THE ADOPTION OF ICTs AT PUBLIC ACCESS CENTRES IN A RURAL SOUTH AFRICAN COMMUNITY

by

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Thesis submitted in fulfilment of the requirements for the degree of

Master of Technology in Information Technology

in the Faculty of Informatics and Design

at the Cape Peninsula University of Technology

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Date submitted: July 2019

DECLARATION

I, Cecilia Frans, declare that the contents of this dissertation represent my own unaided work, and that the dissertation has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

C.Frans — **Signed**

18 Nov 2020 — **Date**

ABSTRACT

An assessment of digital divide eradication strategies in South Africa and internationally indicates that the deployment of public access centres is still considered an intervention by governments. This is in part due to the continued high cost of access to the internet, especially to people in rural communities. The success of these initiatives is threatened by a lack of understanding of the issues relating to the adoption of ICTs in these communities. An important consideration is whether such programmes will be successful, given the many reports in South Africa regarding the failure of public access centre programmes.

The purpose of this study was to investigate the factors that contribute to the adoption of ICTs at a public access centre (PAC) in the small rural town of Barkly West. Furthermore, this study sought to provide better ways of applying existing frameworks or methods to address technology adoption in rural communities. Over the years, several studies as well as literature have shown that the focus in technology adoption research has predominantly been on access. This study, therefore, sought to find a deeper understanding of the factors identified in this context in relation to technology adoption.

This study was based on Chau and Hu's (2002) adaptation of applicability to technology acceptance within various sectors. This framework takes the positives of the UTAUT and introduces emerging variables not initially covered and specific to the environment.

This study collected evidence through a survey questionnaire as well as focus group discussions. This was attained through a two phase process. The first phase was to identify the relationship between variables from the generic framework and a survey questionnaire was distributed. Based on this initial assessment, the research question was addressed. Furthermore, a new variable emerged termed 'Assistance' which was the strongest predictor of Behavioral Intention. The second phase allowed to delve deeper into the issues identified which found that in addition to variables from the UTAUT model 'Assistance' resurfaced again as a need before rural people can engage in ICTs at the PAC. What's more, external factors such as Community Exclusion, Corruption and Training Benefits were found to also contribute to the adoption process in this rural town. In addition, this study takes findings from applying the abovementioned framework and maps it against the Access Capacity and Environment (ACE) framework by Gomez (2010). This develops into a new integrated ACE framework which serves as a contribution to understanding the field of ICT adoption in public access centres in the context of rural communities.

Furthermore, the findings therefore contribute to our understanding of ICT adoption in a typical rural community. This study argued that if public access ICT projects are implemented with an understanding of adoption factors which facilitates adoption then there is a greater chance of meeting goals in relation to the development of an information society.

ACKNOWLEDGEMENTS

I wish to thank:

- Professor Shaun Pather for your continued support through this journey. Thank you for always pushing me when I felt like giving up, and for all your guidance and help. Thank you for always being honest and real with me; the encouragement speaks volumes. Thank you immensely for sponsorship from your CPUT research fund for my fieldwork.
- Dr Corrie Uys for your patience and advice on the analysis of the quantitative data.
- Liezel Ijambo and Xena Cupido for all the advice and guidance.
- Kgololosego Tshwanagae for all your assistance during my fieldwork and for listening when we had to brainstorm.
- The Dikgatlong Municipality for the facilities provided during my fieldwork; in particular Mr Kesekile, Ous Bridget and Whitty Pakela for connecting me with the right people at the municipality.
- Yvonne Frans (my biggest cheerleader, my mother) for always motivating and encouraging me to finish my studies.

Thank you to my family and friends for the support, encouragement and love showed throughout my studies. A special thank you to my daughter, Losego Arefa Frans, for understanding when Mommy was occupied with her studies.

