concept if the goal is to measure intangibles [as] these concepts only exist because we can interpret them”* (Berg & Lune, 2010, P.340).

#### **4.3.3 Unit of analysis**

It is important to understand the ‘what’ and the ‘who’ that the study is dealing with. This calls for the establishing of the unit of analysis that allows for clarification for the phenomena under investigation. The term ‘unity of analysis refers to the sample. In this case the researcher determines whether the data is used in its entirety or divided into smaller units (Bengtsson, 2016). In deciding the unit of analysis, the researcher is guided by what exactly the study seeks to elucidate (Patton, 2002). This study seeks to understand the effects of community participation on sustainability of the VCL project. The unit of analysis is the community’s perception on participation with regards to how it affects sustainability of the initiative. This will capture the perception of the community and understand their views.

#### **4.4 Sampling of participants**

The sampling methods could either be non-probability or probability. The process of selecting reasonable number of participants for a study that are representative of a group is referred to as probability sampling (Gray, 2009). Purposeful sampling technique is used by several qualitative researchers to identify and select information rich cases in situations where resources are limited (Patton, 2002). This process typically involves firstly identifying and selecting a group or individuals that are knowledgeable about the phenomena of interest to the researcher (Creswell & Clark, 2011). Purposive sampling was utilised for this research to ensure none of the important stakeholders are not left out. Bailur (2006) suggests that the stakeholder identification process should be repeated to bring out previously unnoticed stakeholders. The reasoning and strength of purposive sampling is that it allows for the selection of rich information cases to do an in-depth study on. I chose specific participants for a particular reason (McBurney, 1994), to get rich information from all primary stakeholders of VCL to assist me in addressing the research questions and to be able to form sufficient arguments to support the findings (Mason, 2002). Interviewees were chosen based on their knowledge of the Vrygrond Community Lab, its surroundings and Vrygrond as a community.

#### **4.5 Data collection techniques**

The data collection technique is largely influenced by the data collection strategy, the level of accuracy required and the variables involved. This section discusses the techniques that were used for this research.

##### **4.5.1 Semi-structured Interviews**

Interviews are essential tools that are used to explore views, beliefs, experiences, and motives of individuals or groups (Gill et al., 2008). Interviews are a qualitative method used to gain 'deeper' understanding of phenomena that would be impossible to gain using alternative methods like observations or questionnaires. Interviews are appropriate where little is known about a certain subject, or where detailed information

is required from the participant. Interviews may be structured, semi-structured or unstructured (Meyers, 2009). Structured interviews are when data is collected in a strict manner, prepared questions must be answered and the participant may be regulated. In semi structured interviews, questions that may be used as leading questions are drafted and these may change depending on the responses received. Unstructured interviews may use prepared questions. However, questions emerge as the interview progresses (Gray, 2009).

This study used semi structured interview to provide instant feedback and be able to ask follow-up questions. The responses were recorded using a voice recorder that I was trained to use. The questions were developed in line with the theoretical framework for this study. The questions address all the elements of the stakeholder theory and an addition of participation perspective. Twenty interviews were conducted in total. I conducted the interviews on different days and compared what had been shared with me in order to document the results. I also joined WhatsApp groups that includes German volunteers, UCT IS Honours students and the VCL Manager. This platform was of immense help as I was able to post related questions when I needed clarification.

#### **4.5.2 Document analysis**

Documentary review refers to the use of written materials, photographs, photos, videos, websites and software to analyse and interpret phenomena. Utilization of different documents as reliable sources of evidence in research is critically important (Scott, 2006). There may be an instance where a document needs to be thoroughly scrutinised (Platt ,1981). These include;

- The document contains errors or do not make sense
- The document exhibits inconsistencies in content and style
- Different versions of the same document exist
- When the source of the document cannot be trusted

The purpose of documentary review is to corroborate interview evidence and to establish the background of the initiative in question.

#### 4.6 Questionnaire design

The questionnaire was the main research instrument. The following process was used to design the research instrument:

1. Developed the question type and linking questions
2. Developed the question layout for different stakeholders

The questionnaire was divided into five sections as follows (Table 4.2).

The research instrument is in **Appendix E**.

**Table 4.2:** Structure of the questionnaire

<b>Section A-: Demographic Information</b>		
<b>Information required</b>	<b>Section</b>	<b>Question Number</b>
Age group, gender, qualification, employment status, Place of residence	<b>A</b>	1 - 5
VCL stakeholders (determined by using interviews)	<b>B</b>	6 - 9
Different types and degrees of participation. How the community participated during the different phases of planning	<b>C</b>	10 - 12
Information on conflict among stakeholders, and required actions in resolving these.	<b>D</b>	13 - 17
Information on enablers and barriers to the sustainability of VCL. How the Lab is operational and those responsible	<b>E</b>	18 - 24

Section A contains demographic information. This information was deemed important as it would help me to understand the different type of people being dealt with. When needed, this information can be used for further insights and analysis.

Section B deals with the stakeholder identification. This is aligned with the stakeholder theory first stage. This will help determine who the project affects, what their interests are, how they behave and the reason thereof as well as what their history is and to proceed with coalition analysis.

Section C dealt with the different types and degrees of participation. Each type of participation allows a form of influence in the decision making of the process (Luyet, et., 2012).

Section D dealt with understanding the conflict arising between the different stakeholders and what is done to resolve them.

Section E, dealt with understanding sustainability of VCL, as well as determining the different sustainable aspects.

#### **4.7 Pretest the research instrument**

A pilot study refers to the use of the research instruments that were used in the actual study but on a small scale. Pilot testing also referred to as pre-testing literally means small scale trial run of the research instrument, in this case, the research questionnaire. Pilot testing is not only useful to check for errors but for training purposes of the researcher. The questionnaire may be revised several times before the final version is selected.

The study may be conducted among friends or any other sample that may have similar characteristics as the actual sample. This allows the researcher to identify the problems early and set the data collection strategy (Yin, 2009). Once the pilot study has been concluded the necessary changes should be made prior to embarking on the actual research. Pilot testing also allowed the researcher to evaluate the following;

- Availability of study population timing.
- Acceptability of the questions asked.
- Willingness of the participants to co-operate.

In view of the above, for the purpose of pre-test the interview questions were sent to the VCL manager and University of Cape Town representative for comment, and to verify the length of the questions if they are appropriate. Discussions were also held with Prof Wallace Chigona who has conducted several similar interviews for expert guidance. After the discussions with the VCL manager and Prof Wallace Chigona, the interview questions were changed to align properly with the stakeholder theory.

#### **4.8 Validity test**

Any qualitative researcher should be concerned with validity and reliability while designing a study, analysing results and judging the quality of the study (Patton, 2001). Qualitative research equates “contextual validity” to “credibility” referring to how credible the conclusions drawn from the study are presented (Ryan et al., 2002). The main aim of the research is to grasp the “authentically” lived experience of the participants in a convincing manner. This should clearly demonstrated to the reader that the researcher has understood the case. Furthermore, Patton (2002) says in the context of qualitative studies, validity is described in terms of the degree to which the collected data is both credible and accurate. There are generally two perspectives that must be considered in the context of qualitative studies, namely internal and external validity. To maintain internal validity, accuracy of the data must be checked, and should be free from bias. This can be done through triangulation. I took all necessary precautions to ensure that the data collected is reliable. I made sure the data collected is handled with attention and analysed with great rigour. The original ideas from the participants were captured accurately to ensure traceability.

#### **4.9 Reliability test**

The term reliability is primarily used to evaluate or test quantitative research; however, the principles may be applied to qualitative research (Golafshani, 2003). “Reliability considers the method of gathering data for example collecting data from multiple sources or using multiple research instruments called triangulation” (Golafshani, 2003, p.247). Triangulation is the use of more than one approach to investigate a research

question in order to enhance confidence in the ensuing findings (Bryman, 2004). Qualitative research applies four types of triangulation. These were first identified by Denzin (1989) namely;

- I. Data triangulation: This entails utilisation of multiple sample strategies
- II. Investigator triangulation: This entails using multiple researchers to gather and interpret data.
- III. Theoretical triangulation: This entails utilisation of multiple theoretical positions to interpret the data
- IV. Methodological triangulation: This entails the utilisation of multiple methods to gather data.

In qualitative studies, reliability is determined by the consistency between the results and the data collected. In order for this study to be reliable, I used the following strategy:

- **Replication logic:** I conducted the interviews with sufficient participants.
- **Code-recode strategy:** I coded the data multiple times in order to have consistency
- **Observation by multiple observers:** I consulted a PhD student that has gone through the process previously to check on my consistency.
- **Triangulation:** I used different data collection methods, and continually made sure data collected is understood.
- **Audit trail:** The data collection strategy has been clearly explained, and the data collected is safely secured.

#### **4.10 Ethical consideration**

Ethics are more than the mere recognition of right and wrong. It is the application of moral principles in planning, researching and reporting of a study (Myers, 2009). This study respected participants of the study, and did not disclose any information that may be harmful to their reputation in any way. This study applied the following principles during the course of the research

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- Honesty
- Objectivity
- Integrity
- Carefulness
- Confidentiality
- Competence

The study conformed to the code of conduct as prescribed by the University of Cape Town's Ethics committee and ensured that the participation in the study is voluntary and confidentiality is enforced. The ethics approval letter is attached as **Appendix F**

#### **4.11 Approach to Data Analysis**

The data analysis section in qualitative studies involves a logical process to derive meaning from the data collected. The purpose of the data analysis is to answer the research question and objectives of the research (Gray, 2009). Although different approaches may be applied to qualitative research, this study applies thematic analysis. This approach allows the researcher to break down the data into small units to establish structure and characteristics. Thematic analysis moves beyond merely counting phrases or words. It focuses on identifying implicit and explicit ideas generated from the research data (Guest et al., 2011).

When applying thematic analysis Braun and Clark (2006) suggest following six steps.