DEDICATION

- **To Yvonne Frans. This one is for you. Through your strength, I found mine.**

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GLOSSARY

CAQDAS	Computer-Aided Qualitative Data Analysis
CI	Community Informatics
DD	Digital Doorway
EPWC	Environment and Public Works Committee
ICT	Information Communication Technology
IDI	ICT Development Index
IDT	Innovation Diffusion Theory
MM	Motivational Model
MPTU	Model of PC Utilisation
NBN	National Broadband Network
NDP	National Development Plan
PAC	Public Access Centre
SCT	Social Cognitive Theory
SEM	Structured Equation Modelling
SIP	Strategic Infrastructure Plan
TAM	Theory of Acceptance Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
USAASA	Universal Service Access Agency of South Africa
USOs	Universal Service Obligations
UNDP	United Nations Development Programme
UTAUT	Unified Theory of Acceptance and Use of Technology
ACE	Access Capacity and Environment

CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.1 Introduction

Information and communication technologies (ICTs) are considered a powerful tool for socio-economic development, and a number of development issues have become the primary focus for the research practitioner (Chair, 2015; Gutterman *et al.*, 2009). The adoption, uptake and use of ICT plays a major role in facilitating poverty reduction and empowering citizens with choices for their own development. Grazzi and Vergara (2012) state that this can be achieved through better diffusion of information and the active promotion of community programmes, improved governance and participation from political structures. Additionally, Mohamed *et al*. (2010) affirm that the role of ICT in improving knowledge and human development should also be focused on supporting developments that are more manageable (Henry, 2012). However, ICT projects, especially in rural contexts, are confronted with constraints that threaten sustainability (Mamba & Isabirye, 2014; Sund′en & Wicander, 2006), thus further entrenching the digital divide. Fucks and Horak (2008) link these constraints to things such as adoption, actual usage as well as benefits associated with using ICTs (United Nations E-Government Survey, 2012).

In South Africa, government agencies such as the Universal Service Access Agency of South Africa (USAASA) and various non-government organisations like Microsoft South Africa have attempted to address the digital divide (Mphidi, 2016) through the establishment of public access ICT centres (Department of Communications, 2012). These centres have been labelled in various guides as telecentres, community knowledge centres, community multimedia centres and digital hubs. Despite these efforts and large substantive expenditure from government, there have been widespread reports of failure in respect of sustainability of such centres (Ruxwana *et al.*, 2010). Gomez (2012) therefore states that without additional training and outreach to include people marginalised from social and economic services, public access centres may not significantly transform the communities they serve (Kassongo, Tucker

& Pather, 2018). The issue concerning the lack of community participation in these programmes is one that has received the most critique.

Notwithstanding issues of sustainability, questions have also arisen regarding whether and how such access centres provide meaningful benefits to local rural communities. Studies have shown that even if ICTs were made available, communities might not automatically use them (Kassongo *et al.*, 2018). According to Sund'en and Wicander (2006) as well as Wyche and Olson (2018), failure of ICT projects in rural communities occurs mainly because the reality of the local people is not fully understood. Research has shown that this is because adoption of technology is a complex process. Many studies have therefore investigated the problem of technology adoption. For instance, Rogers (1995) suggests that people are eager to adopt innovations when they provide a relative benefit to older ideas. The theory suggests that adoption should be more compatible with what is valuable to the adopter (Rogers, 1995). Likewise, over the years, other theoretical perspectives have also been explored in relation to the adoption of technology. These include the Technology Acceptance Model (TAM) by Davis *et al.* (1989), the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh *et al.* (2003) and Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975) and Chang (2009), just to name a few.

More recently attention has focused on interventions to specifically address past failures and ensure public value from public resources with regard to the digital divide (National Integrated ICT Policy White Paper, 2016). These interventions include the deployment of networks in rural and communities (Van de Groenendaal, 2016) in order to support inclusive economic growth, among other things. The problem still remains that the needs of the rural people are not fully understood because of the underutilisation of these centres. Particular issues relevant to the rural people are not considered when the digital divide is addressed. In addition, an important consideration in the implementation of such programmes concerns the context in which marginalised communities adopt technology to render the initiatives successfully. This is a relevant issue, given the many reports in South Africa regarding the failure of public access centre programmes.