- Familiarisation with data
- Generating codes
- Searching for themes
- Reviewing themes
- Defining and naming themes
- Producing a report

#### **4.11.1 Data Analysis Stage One**

The process began with an analysis of data collected in order to make sense of it.

#### **4.11.2 Data Analysis Stage two**

The second step was to prepare the primary data. This includes all the semi-structured interviews. I went through all the interviews then jotted down all the relevant opinions, phrases and some interesting quotes that relate to the stakeholder theory (Chigona et al., 2010). The data on its own did not make sense at first, however after going through the data several times and considering possible meaning and how these would help address my study's objectives, it started to make sense. I then used the stakeholder analysis tool to develop a comprehensive analysis of the whole study.

#### **4.12 Challenges and limitations of the study**

A study of this nature is bound to have a few challenges and limitations. However, I budgeted for these eventualities. Furthermore, one of the key participants went away for three weeks and was therefore forced to wait for them. This caused a delay in my initial schedule. The study also lends itself to a number of limitations that may have been addressed in a longitudinal study. However, due to the fact that this is a Masters study, this would have been impractical.

#### **4.13 Conclusion**

Qualitative research methods are appropriate to gain a deeper understanding of the relationship between community participation and sustainability. An interpretivist epistemological stance was taken by this thesis as it meets the study requirements. Interpretivist research methods strongly favour qualitative data that has been used in this study. Similar methods have been used by other researchers in the IS field to answer research questions of similar nature. The data collection methods used were semi-structured interviews and documentary analysis. Studies dealing with participation and sustainability have used semi-structured interviews as a means to explore and gain deeper understanding of contextualised research. Document analysis allowed the researcher to establish project background and to apply to the current thesis. I

conducted the data analysis using an interpretivist and inductive exploratory approach. This was done in two stages, attempting to thoroughly understand community participation and how this affects sustainability of ICT4D initiatives. In order to find repeated meaning of the interviews, focus groups, and range of texts thematic analysis was utilised. The credibility and dependability of the research conducted was ensured by a number of strategies that include adequate data collection and triangulation.

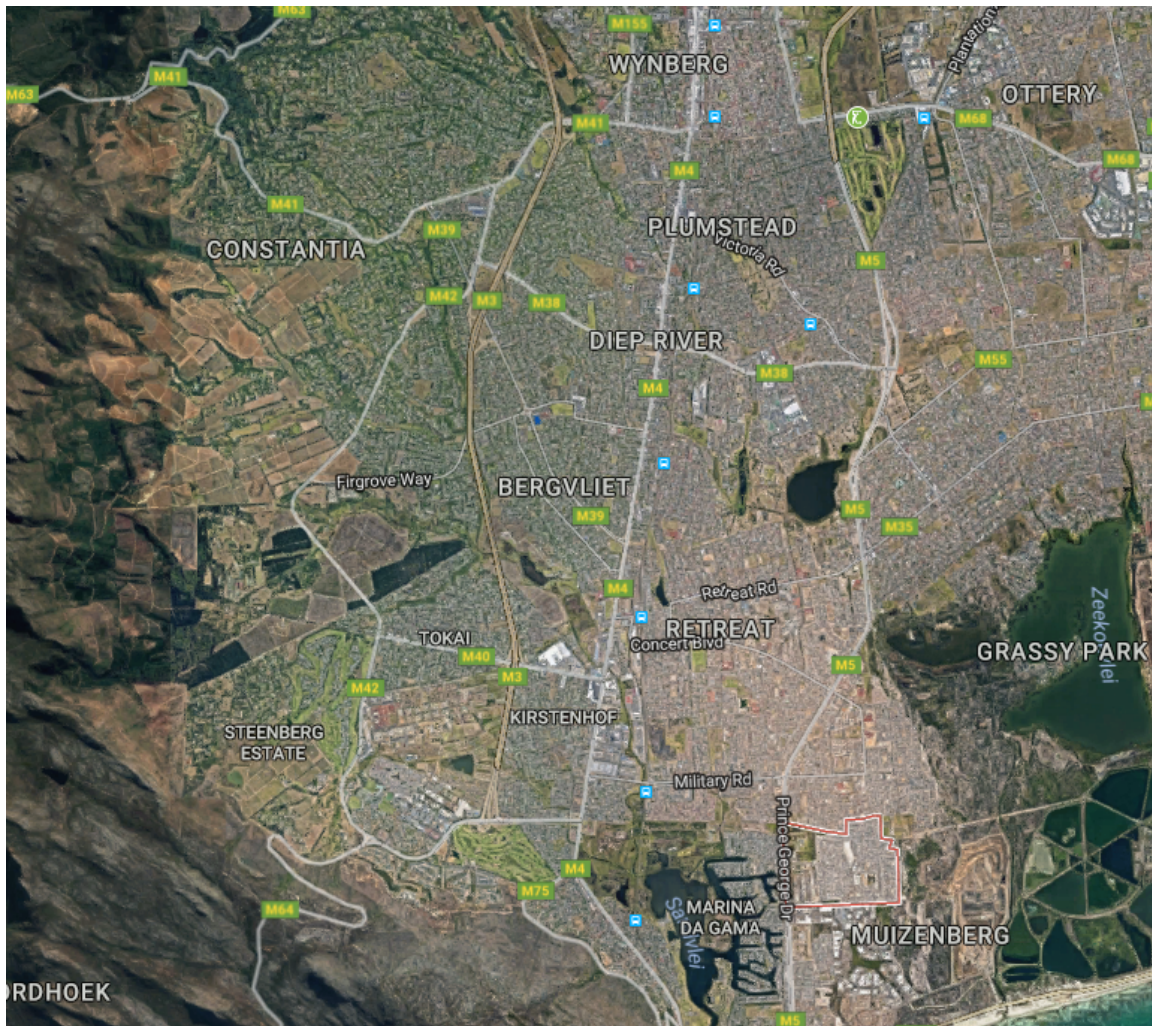
## Chapter 5: The Vrygrond Community Lab project

### 5.1 Introduction

This chapter presents the context of this study, the Vrygrond Community Lab (VCL) project. The chapter starts by discussing the community of Vrygrond then it goes on to give an overview of the project. It further moves on to discuss VCL as a whole, its vision, mission and the daily operations.

### 5.2 History of Vrygrond

Vrygrond, also known as Capricorn, is located near False Bay, Western Cape South Africa. Figure 5.1 indicates where Vrygrond is found. Vrygrond is approximately 26.7 kilometers from the Cape Town CBD.



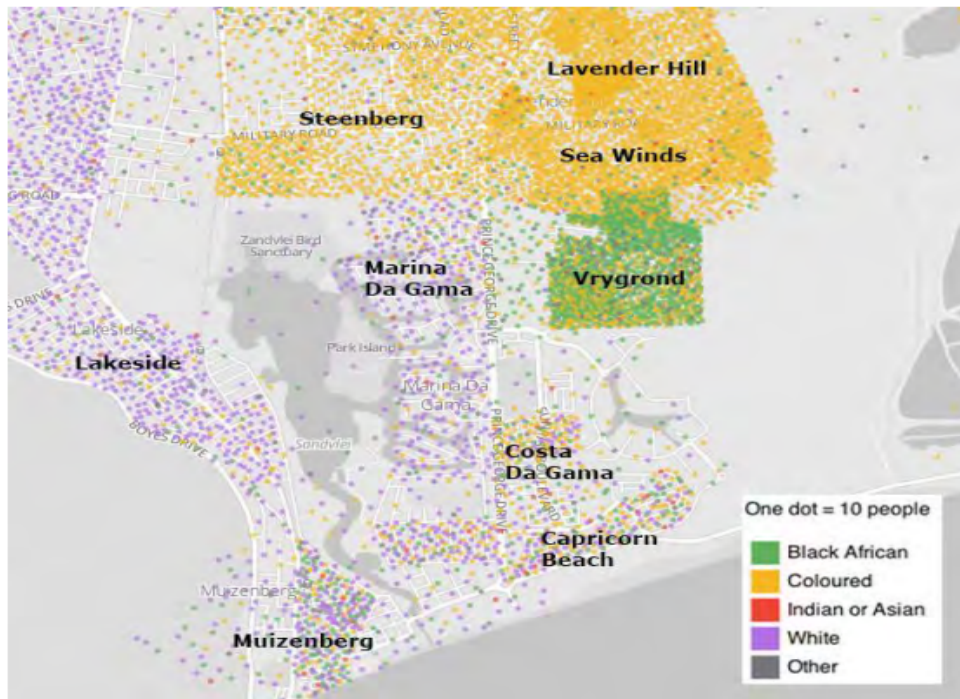
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**Figure 5.1:** A map displaying the location of Vrygrond (Google Maps, 2017)

The community is home to about 40 000 people (University of Cape Town, 2014). Vrygrond was established in 1942, it was home to migrants, initially from impoverished neighbourhoods of Cape Town. Later the inhabitants came from apartheid homelands, Transkei and Ciskei in the Eastern Cape. Migrants fleeing war from other African countries have also found refuge in Vrygrond (Jensen et al., 2009). It is also known as Capricorn, it is the oldest informal settlement in the Western Cape. The word Vrygrond means 'Free Ground'. The area was first inhabited by fishermen who worked along the Muizenberg coast, they set up informal houses. The City of Cape Town owned the land in Vrygrond until 1997. The Vrygrond Community Development Trust was formed to obtain their land formally from the City of Cape Town. It all began with the African National Congress (ANC) agreeing to provide free housing subsidies for qualifying South Africans through the Reconstruction and Development Programme (RDP) (Davies, 2014). In order to facilitate the delivery of houses the ANC required that a community body be established that would also assist with engaging the community.

The population of Vrygrond currently consists of coloured people who speak English and Afrikaans as well as Black isiXhosa speaking people and a number of immigrants. The current demographics were as a result of Group Areas Act passed by the South African apartheid (an Afrikaans word meaning separation) government in 1950 (consolidated 1957; and again in 1966) (Peters, 2016). The act allowed the apartheid government to declare any 'defined area' for living as well as owning property to one race.



**Figure 5.2:** Racial dot map of Vrygrond and the surrounding area (Frith, 2013)

### 5.3 Vrygrond Community

The community of Vrygrond lives in dire poverty. A number of families live in shacks that are usually built using tin and wooden boards. These materials offer little protection from the cold winters and hot summers. The Trust also facilitates a number of development projects. Based on the 2011 Census, the following are key results for Vrygrond:

- The population is predominantly Black African (62%).
- 28% of those aged 20 years and older have completed Grade 12 or higher.
- 69% of the labour force (aged 15 to 64) is employed.
- 77% of households have a monthly income of R3200 or less.
- 61% of households live in formal dwellings.
- 79% of households have access to piped water in their dwelling or inside their yard.
- 74% of households have access to a flush toilet connected to the public sewer system.
- 93% of households have their refuse removed at least once a week.
- 99% of households use electricity for lighting in their dwelling

Vrygrond still lacks proper basic services such as healthcare, education and recreational facilities. The area is classified as an ‘underserved’ community and often such a community lacks access to computers and the internet. Figure 5.3 illustrates some of the residential structures found in Vrygrond. Service delivery protest occur frequently.



**Figure 5.3:** Example of residential structures of Vrygrond Community (Google Maps, 2017)

#### **5.4 Vrygrond Community Lab**

The VCL started with ideas from professors from departments of Information Systems from two universities; UCT in South Africa and Pforzheim University in Germany. The

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two universities collaborated on ways to assist the community in improving their employability. It was piloted in December 2012 and officially launched in March 2013.

The VCL is an IT competence centre with 20 computers. The computers were donated to the UCT Information Systems department by various donors. The number of computers was not enough to meet the demand of services offered by the Lab.

*“We only have 20 Computers, and they are not enough to cater for the community”* (Participant 2)

The immediate goal of the project was to equip residents with computer skills that would assist them in their daily lives, either in finding work, studying, or running businesses. The long-term goals were to use the shared structures of people and to further develop the area. This would create jobs and the project would be sustained.

The project also aimed to expose students from UCT to a life changing experience in intercultural, social and ethical dimensions. In the future, there is hope that a continued collaboration between UCT’s Information Systems Department and the Pforzheim University will support even more communities.

*“We are happy with the support we get from our partners in Germany. VCL is going well so far. We hope to extend the activities we are doing there in the future”.* (Participant 1)

There is an ongoing investigation by UCT and Pforzheim University on how development of individual people can be intertwined with development of the whole community and the model when successful would be applied in other urban underserved areas with the same context.

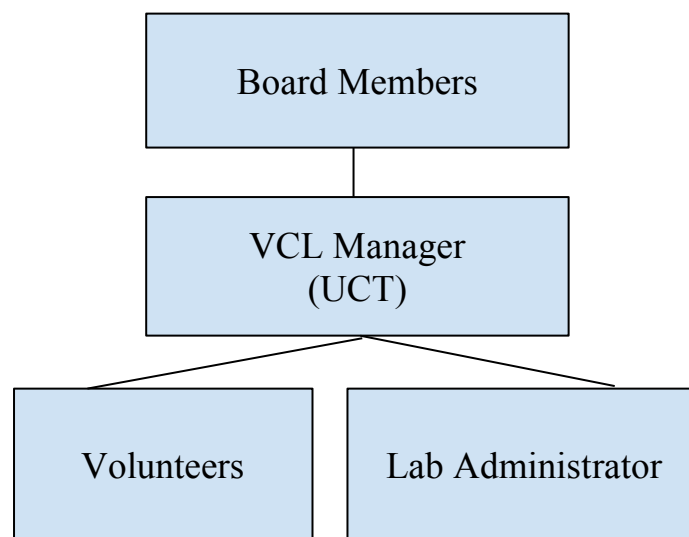
## **5.5 Execution team of VCL**

The organisational structure responsible for the VCL is illustrated in Figure 5.4. The Board members consists of 6 individuals from the UCT and Pforzheim University together with the Vrygrond Trust the board was responsible for setting up VCL. The board meets every first Sunday of every month to discuss operational matters. The

board has hired lawyers and an accountant for legal matters however they are not part of the board.

*The board members are skilled in their profession, we also have an advisory board that are non-board members that specialises in the field of IS (Participant 1)*

The VCL manager is an employee of the Information Systems department, UCT. The Lab Administrator is assisted by volunteers and they all report to the VCL Manager. The Lab Administrator is responsible for the daily operations of the Lab. The volunteers are postgraduate students from both universities that are involved in the activities of the VCL as interns and mentors. The volunteers from UCT were IS Honours students that were required to work 30 hours for a Community Outreach Programme for Information Systems students at UCT.



**Figure 5.4:** VCL Organisation Chart

The responsibilities of different members of the organizational chart are presented in Table 5.1. For VCL to run successfully, there needs to be technical support. All this requires hard work from those responsible for the project.

*“The Lab administrator notifies us of any technical support required and we ask one of our Honours student to go and fix the issue”. (Participant 1)*

**Table 5.1:** Responsibilities of selected VCL Stakeholders

<b>Individual/s</b>	<b>Responsibilities</b>
Board Members	<ul style="list-style-type: none"><li>• Oversee the whole project</li></ul>
VCL Manager	<ul style="list-style-type: none"><li>• Manages VCL Finances</li><li>• Responsible for overseeing the project</li><li>• Write reports for board members</li></ul>
Volunteers	<ul style="list-style-type: none"><li>• Assist with teaching and general support of students in the Lab</li><li>• Maintenance of the computers</li></ul>
Lab Administrator	<ul style="list-style-type: none"><li>• Responsible the petty cash (The money paid for courses)</li><li>• Teaching the courses</li><li>• Coordinating volunteers from UCT and Germany</li></ul>

## **5.6 Services offered by VCL**

The VCL offered a number of services. These are:

- Individual support and tutoring
- Internet access
- Workshop and training

Tutors who volunteered supported individuals who come to the centre for learning. The courses cost R100 and may be paid prior to commencing classes or negotiate payment terms with the Lab Administrator. There was time referred to as ‘open hours’ where members of the community irrespective of age, may come to the lab for all purposes, research, doing school projects, responding to emails or job hunting. All this was done free of charge. The Lab offers computers skills courses ranging from basic computer skills, to work- readiness workshops. There was also IT training for personal development or professional life. At the end of each training they receive certificates.

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## **5.7 Conclusion**

The VCL was initiated in the year 2013, as a partnership between the University of Cape Town and the University of Pforzheim. The lab was equipped with 20 computers. The Lab aims to be a competence centre where educational opportunities are created through IT skills training. The Lab exists in Vrygrond for several reasons, including poor education infrastructure, whereby, usually schools in urban underserved areas do not have access to computers. Secondly, there are high levels of poverty as unemployment, very few in the community have work. The thousands living in poverty don't have the mind set to break free and improve their lives. Unemployment was estimated to be as high as 80%.

## **Chapter 6: Data analysis and research findings**

### **6.1 Introduction**

This chapter discusses focuses on the analysis of the data gathered and presents the research findings. The data presented in this chapter contributes towards answering the research question and objectives. As summarized in chapter 4, the data was collected using semi-structured interviews, observations and documentary review. Twenty interviews were conducted in total. Documentary review was done after the different stakeholder interviews to verify some information and to supplement missing data.

Section 6.2 presents the demographic profile of the participants of this study. Section 6.3 presents the how aspects of thematic analysis such as searching for codes was undertaken. Section 6.4 presents the stakeholder importance map that clearly outlines their influence and importance. Section 6.5 discusses stakeholder behaviour by going into details on all the main stakeholders previously identified. Section 6.6 summarises the relationships among the main stakeholders. Section 6.7 highlights stakeholder management strategies. Section 6.8 discusses how the Vrygrond community participated in VCL either directly or indirectly. This was done by identifying what stakeholder was informed, consulted, partnered with or was in control during the different stages of setting up VCL. Section 6.9 re-visits the different sustainability aspects and applying to VCL. Section 6.10 discusses how community participation affected sustainability of VCL. This is done by clearly indicating how the community participated and linking it to the different sustainability aspects. Section 6.11 is the conclusion of the chapter.

### **6.2 Demographic profile of Participants**

Table 6.1 summarizes the demographic details of the participants.

**Table 6.1:** Demographic characteristics of Participants

<b>Demographic</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Gender	Male	9	45%
	Female	11	55%
	Choose not to answer	0	0%
Age Group	18-25	4	20%
	26-35	7	35%
	36-45	3	15%
	46-55	4	20%
	56>	2	10%
Qualification	Primary	6	30%
	Secondary	12	60%
	College	1	5%
	University	1	5%
Employment status	Employed	4	20%
	Unemployed	16	80%

The demographics demonstrate consistency with the general population in Vrygrond, Unemployment is high and the majority of the population do not have any form of higher education. Some have completed primary school, particularly the older participants.

### 6.3 Data analysis

This section discusses the key aspects of thematic analysis utilized as previously discussed in chapter four. The audio recordings of the interviews were transcribed soon after the interviews were conducted. The transcription was done with MacSpeech Scribe a speech recognition software for Mac OS X designed precisely for transcription. I utilised open coding to summarize key themes emerging from the data that helped address aspects of the stakeholder theory. Data collected using WhatsApp conversations was used to enhance my credibility and validity of the study. The WhatsApp group had some of the key stakeholders for the study including, Pforzheim University students, VCL Manager and Administrator and some UCT students. After some interviews, I would at times debrief to the WhatsApp group, in this way some members would help clarify certain issues that were not clear.

### 6.4 Stakeholder Identification

Stakeholders of VCL were identified by meeting stakeholders and validating their opinions by double checking with what other stakeholders had to say. This was done in an iterative manner (Freeman, 2010). Primary and secondary stakeholders were also identified. The Primary stakeholders refer to those who the project is dependent upon for continuation. If these primary stakeholders withdraw or become dissatisfied with the system, the corporation [VCL] would be seriously damaged or unusable to continue (Clarkson, 1995). The stakeholder importance-influence map was also drawn up based on Bailur (2006). To identify the stakeholder of VCL participants were asked the following questions, with follow up questions.