1.1.1 Statement of research problem

In the South African rural context, not enough research has been done in understanding value systems in local communities before implementing ICTs (Mutula, 2010; Pramanik, Sarkar & Kandar, 2017). There are many studies which have alluded to the rich and fluid socio-cultural modalities that underpin the adoption of technology (Oyedemi, 2012). Thus, the success of public access initiatives may be enhanced by understanding the factors that promote the successful uptake and adoption of ICTs at a rural community level. The importance of ensuring such understanding is that future projects should not be viewed as infrastructure technological deployments only. Rather, the particular issues relevant in the social and community context are as important to consider.

In light of the above, the research problem underpinning the proposed study is that there is a continued effort to address the digital divide (Obijiofor, 2015) by deploying public access centres amongst underserved communities in South Africa. The success of these initiatives is threatened by a lack of understanding the issues relating to the adoption of ICTs, especially in rural areas (Salmi, 2014).

Overview of Barkly West

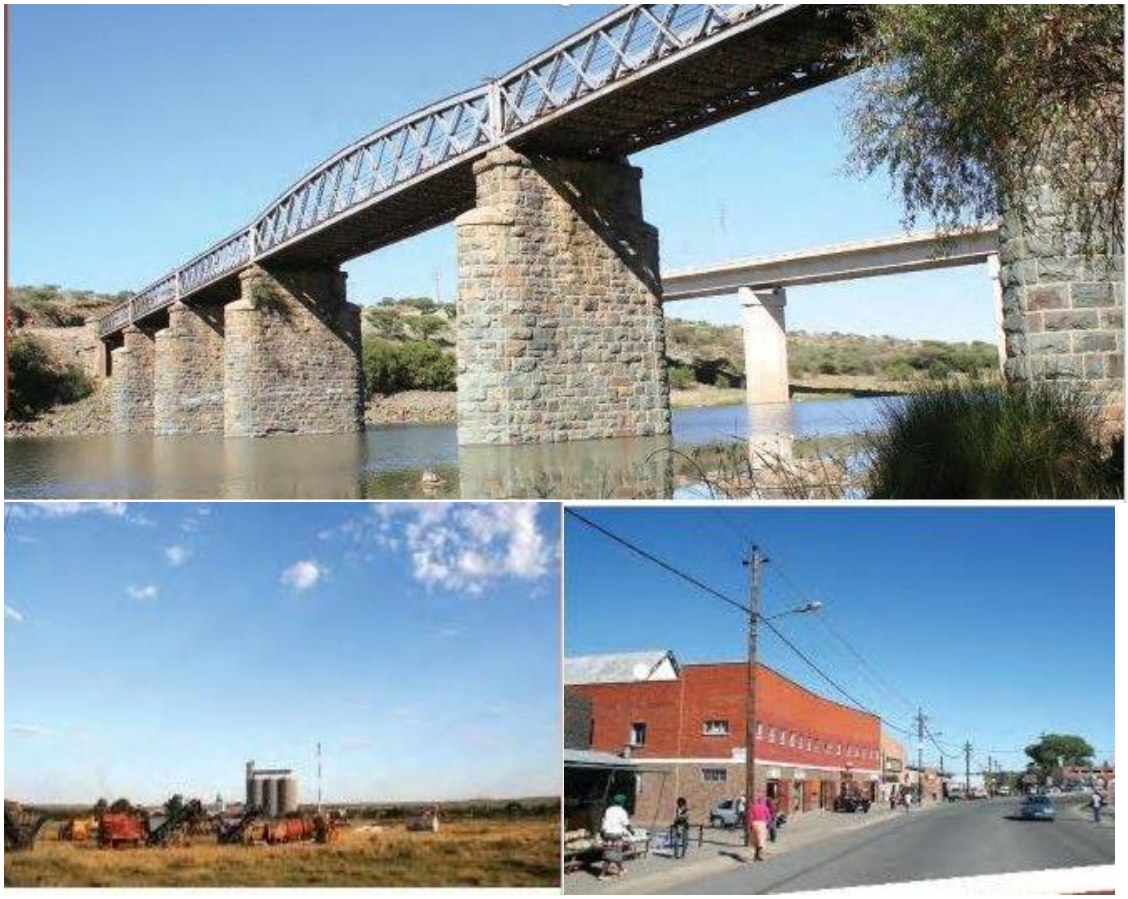

Figure 1.1: Top: Barkly Iron Bridge (the first bridge to span the Vaal River). Bottom left: Agriculture is the area's main industry. Bottom right: Barkly West Main Street. (Source: http://www.dikgatlong.gov.za/index.php/tourism)

Barkly West is located on the north bank of the Vaal River about 35 kilometres from Kimberley. This small town is also the administrative district of the Dikgatlong municipality. Other towns under Dikgatlong in the region include Delportshoop, Longlands, Winsorton, Ulco and Sydney-on-Vaal. The region depends on livestock, irrigation farming and commercial mining to drive the districts economy (Dikgatlong Local Municipality, 2016).

Barkly West is a small town with an estimated population of 58 330 in 2015 from the reported 42 069 in 2010 (Dikgatlong Annual Report, 2015-2016). The report further indicates that 66.31% of the population is aged between 0-34 years. In terms of

educational levels, 12.83% constitutes those with Grade 12 and only 1.64% with higher education levels (Census, 2011). According to the Dikgatlong Municipality Spatial Development Framework Review of 2014-2019, the municipality has the highest unemployment rate of 39.7% within the district compared to other local municipalities. The contributing factor for such a low level of employment is due to a high percentage of the labour force who have not obtained Grade 12, which results in an unskilled labour force.