- *Who was consulted before the Vrygrond Community Lab started?*
- *Who do you think should have been consulted?*
- *Who is currently involved in the running of the lab?*
- *In your view, what roles does the community play in the daily running of the lab?*

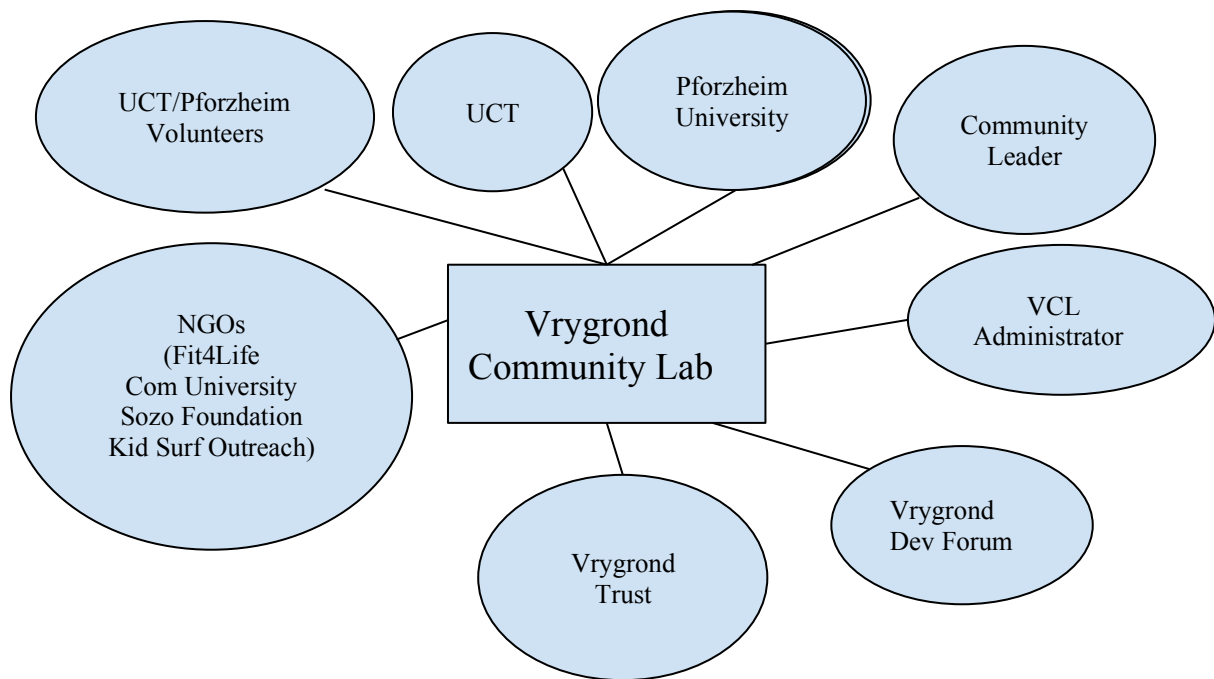
### 6.4.1 Overview of stakeholders

The development forum, UCT, Vrygrond Trust were particularly key in identifying all the key stakeholders for the Lab. Table 6.2 summarizes the stakeholders of VCL project.

**Table 6.2:** Summary of VCL stakeholders

<b>Stakeholder</b>	<b>Explanation</b>
UCT	University of Cape Town, responsible for overseeing VCL. Makes sure post graduate students are available every year to serve as volunteers and mentors.
Pforzheim University	VCL project sponsor.
Vrygrond Trust	The Trust was initially formed to facilitate acquiring their land formally from the City of Cape Town, but also to facilitate a number of development projects.
Vrygrond Dev Forum	Different community stakeholders form the development forum. The focus is on brainstorming ways to bring prosperity to Vrygrond.
VCL Administrator	Manages the operations of the lab
Community Leader	Political figure who is elected by the community
Volunteers	There are both from UCT and Germany. They assist the VCL administrator

The study identified 8 stakeholders (see Figure 6.1). The volunteers from both Universities were grouped together as they performed the same function. UCT and Pforzheim University also shared VCL's objectives however were seen as different stakeholders. Table 6.3 summarizes the NGOs and the role they played in VCL.



**Figure 6.1:** Illustration of Vrygrond Community Project Stakeholder

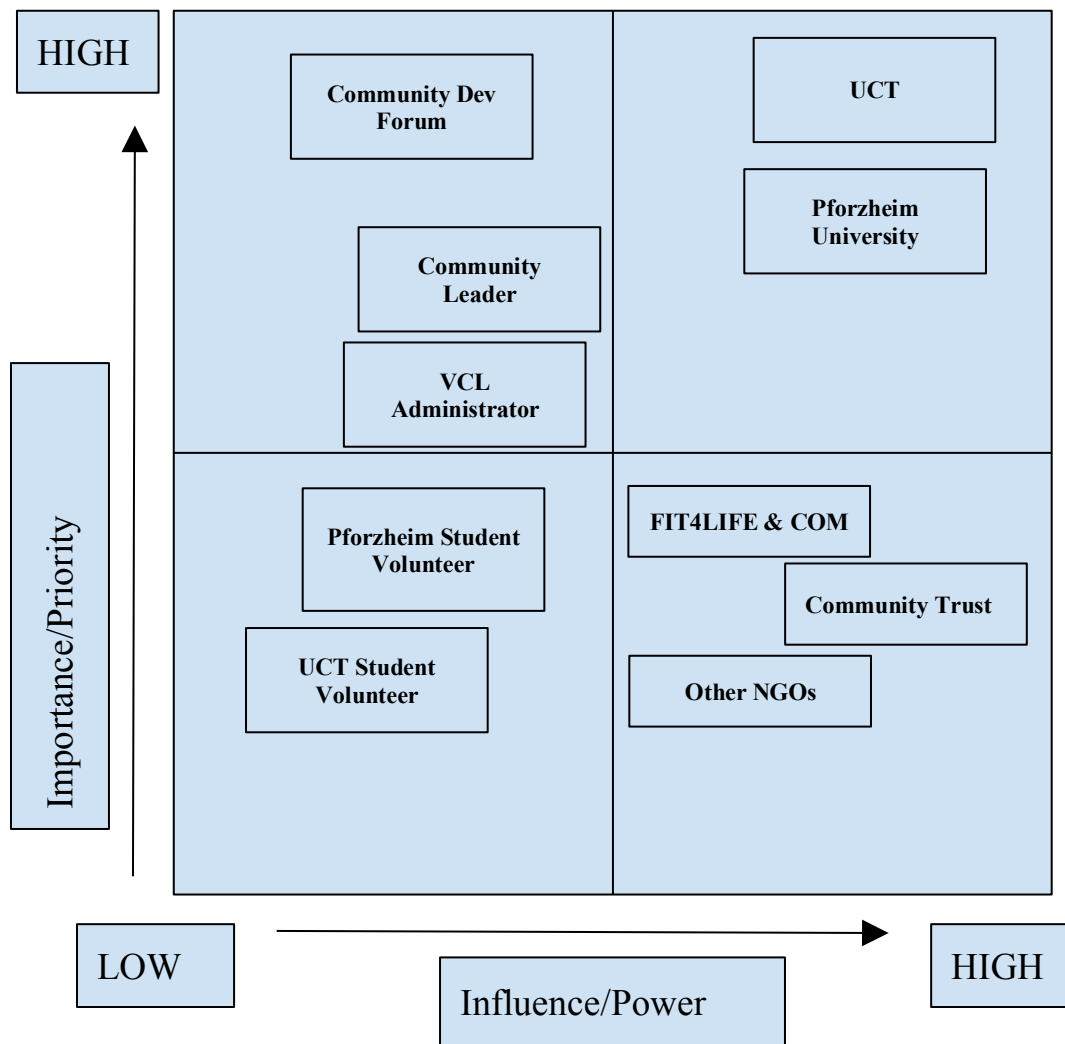
The different NGOs played different roles due to when they began. Com University was instrumental in designing the course content used by VCL. Fit4Life has also played a crucial role in providing users to VCL as well as paying for the services of the Lab.

**Table 6.3:** Summary of NGOs in VCL

NGO	Explanation
Fit4Life	A skills development programme focused on empowering youth (18-27 years) through life and work skills training.
Sozo Foundation	Creates opportunities for holistic development through four key areas: Education, Skills, Youth and Wellbeing.
Com University	Offers reading classes and assists locals with homework.
Kid Surf Outreach	A programme that gets volunteers to give children in Vrygrond and neighbouring townships swimming lessons in summer.

### 6.4.2 Stakeholder importance mapping

Following Bailur (2006)'s suggestion in plotting the stakeholder importance influence map, I differentiated all the importance, priority and influence or power. All these aspects were outlined from low to high. The ranking was arrived on by assessing the priorities of all the identified stakeholders and looking at the issues frequently brought up. The stakeholder influence map in Figure 6.2 indicates the difference in influence, power and importance among the identified stakeholders of the project.



**Figure 6.2:** The Stakeholder Importance Influence – Map

All 20 participants agreed that both Universities and the Lab Manager were important and influential as they ultimately came up with the idea and continue to assist in making sure the Lab is viable. When UCT first came to Vrygrond they communicated with the Community Trust Representative. The Trust is seen as an important stakeholder and was ranked as having high influence. Although their influence is high they play no active role in the operations of the lab at the moment and therefore scored low on the importance aspect.

Fit4Life and Com University are housed within the premises owned by the Vrygrond Trust. They ranked above average on influence due to where they are stationed and the role they play contributing to VCL. Both NGOs were ranked slightly lower in terms of importance due to the core focus by VCL being different to that of both NGOs.

*“Our focus is to help these young people with their self-esteem, you see some of them are always down and feel little about themselves, if we help them feel good about themselves then we help them help themselves” (Participant 17)*

The Community leader was ranked high on importance. The Community Leader had influence around the community and was seen as an important stakeholder. However, it was seen that they have middling influence on activities within Vrygrond as a whole. The VCL Administrator was a key stakeholder in the operation of the Lab. This individual is responsible for the operations of the lab and making sure classes were offered and working together with the Pforzheim University volunteers as well as UCT volunteers. The VCL Administrator does not have any real influence or power beyond the vicinity of the lab. The VCL Administrator reports to the UCT appointed Lab Manager.

*“My job revolves around this Lab, I make sure everything is going fine. I make sure the Lab is open during open hours and when I have to teach. The volunteers have been helpful in this regard” (Participant 2)*

The Lab Manager ranked highly on Influence and power as he/she is seen as the intermediary between the Lab Administrator, UCT and Pforzheim University. Although the initiative would continue without them, they were ranked above average due to the

power they have in negotiating with the project sponsors. The Volunteers were seen as additional with relative influence and importance. Their participation was helpful however, the operational activities would continue without them.

*“My role is pretty broad, I schedule meetings with the board, and with the help of the Lab Administrator make sure the lab is operational and sort out any other issues that the Lab Administrator is unable to sort out” (Participant 1)*

## **6.5 Stakeholder Behaviour**

### ***UCT and Pforzheim University***

UCT and Pforzheim University were ranked as influential and important stakeholders in VCL. They were responsible for setting up VCL and continued to play a role in the running of the Lab. UCT got involved in the setting up of VCL as they saw it as part of their social responsiveness ambitions. This cooperative behaviour was important in attaining set-out objectives.

### ***Vrygrond Community Trust***

The Vrygrond Community Trust was approached by UCT and Pforzheim University prior to the set-up of VCL. After an agreement was reached it was decided that the Lab would be housed in the Community Centre owned and managed by the Vrygrond Community Trust. During the focus group with representatives from the three NGOs, the Lab Administrator, the Vrygrond community Trust, the Lab Manager and a UCT volunteer, it became evident that some of the stakeholders were viewed as more influential and powerful than others. Some participants expressed reservations with regards to how the lab was being run.

*“We feel that the way the lab is ran could be improved, we are not happy that children are allowed to spend time playing useless games” (Participant 10)*

*“Discussions were held between the two Universities and the Vrygrond Community Trust and they agreed to set up the Lab in their centre. You see,*

*they also know it would be nice to have someone teach children how to use computers. They wouldn't have said no" (Participant 2)*

The stakeholders that had a disagreement but came together and were able to resolve the disputes amicably.

### **Vrygrond Development Forum**

The Vrygrond Development Forum was set up after the VCL was operational already. They became a relevant stakeholder due to their influence within the community.

*"We usually have meetings in the evening to talk about social things happening in our community. We talk about lack of service delivery and other things. Some of our members use the Lab, they know how important it is to us" (Participant 3)*

### **VCL Administrator**

Someone was required to coordinate activities at the Lab and someone was identified for this role. Someone who was initially a user of the Lab was eventually hired for this role.

*"The Lab Administrator plays a vital role, I am dependent on him for me to do my job correctly. He has been doing very well so far. If he had to resign then replacing him would be difficult" (Participant 1)*

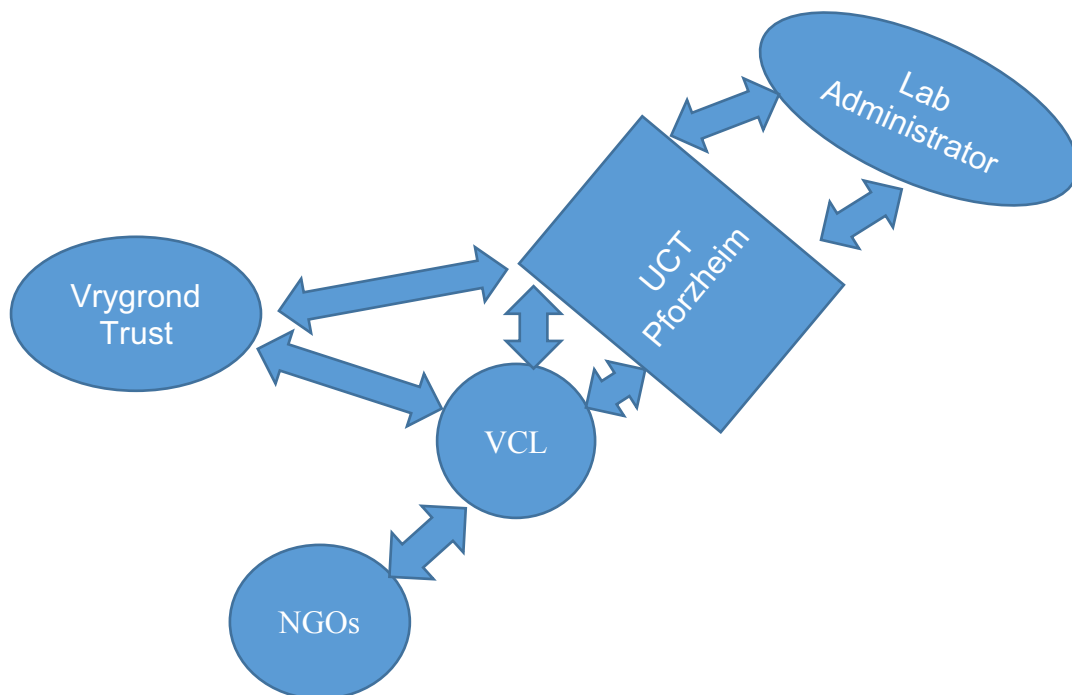
The VCL Administrator had a positive attitude towards the success and sustainability of VCL.

### **NGOs**

The NGOs were happy with their relationship with the Lab. The VCL has an arrangement with the NGO that use the lab. Com University and Fit4Life were the two NGOs that used the premises often. They were required to pay a certain amount to the lab administrator. This arrangement has been honored by the NGO and therefore created a positive relationship with VCL. Fit4Life was involved in setting up the current curriculum used in teaching at VCL.

## 6.6 Stakeholder Coalition Analysis

Coalition analysis determines how the different stakeholders interact with each other (Freeman, 1984). All stakeholder can exert power on each other in different way that meet their organizational objectives. The coalition analysis was done by meeting different stakeholders and perceptions were validated by cross checking against other stakeholders.



**Figure 6.3:** Illustration of key VCL relationships

### ***UCT and Pforzheim University***

A coalition between UCT and Pforzheim University was in place as they were key partners in ensuring the sustainability of the Lab. Their coalition is based on their cooperation as the founding stakeholders of VCL and shared objectives for VCL

### ***UCT, Pforzheim University and Vrygrond Trust***

The partnership between UCT and the Vrygrond Trust was also important as securing the venue for the lab was facilitated by the Trust. The relationship between them was cordial, although the Trust feels they could play an even increased role in the operations of the lab.

*“We can’t have a situation where they [Children] come to this Lab and they are just wasting time on games. We should be involved when these programmes are designed so we tell them what to include” (Participant 3)*

### **UCT, Pforzheim University and VCL**

The two universities collaborated in sourcing funds for VCL. The relationship is seen as a giver and a taker. The VCL played the role of utilizing the funds received from the two project sponsors.

### **NGOs and the VCL**

The relationship between the NGOs and the Lab was very important. The NGOs provided users and paid for utilizing the facility. These NGOs are situated close to VCL and therefore made financial sense to use facility nearby.

### **Lab Administrator and UCT**

The functionality of VCL dependent on the Lab Administrator. The Lab administrator was seen an important enabler for sustainability. Prior to my study the Lab Administrator was there on a part time basis. A volunteer from Com University would do the rest of the time required. However, this relationship broke down and the Lab Administrator continued uncertain of what exactly to do. A meeting was set up between the different stakeholders and the role was clearly defined and was agreed that the Lab Administrator should report to UCT

## **6.7 Stakeholder Management**

When VCL was starting Pforzheim University and UCT played a key role and the Community Trust was their main partner. Initially UCT was merely supposed to be a local partner to Pforzheim University however, post implementations there were some

issues relating to availability of Pforzheim representatives in Cape Town. The two Universities already had an ICT4D agreement between them (Tanner, 2016).

It was decided that UCT would be in charge and they continue to play this role now. Over time more important stakeholders like the Development Forum have been formed and currently play an important role even though they were never initially part of the planning and implementation.

More NGOs have requested to use VCL facilities over the time. These were Sozo Foundation and Kids Surf Outreach. The volunteers from both universities play support roles. I have summarized the situation at VCL using Table 6.4

**Table 6.4:** Stakeholder Management Results

	<b>Inform</b>	<b>Consult</b>	<b>Partnership</b>	<b>Control</b>
<b>Identification /analysis</b>	Sozo Foundation COM Uni Fit for Life	Fit for Life	Community Trust	Pforzheim Uni
<b>Planning</b>	Sozo Foundation COM Uni Fit for Life	Fit for life	Community Trust	Pforzheim Uni
<b>CBA and resource allocation</b>	V.Community Trust Pforzheim Volunteers	Sozo Foundation COM Uni Fit for Life KidSurf Outreach	Community Trust	Pforzheim Uni
<b>Implementation</b>	V.Community Trust Pforzheim Volunteers	COM Uni Fit for Life Lab Manager	Community Trust	Pforzheim Uni UCT

<b>Monitoring and evaluation</b>	Vrygrond Community Trust	Sozo Foundation COM Uni Fit for Life Kid Surf Outreach Pforzheim Volunteers	Pforzheim Uni	UCT
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### 6.8 Concessions

At the time of the study, there were no visible conflicts between the stakeholders. The minor disagreements were with regards to the day-to-day operation of the Lab. The Community Trust representative was unhappy to a certain extent. They were unhappy with the amount of time children spent playing games. This was seen as a waste of time. They wanted more control on the content available to the children using the Lab.