Barkly West is filled with rich heritage that is reflected in its historical buildings and attractions (Northern Cape Info, n.d.). Key attractions include the Barkly West Iron Bridge which has been erected across the Vaal River in 1885. The Canteen Kopje is the first site in South Africa where alluvial diamond diggings took place in 1869 and is declared a National Heritage Site (Dikgatlong Local Municipality, 2016). Furthermore, the Good Hope and Mattanu private game reserve is also a key attraction of the town.

1.1.2 Research question, sub-questions and objectives

Table 1.1 below shows the research question, sub-questions and methods used to address these. Additionally, objectives are also listed for questions posed to the research problem.

Table 1.1: Research question, sub-questions and objectives

Primary research question	How can the PAC model in the rural context be strengthened to improve the adoption and uptake of ICTs?	
Research sub-questions	**Method/s**	**Objectives**
1. What is the digital divide? 2. What has been the historical purpose of public access centres in addressing the divide?	Literature review	To analyse the public access centre landscape so as to establish a contextual foundation for the research

3. What are key theories, models and frameworks related to ICT adoption?	Literature review	To establish a primer from the literature in order to develop a theoretical frame for the research
4. Which of these theories lend themselves to studying ICT adoption in a public access centre context?	Literature review	To select the most suitable framework for this study
5. What is the understanding of community members of a public access centre?	Focus groups	To identify specific social and other constructs at a community level which are related to technology adoption
6. What are the factors which promote and inhibit the use of ICTs at a typical public access centre?	Focus groups, structured survey	To identify relevant factors associated with the adoption of ICTs at public access centres
7. What are the key issues which are associated with adoption of technology at a community level? 8. How do they relate to one another?	Analysis and synthesis of quantitative and qualitative data	To identify related factors relevant to technology adoption at community level.
9. How do the challenges associated with technology adoption relate to access, capability and environmental issues?	Analysis and synthesis of qualitative data	To identify these challenges in order to address issues of access, capability and the environment

1.1.3 Research aims

The main aim of this study is to gain an understanding of the adoption of ICTs at public access centres in a rural context. This will allow for the identification of factors that enhance the diffusion, uptake and use of ICTs at public access centres. The study also aims to provide evidence to support the development of more robust policy regarding community-based ICT programmes and the achievement of universal access goals.