*“We need a proper programme to teach these children language skills and maybe mathematics. We can’t have a situation where they come to this Lab and they are just wasting time on games” (Participant 3)*

*“Space has become a major source of conflict, we have too many youngsters wanting to use the facility, especially during the holiday, and it’s difficult to manage. We hope we are able to secure additional 20 computers in the near future to resolve this’. (Participant 2)*

Based on the response from the Development Forum representative, discussions were in place to secure an additional venue close to the high school nearby. Prior to the researcher embarking on this study, conflict had arose regarding the utilisation of the Lab. However, this conflict was resolved after all stakeholders involved signed an MoU defining every stakeholder’s responsibility. At the time of this study, there were no conflicts.

## 6.9 Degree and type of Community Participation in Vrygrond

To determine the type and degree of participation, the participants were asked the following questions;

- (i) *Who was consulted before the VCL lab started?*
- (ii) *Who should have been consulted?*
- (iii) *Who is involved in the running of the lab?*
- (iv) *In your view what role does the community play in the running of the lab?*
- (v) *What were the challenges in the beginning?*

### 6.9.1 Degree of participation

The analysis of the degree of participation was based on the ladder of participation (recall Section 2.5.3). To achieve sustainability, ideally participation should be the aim all the way end to end of the diagram. In the first two sections, those living in the community are considered incapable of knowing what is good for them. Those leading the project initiative do not consult nor require the community's input (Luyet et al., 2012). In this case the Community Trust were the chosen representatives of the people. They worked together with the external project sponsors to develop priorities. However, the responsibility remained on outsiders (UCT and Pforzheim University) to direct processes.

*“The Development Forum came about after the VCL started. However, we make sure we consult all our partners in the community before embarking on anything. You see the guys from Sozo foundation? - most of them are our friends who live in the community and understand the problems we have”*

The community had some form of control of the outcomes of the Lab. However, they were still reliant on external parties for guidance. The last two steps are where the have nots (community) control project outcome. They have managerial powers in any intervention and control the outcome of the intervention. This is not the case with VCL.

### 6.9.2 Type of Participation

Participation in the VCL can be categorized as functional participation, based on Pretty's typology of participation (Pretty, 1995). The external stakeholders who were also the project sponsors UCT and Pforzheim University required the participation of the community for the project to get off the ground.

Although there is an element of shared decision-making, the external stakeholders made major decisions and then informed the community stakeholders. Based on Arnstein's ladder of participation, VCL would rank between placation and partnership level, see Figure 6.4. Despite that the findings indicate an element of 'tokenism' the VCL seems sustainable. The partnership aspect is there however, the community is still dependent on UCT and Pforzheim University for direction and funding. The Lab is not currently self-sustaining. On the highest level of the ladder is 'Citizen Power' that usually imply citizens are not only able to negotiate with the power holders but also are able to get decision making powers (Arnsten, 1971). This is not the case with VCL stakeholders.

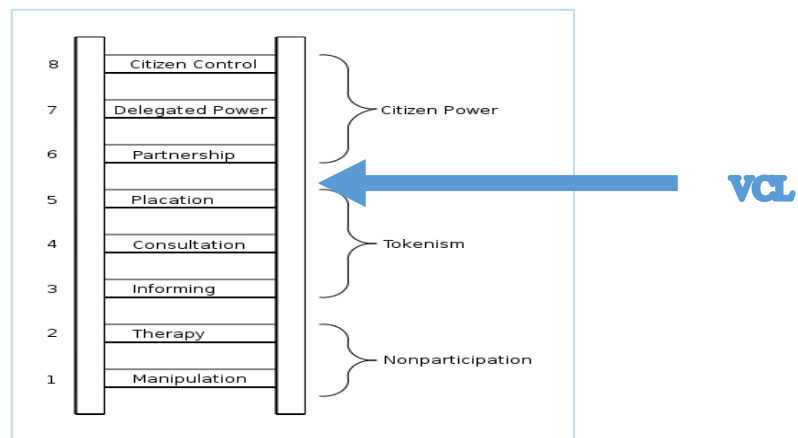


Figure 6.4 Degree of participation in VCL

Community involvement (Directly and indirectly) in all stages of the project resulted in increased 'sense of ownership' and this together with the roles played by other key stakeholders influenced sustainability of the initiative (Bridgon & Korf, 2002). Section 6.7.3 provides a detailed discussion of ways to determine a sense of ownership.

### 6.9.3 Sense of ownership

Fostering a sense of ownership in a community for an ICT4D initiative requires that the initiative is designed in an 'ownership-friendly' manner (Ballantyne, 2003). To achieve this, community stakeholders should be involved in all phases of the initiative. Stakeholder relationships should be managed carefully in ways that is inclusive.

Sense of ownership is stimulated when 'users' are involved in the process of decision making (Marks et al., 2012). To determine the sense of ownership by the community members the study utilised Lachapell (2008)'s three characteristics:

- Who has a voice and whose voice is heard?  
*"We usually have meetings with everyone, the people from UCT also come sometimes. They ask us what we want or changes we want and we tell them"* (Participant 4)
- Who has influence over decisions and what results from the effort?  
*"The people who come here usually listen to us as a community. When we said we want open time for us to be able to just come and use the computers, they listened. That was nice"* (Participant 18)
- Who is affected by the process and outcome?  
*"The community members who use our Lab [Their Lab] are affected by the process. We try make decisions in consultation with the community stakeholders. That is very important for us"* (Participant 15)

The community development forum members, the Lab administrator and a number of community members who used the Lab had a 'sense of ownership', they felt like the Lab was there to serve their needs. They were willing to protect its infrastructure. Meaningful stakeholder engagement and the relationship among VCL stakeholders increases sustainability of the initiative.

## 6.10 Sustainability of the Vrygrond Community Lab

This section revisits the different factors discussed in Section 2.4.1 to determine the sustainability of VCL. I will explore the following factors affecting sustainability: economic sustainability, social and cultural sustainability, technological sustainability and lastly institutional sustainability.

### 6.10.1 Economic sustainability

The following are the sources of the income for the lab

1. Taught courses (each student pays R100). The classes run for six weeks
2. Donations (From various people or organisations)
3. Old computers were occasionally sold
4. The NGOs that use the facility also pay to use the facility

The petty cash is managed by the Lab administrator who receives payment for the courses taught at the labs

*“20 students from FIT FOR LIFE from 09.00 till 13.00 X 3 Weeks*

*20 students from Sozo Foundation from 13.00 till 15.00 for 19 weeks*

*A day we cater for almost 100 users. Open hours are for anyone who wants to CV, job search, homeworks etc. They use it for 45 min they share” (Participant 2)*

*“Sometimes only a few pay the rest can’t afford” (Participant 2)*

There is a form of participation by the community directly and indirectly through the NGOs. Although the Lab has a lot of users per week, those paying are very few. Despite the low paying users VCL demonstrates a form of economic sustainability over the last few years. The main sources of income were external, especially from Pforzheim University and UCT.

### **6.10.2 Social and Cultural sustainability**

Social and Cultural sustainability looks at the ‘user buy-in and participation’. This means that the continued operation of VCL is in their best interest and therefore will do all they can to see its continued operation. The lab is used by young and old from the community. Although the interviews were conducted with adults, I observed a number of school going children in queues to use the Lab. Over the last year the use of the lab had increased so much that an additional venue with similar capacity or bigger was needed. ICT4D initiatives continue to be technocentric. This is developmental efforts that “that focus almost exclusively on providing access to digital communication technologies” (Chigona et al., 2009, P.3). Focusing on a technocentric strategy may create “socio-techno divide” that needs to be closed: in human and technology development” (Chigona et al., 2009, P.5). Using strategies such as grass root participation ICT4D initiatives are able to play their roles (Marais, 2015).

In conclusion, the VCL is socially and culturally sustainable. This is because VCL is not a technocentric initiative that focuses on simply providing ICT tools and access to them. It focuses on grass root strategies like participation to involve the community.

### **6.10.3 Technological sustainability**

Technological sustainability refers to its ability for usage of a prolonged period of time. The computers used were standard computers that do not require exceptional skills to operate. UCT has appointed volunteers to maintain the PCs.

*“We have a maintenance policy; however, we wait for [VCL Administrator] to identify the broken computers then we send a technician. (Participant 1)*

*“I make sure that I report any issue arising that I pick up during the week of classes. I don’t want a situation where one of my students has no computer to use, yet has paid to be there’. (Participant 2)*

Based on my observation, all 20 computers at the lab were in working order with Internet connectivity. In conclusion, the availability of technical support indicates

technological sustainability. As long as UCT continues to have a volunteer technician, the computers will be used for a long time.

#### **6.11.4 Institutional sustainability**

I looked at the user buy-in of the main institutional actors that are likely to determine the VCL's sustainability. This is the factor mostly likely to see VCL to fail. The roles of all the stakeholders have been explained over the last few years. This has helped in reducing conflict between stakeholders. The day-to-day operations has been clearly defined and assigned to a specific stakeholder. The clarification of roles played by different stakeholders makes VCL institutionally sustainable.

#### **6.11 Relationship between Community Participation and Project Sustainability**

Participation is necessary in attaining sustainability of any initiative because sustainability is dependent on the key stakeholders (Australian Agency for International Development, 2000). VCL's main stakeholders were UCT, Pforzheim University and the Community Trust. Based on the stakeholder management it was shown that UCT currently plays the supervisory role in the relationship. However, it is the intended participants that may be detrimental to the sustainability of the project. The leaders of the community organisation may negatively influence other members of the community to stop using the facility. Other literature consulted in developmental theories also suggest that community participation is strongly correlated to sustainability (Pollak & Pomeroy, 2005). Community participation is seen as a tool for a developmental initiative in becoming sustainable (Brigdon & Korf, 2002). Table 6.4 summarizes ways the community members participate in ensuring sustainability of VCL.