1.1.4 Context of public access centres (PACs)

To understand the issues relating to sustainable public access centres in rural communities this study aims to explore the adoption of ICTs through literature regarding technology adoption models, ICT4D and diffusion of technology. The success rate of public access centres is mostly influenced by how communities adopt and use these technologies. Telecentres or public access centres (PACs) are known for providing services to rural and underserviced communities such as internet access, facsimile and photocopying services, video facilities and in some cases, ICT training as well (Chisango *et al.*, 2014; Furuholt & Saebo, 2017; Kapondera & Namusanya, 2017).

For ICT to reach its full capacity with regard to social and economic development, the mere presence of it is not enough. According to Obijiofor (2009), the uptake and use of new technologies can thus be linked to economic growth and development. Furthermore, Gomez *et al.* (2012) assert that the key in empowering the poor in South Africa is to equip them with the necessary resources so that they are able to lift themselves out of poverty. A good example of such an initiative is the Cape Access project in South Africa where a telecentre programme has been established through community buy-in and participation (Ali & Bailur, 2007; Gomez *et al.*, 2012). Regardless of telecentre programmes such as the aforementioned in South Africa, Attwood and Braathen (2010) bring our attention to similar problems in telecentres identified in previous decades by Benjamin in 2001. The telecentre problems

particularly relate to functional technology and equipment, good governance and power relations, managers and responsive facilitators, financing options beyond user financing as well as needs and social norms (Attwood & Braathen, 2010). It therefore becomes evident that a technological approach for public access centres is not enough on its own for development.

1.2 Overview of the digital divide in South Africa

South Africa is developed in an uneven manner where most people in rural areas primarily depend on agriculture for their livelihood (Chisango & Lesame, 2017) while most urban areas are driven by information to which the residents have access. Moreover, Modimogale and Kroeze (2011) believes that South Africa faces similar challenges as other developing countries such as economic and social issues as well as the integration of ICTs, especially to the marginalised. Modimogale and Kroeze (2011) note that two of the most prevalent problems of South Africa in relation to the digital divide is due to high connectivity costs as well as the infrastructure that is still lacking.

Research has consistently shown that South Africa remains a deeply unequal society, especially with regard to ICT contribution to eliminate poverty and reduce inequality (National Integrated ICT Policy White Paper, 2016). The problem of the growing digital divide is further worsened by the situation of rural areas being underdeveloped and services such as electricity and telephone lines remains a need (Modimogale & Kroeze, 2011). Some of the challenges facing people in rural communities are poor infrastructure, financial constraints, ICT skills shortages, language barriers and socio-cultural factors. Therefore, this study informs efforts made by the government and policy makers in understanding the citizens before deploying ICTs, especially in rural communities. The digital divide can also be dealt with if an understanding of those divided from the information society are understood and services provided accordingly.

1.2.1 Overview of public access centres (PACs)

In South Africa, the government and private sector have been providing basic computer services and internet access to communities in the form of public access centres (PACs) (Uys & Pather, 2016). This provision has been the responsibility of the public entity USAASA (Modimogale & Kroeze, 2011) which was founded through the Telecommunications Act of 1996 to ensure universal IT access to the marginalised (Chisango & Lesane, 2014).

By 2000, USAASA was able to help establish about 65 telecentres, each comprising about four computers, telephone lines and access to the internet, especially in underserviced areas (Attwood *et al.*, 2013). Furthermore, in 2007, USAASA began a programme that looked at restoring how existing telecentres functioned before they could hand over their maintenance and administration to local entities (Attwood *et al.*, 2013). This followed a number of difficulties for both USAASA and the earmarked local entities which led to USAASA being given the responsibility of facilitating the delivery of ICT infrastructure (Gomez *et al.*, 2012). Attwood *et al.* (2013) highlight the need to look for alternatives, given the varied outcomes of PAC provision.