When there is contribution by the community either with money or time it enhances both planning and changes after implementation. Although the Vrygrond Community members did not pay to use the lab, those wanting to get the certificates paid a fee of R100 (USD7.7). Some struggle to pay this fee immediately due to the high levels

of poverty and unemployment in the area. They were allowed to pay in instalments after receiving the certificates. Paying for the certificates is important because it makes them feel like they have contributed to paying the Lab Administrator but also helped support an important project in the community. Sustainability necessitates enduring and effective participation, which happens when the community regards an initiative as their own (Pade et al., 2008).

Lyons et al., (2001) suggested a link between the nature and extent of participation, empowerment and the sustainability of a developmental initiative. The idea is that once a community is empowered then the developmental initiative becomes sustainable (Botchway, 2001). It is therefore evident that community participation influences sustainability of an ICT4D project positively.

**Table 6.5:** Summary Different sustainability aspect and community participation

<b>Sustainability Aspect</b>	<b>Form/Manner of participation</b>
Economic sustainability	<ul style="list-style-type: none"> <li>• NGOs brought users to the Lab and paid for using PCs</li> <li>• Taught courses [13 classes held monthly]</li> </ul>
Social and cultural sustainability	<ul style="list-style-type: none"> <li>• User buy-in [ Children largely dominated usage during 'open hours']</li> </ul>
Technological sustainability	<ul style="list-style-type: none"> <li>• Maintenance of the PCs was done by a UCT staff member on a voluntary basis</li> <li>• UCT replaces all PCs that are no longer in working order</li> </ul>
Institutional sustainability	<ul style="list-style-type: none"> <li>• Key stakeholders have a good relationship</li> </ul>

## 6.12 Conclusion

Based on the data and literature discussed, the community stakeholders are extremely important and usually reasons a project would fail. This means that any ICT4D initiative should be community driven. The VCL was piloted first in 2013 before it was officially launched, this was important to understand the community's perception of such a project and how they reacted to having it there. Incorporating community participation into an ICT4D initiative may contribute towards sustainability. The conclusion based on this study is that the level of community participation in VCL influences its sustainability. Any initiative similar to VCL would stay more sustainable when those it is aimed to benefit are involved in the setup from the beginning. The Development Forum mentioned that when people are consulted about an initiative, then they will make sure it is secure in times of trouble.

Community participation is one the solutions to sustainability. *"A participatory approach not only improve the success of the project but also makes projects more efficient and effective"* (McGee, 2002, p.95). A clear indication that participation in all the stages of a project is important as it has a bearing on its sustainability.

## Chapter 7: Discussion and Conclusions

### 7.1 Introduction

This chapter discusses the research findings of the study, that helps answer the research questions. Firstly, this chapter looks into the key findings of the study. This is followed by a section that highlights contribution made by this study and lastly looks at the limitations of this study. The aim of the study was to understand how community participation influences sustainability of ICT4D initiatives in South Africa. The study analysed a case of the VCL in the Western Cape. The study presented in this study examined the much talked about issue of sustaining ICT4D initiatives in a developing country context (Heeks, 2008; Marais, 2011). The study went beyond examining factors affecting sustainability but examined different types and degrees of community participation and how they affect sustainability of ICT4D initiatives in the context of the South Africa. The specific research question addressed by the study was “*How does community participation influence sustainability of an ICT4D project*”.

### 7.2 Thematic discussion on the findings

Using the case of VCL, the study highlighted the relationship between participation and sustainability. The findings on stakeholders showed that all stakeholders have a fundamental value (Donaldson & Preston, 1995). Instrumental stakeholder perspective allowed for the examination of the connections between the practice of stakeholder management and the achievement of organisational goals. To examine the level of participation in VCL, I examined the different types of participation. The findings on the level of participation point to a functional participation. People participated by forming groups mainly after VCL was established.

Community involvement in all stages of the project resulted in increased ‘sense of ownership’ and this in turn influenced sustainability of the initiative (Bridgon & Korf, 2002). There are three characteristics that sense of ownership can be applied to in the community development context (Lachapelle, 2008).

The characteristics with questions are listed in the following section:

- A sense of ownership in process (who has a voice and whose voice is heard?)
- A sense of ownership in outcome (who has influence over decisions and what results from the effort?)
- A sense of ownership distribution (who is affected by the process and outcome?). |

The emerging themes from the study are discussed in more details in the following subsections.

### **7.2.1 Stakeholders Identification**

I used the stakeholder theory instrumental perspective to identify VCL's stakeholders and to understand how they were managed.

The stakeholders in this study were categorised as either primary or secondary. The importance and influence is taken into consideration when managing the identified stakeholders. Gavin and Pinder (1998) created a participation matrix and was later modified by Bailur (2006). The primary and secondary stakeholders were identified by means of semi structured interviews with the Lab Administrator and VCL Manager. One of the primary stakeholders was the Vrygrond Development Trust. They were part of the project in the planning phase. Stakeholders such as Pforzheim University and UCT that were classified as highly important and influential were involved in the planning to implementation stage. The stakeholders that had high influence yet low importance like the three identified NGOs, the Vrygrond Forum as well as the Vrygrond Development Trust were informed or consulted. The rest of the stakeholders were easily identified because they were associated with the lab in one way or another.

### **7.2.2 Stakeholder Management**

The power of stakeholder analysis was that it highlighted conflicts, and how these conflicts were resolved (Pouloudi & Whitley, 1997). In the planning phase of VCL, project sponsors met with the community stakeholders to explain the aim and objectives of the project. Stakeholders with high influence and low importance were informed or consulted like the three identified NGOs (Gavin & Pinder, 1998).

Stakeholders that had high influence and high importance like UCT and Pforzheim University also played the role of coalition support. Together project sponsors with the Vrygrond trust as the founding partners worked together well as they shared similar interest on how the lab should operate.

### **7.2.3 Community Participation**

Participation is both complex and multidimensional in nature. It has different forms and happens at different levels in a community. Participatory approaches differ and may range from getting limited input to getting extensive input from all stakeholders in the decision-making process. These approaches are influenced by a number of factors, including availability of resources and objectives (Beaumont, 1997). Participation may also be in different means (Fanklin & Slopper, 2004). May range from mere opinions to availing themselves on the day a decision is needed about an issue that affects them.

This was clear in the case of VCL. I used both Pretty's typology of participation as well as the ladder of participation to categorise the type of participation in VCL. Based on Pretty's typology of participation, I classified it as functional participation. This was due to the continued major influence of the external stakeholders who may at times make decisions and inform community stakeholders later. Although VCL was dependent on project sponsors, it may become self-dependent and enabling in the future. Based on the ladder of participation, the extent of participation and power held by community members was visible. Elements of 'Tokenism' was demonstrated by response from a number of the interviewees.

*"We have meetings with them [Project sponsors] but sometimes it feels they do what they want" (Participant 2)*

*"There is always emphasis on finding our own ways to make sure VCL continues to serve us for a long time, but because we are poor we can't really make big decisions" (Participant 5)*

The Vrygrond community organised themselves into different bodies, one of these is the Development Forum. These organisations are the mediators between the community and project sponsors who come into the community. Communication between community members, VCL representatives and project sponsors must be constantly worked on in order to create a climate of trust. The community therefore has a voice in the decision-making processes that affects their lives. Mutenda et al (2011) discusses reasons why community participation is important early in the project during the conceptualisation and planning phases. The Vrygrond community participated indirectly via the different stakeholders that represented different interests.

#### **7.2.4 Participation and Sustainability in an ICT4D Initiative**

My findings show that the Community Trust and Development Forum engaged with UCT and Pforzheim University on behalf of the community. Furthermore, findings are in agreement with literature with regards to developing a sense of ownership. Bridgon and Korf (2002) suggest that an increase in community involvement and influence in all stages of the project increases the 'sense of ownership' in the intended participants of the project. This was true in the case of VCL as this motivated the community to protect the facility during the violent protest that took place in Vrygrond.

#### **7. 3 Revisiting the research question**

South Africa faces developmental challenges, particularly in urban underserved areas, informal settlements and townships. The need to achieve socio-economic development is important. Literature indicates wide recognition of ICTs in their application to reducing these developmental challenges. However, there is an unacceptable high failure rate of these ICT4D initiatives. The core problem has been the focus on providing hardware and software and paying little attention to the social and cultural dynamics of each individual country. The study has argued that one of the ways to address this challenge is by focusing on 'community participation'. The focus should be the socioeconomic and sociocultural issues faced by the community. Although participation may be challenging due to different stakeholders having different interest and ideas of operation of the initiative, it is imperative that common

ground is reached in the planning phases. Based on the argument stated, the following primary question was presented:

- *How does community participation influence sustainability of an ICT4D project?*

The question was answered using one sub question. *To what extent does community participation influence sustainability of ICT4D initiative?* The answers to the primary and sub question are answered in the following section.

The analysis identified the founding stakeholders, as well as other key stakeholders that have been involved in the operation of VCL since 2013. The project was analysed from an instrumental perspective, it was evident that the project would be sustainable if all stake stakeholders are identified and managed in a way that helps maximise the number of users of the lab.

The study also analysed community participation and how it affects sustainability of the VCL initiative. The findings are in agreement with literature discussed in chapter two that participation involves collaboration with the decision-making team with regards to project initiation, and that participation can take a variety of forms. Appropriate determination of the information needs, planning and operations was done (Bailur, 2006).

Although some literature suggest that indirect participation leads to lack of local ownership, and identity crises between the implementers and the community (Brunello, 2010), this is not the case with VCL. All participants that lived in Vrygrond and used the Lab indicated that they felt the lab was there to serve them and therefore would do everything to protect it. It is common for service delivery protest to take place in the area. Shortly before I conducted the study, service delivery related protest had taken place in the area; where windows of buildings surrounding the lab had been stoned while the Lab remained untouched. The Vrygrond Trust Representative indicated that this was one of their 'own' projects, they felt they had contributed to having it there.

## 7.4 Sustainability of the Vrygrond Community Lab

I analysed VCL using the sustainability and failure model by Kumar & Best (2006). The sustainability aspects are summarised in Table 7.1 to illustrate VCL's sustainability status.

**Table 7.1:** VCL sustainability status

<b>Sustainability Aspect</b>	<b>Sustainability status</b>
Economically sustainable	No
Socially and culturally sustainable	Yes
Technologically sustainable	Yes
Institutionally sustainable	Yes
Environmentally sustainable	Yes

The VCL was operational for the past four years with minor hiccups, misunderstandings between different stakeholders. Although the initiative is socially and culturally sustainable meaning that the project has buy in from the community. This also means that the community are willing to do everything (participation) in their power to ensure that the initiative does not shut down. VCL was found to be economically unsustainable. The lab is not generating enough income on its own to guarantee economic sustainability. Income from students who come to take the courses was not guaranteed as the Lab Administrator allowed students to take the courses without paying in the hope they will pay in the future. Despite the lack of sufficient financial contribution from the community, the VCL continued to meet its objectives.

## 7.5 Contributions of the study

This study is significant in that it broadly contributes to;

- The existing literature in community participation and sustainability in ICT4D.

- The study extends the current literature by demonstrating the effects of community participation on project sustainability in the context of South Africa and Western Cape specifically.
- The study is also valuable by virtue of its application of the stakeholder theory as an alternative theory in addressing participation and ICT4D project sustainability.

## **7.6 Limitations of the study**

The study had a few challenges and limitations. This caused a delay in my initial schedule. A number of limitations may have been addressed in a longitudinal study. For example, conducting similar research in a different environment with a different historical context to see differences or similarities. As the community develops and jobs are created, it would be interesting to see if the views expressed regards the importance of VCL remained the same. However, since this is a Masters study, this would have been impractical. The interviews were conducted on one community Lab in Vrygrond.

## **7.7 Suggestion for future research**

There still exists gaps in the literature community stakeholder participation in socio economic activities aimed at uplifting entire communities. We would benefit from the following research;

1. In-depth exploration of how community stakeholders can assist in the sustainability of an ICT4D initiative long after external stakeholders have pulled out.
2. Design an appropriate model on the required number of participants that would ensure sustainability of an ICT4D initiate
3. Engage in developing theories and frameworks that offer specific guidelines to project managers on ways to sustain ICT4D projects. The study found that there is still a lack of realistic and comprehensive criteria on project sustainability. One cannot really ascertain the degree of sustainability achieved (De Zoysa et al., 2013).

## **7.8 Final word**

To summarise, this study used the Vrygrond Community Lab, in Muizenberg, South Africa to explore the relationship between community participation and project sustainability. The research findings indicated that community participation had a positive influence on sustainability. Lastly the study has also demonstrated that the type of community participation required to boost sustainability is one adopted as a means to an end.

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## **Appendix A - Forms of Participation**

There are different types of participations, and according to White (1996) there are four different types participation namely; nominal, instrumental, representative and transformative. Each of the different types serves a different function. Those who are more powerful and those less powerful have different perception and their interest differ

- Nominal participation - Used by those who are powerful in the community to give legitimacy to development plans. Ordinary members of the community become members due to the fear of being left out and does not necessarily result in any change.
- Instrumental participation - Community participation is used as a means to an end. During the project, the skilled members of the community are simply used during the project implementation
- Representative participation - The community is given a voice in the implementation process. Representative participation increases the chances of the project being sustainable.
- Transformative participation - This would result in the empowerment of those involved, and the structure of the community may be altered leaving to marginalisation and exclusion.

## Appendix B – Key Principles for Interpretive Case Studies

This study followed key guidelines as defined by Klein and Myers (1999). This helped with providing a guideline for the execution of this interpretive case study. The guidelines allow the researcher to constantly evaluate findings. These principles are discussed in this section.

- *The fundamental principle of hermeneutic cycle* – It is suggested in this principle that one achieves understanding by iterating between the consideration of interdependent meaning of parts and the whole they form.
- *The principle of contextualization* - The principle requires the researcher to deeply explain the research setting or the context within which it is situated. This is key for any interpretivist study.
- *The principle of interaction between researcher and subjects* – This principle requires the researcher to engage with the data, and critically understand how the data was gathered, considering the interaction between the researcher and the participants.
- *The principle of abstraction and generalization* – This principle requires the research to clearly show the ‘small’ details that emerge by engaging with the data in light of the hermeneutic circle and context. This should relate to the description of the human understanding and social action. Idiosyncrasies identified in the research should be thoroughly explained based on human understanding and social action.
- *The principle of dialogical reasoning* – This principle requires consistencies between the theory and the research. The researcher should allow the theoretical preconceptions to guide the research.
- *The principle of multiple interpretations* - This principle requires the researcher to allow for multiple viewpoints and interpretation.
  
- *The principle of suspicions* – This principle requires the researcher to be aware of possible bias or distortion of data from participants.

## Appendix C - Information sheet and consent form

Request to conduct research and interview participation consent form

Dear Sir/Madam,

In terms of the requirements for completing a Masters Degree in Information Systems at the University of Cape Town a research study is required.

The researcher, Evode Ndayishimiye, has chosen to conduct a case study entitled *The effects of community participation on sustainability in an ICT4D project: A Case of Vrygrond Community Lab in South Africa*

I would like to request your assistance in participating by answering the questions on the next page. The objective of the research is to

- To determine the key stakeholders in the Vrygrond Community project and how they are managed.
- Investigate the extent to which Community participation in a skills development initiative affects its sustainability
- Explore the sustainability of the Vrygrond project
- Define the Vrygrond Community's perception on the Vryhond project

Your participation in this research is voluntary. All information will be treated in a confidential manner and used exclusively for the purpose of this study. No individual names will be recorded or published. You will not be requested to supply any identifiable information, ensuring anonymity of your responses. You can choose to withdraw from the research at any time for whatever reason, in accordance with ethical research requirements.

The data collection method will be semi-structured interviews, one-on-one interviews with the Vrygrond Community Lab users. The interviews will be conducted in the Vrygrond Community Lab and will last approximately 20 Minutes each time.

Your participation in this study would be greatly appreciated, but is entirely voluntary.

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The effects of community participation on sustainability in an ICT4D project: A Case of Vrygrond Community Lab in South Africa

Sincerely,

**Evode Ndayishimiye** [Student]  
Department of Information Systems  
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Professor in Information Systems  
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### **Research Participant Consent Form**

I, \_\_\_\_\_, consent to participate in the research on **the effects of community participation on sustainability in an ICT4D project: A Case of Vrygrond Community Lab in South Africa**

I am aware that participation is voluntary and that I may choose to withdraw from this study at any time, should I choose to do so.

I grant permission to record my interview in audio form.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

### **Appendix: D Vrygrond Community Lab Permission letter**

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Department of Information Systems  
Leslie Commerce Building  
Engineering Mall – Upper Campus  
OR Private Bag – Rondebosch 7701  
Cape Town  
South Africa  
29<sup>th</sup> May 2017

**To Whom It May Concern**

This serves to confirm that Mr Evode Ndayishimiye has been granted permission to conduct his research study at the Vrygrond Community Lab (VCL).

He will be interviewing community members using the lab (VCL).

Kind Regards

Jamie-Lee

A handwritten signature in blue ink, appearing to be 'J. Lee', enclosed in a thin black rectangular border.

Vrygrond Community Lab Project Manager

Department of Information Systems

University of Cape Town

Tel: 021 650 4260

## **Appendix E – Semi- structured Interview Questionnaire**

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## **SECTION A - BIOGRAPHICAL INFORMATION**

1. How old are you 18 – 25    26-35    36 - 45    46 - 55    56>
2. Gender:            Male            Female            Prefer not to answer
3. Highest level of education Primary    High School    College    University
4. What is your current job
5. Place of residence

## **SECTION B - Stakeholders**

6. What do you know about VCL? Who was consulted before the Vrygrond Community Lab started? Have you been involved in the project from the beginning?
7. Who do you think should have been consulted?
8. Who is currently involved in the running of the lab?
9. In your view, what roles does the community play in the daily running of the lab?

## **Section C - Community Participation**

10. Do you know the intended beneficiaries? What services are offered at VCL?
11. What is your view of the services offered?
12. What services would you like to see introduced?

## **Section D - Conflict**

13. What role do local leaders play in the lab
14. Has there been any conflict you aware of regarding the running of the lab?
15. What was done to resolve the conflicts?
16. What other conflicts do you think may arise in the future?
17. In your view what can be done to avoid conflicts?

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## **SECTION E - Sustainability aspect**

18. What do you consider to be the main enablers of VCL sustainability?
19. What do you consider to be the main barriers to VCL sustainability?
20. Does the project have an operations and Maintenance plan?
21. How are broken computers fixed?
22. What are the sources of income for the Lab?
23. How are the finances of the lab managed?
24. How is the lab Manager compensated?

## **Questionnaire - General**

### **SECTION A - BIOGRAPHICAL INFORMATION**

2. How old are you      18- 25      25-35      46 - 65
3. Gender:              Male              Female      Prefer not to answer
4. Highest level of education:    Primary    High School    College      University
5. What is your current job?
6. Place of residence
7. In your view what is purpose of the Lab?
8. Describe the ways in which you use the Lab
9. Have you referred anyone else to the lab?
10. What challenges have you experienced in accessing the lab?

**Thank you for participating**

## **Appendix F: Ethics approval letter**

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## Faculty of Commerce

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 @Commerce\_UCT  UCT Commerce Faculty Office

10 July 2017

Mr Evode Ndayishimiye  
Department of Information Systems  
University of Cape Town

REF: REC2017/07/003

Dear Mr Ndayishimiye

**Project: The effects of community participation on sustainability in an ICT4D project: A Case of Vrygrond Community Lab in South Africa**

Thank you for submitting your study to the Faculty of Commerce Ethics in Research Committee.

It is a pleasure to inform you that the EIRC has **formally approved** the above-mentioned study.

Approval is granted for the period of 12 months. Should you require an extension or make any substantial changes to the research methodology which could affect the experiences of participants, you must submit a revised protocol to the Committee for approval.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Your sincerely

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