Furthermore, it is reported that the governance of the ICT sector and how it is regulated have been spread across a number of entities which include the Ministry of Communications ICASA, ZA Domain Name Authority (.zaDNA) and the USAASA, resulting in the overlap and duplication of roles and a lack of coordination among these entities (National Integrated ICT Policy White Paper, 2016). In order for universal access to reach the underserviced communities, government policy, which supports this provision of ICTs, needs to be clear. To gain an understanding of the adoption of ICTs the next sections provide an overview of some of the key concepts inherent to this study.

1.3 Technology adoption

According to Khong *et al.* (2009), adoption is a decision taken by an individual to fully utilise an innovation and rejection as a decision to not use it at all (Rogers, 1983). A considerable amount of literature shows that the Unified Theory of Acceptance and

Use of Technology (UTAUT) is the most commonly used model in understanding the adoption of ICT (Zhan *et al.*, 2011). In addition, the UTAUT also incorporates its predecessor, the Theory of Acceptance Model (TAM), which has also been able to study adoption of ICT across different contexts (Straub, 2009). The UTAUT model has identified all factors that are deemed pertinent in an individual's intention to use or the decision to actual usage of information technology (Venkatesh *et al.*, 2003). According to Schaper and Pervan (2007), in comparison with other models which explain about 40% of technology acceptance behaviour, the UTAUT has been able to explain about 70% of how users accept technology and their behaviour after acceptance.

According to Kabbar and Crump (2007), technology should encourage people to be part of an information society instead of entertaining the view that it is an end solution. Kabbar and Crump (2007) further explain that the success of the use of technology among the disadvantaged relies primarily on how resources are managed. Obijiofor (2009) is of the opinion that, without proper guidelines with regard to how new technologies are implemented in developing countries, the future generations in such a society will be left behind. ICT adoption can bring about many benefits for people living in disadvantaged communities because of its ability to open up the knowledge domain. For the sustainability of public access centres the local community needs to be the drivers of such initiatives in order to secure continued use and uptake of ICTs.

1.4 Diffusion of technology

The contribution of ICT to economic growth relies on technology usage and how widely it is diffused (Sidek, 2015). The diffusion of technology ultimately means the spread of a new technology and acceptance thereof. According to Avgerou (2010), the reasoning behind diffusion of technology is associated with the assumption that technologies are independent from the social environment that gives the rise for the technology to be transferable. Weilbach and Byrne (2009) describe diffusion as the process of implementing the decision to use technology.

For the purpose of this study, the technology in question is the use of computers, laptops, the internet and other related technologies. Straub (2009) states that an

innovation has characteristics specific to that innovation. According to Vasseur and Kemp (2015), these characteristics relate to how easy the innovation is to use and how compatible it is with the lifestyle of an individual or community. The assumption is that the diffusion of an innovation spreads rapidly, depending on how well it is received. Conversely, Jagodic *et al.* (2009) allude that diffusion of an innovation more especially relating to ICT can bring about hesitation from the community. According to Roger (1995), diffusion comprises processes which are planned; more so that, through the diffusion of an innovation, people's behaviours are expected to change (Jagodic *et al.*, 2009). Straub (2009) adds that the adoption theory mainly observes the choices that lead an individual to accept or reject an innovation. Furthermore, adoption of an innovation relies on the extent to which it will be integrated into the appropriate context.

1.5 Research design and methodology

This study investigated factors contributing to the uptake and use of ICTs in public access centres in rural communities. A qualitative and quantitative approach was implemented to conduct this research. This study then applied these approached in two phases. Phase one was to ascertain the relationship between factors identified which led us into phase two which allowed this study to seek an in-depth understanding into human behaviour and the causes that direct that behaviour (Hossain 2011).

1.5.1 Research design

This study aims to investigate the factors contributing to the low uptake and use of ICTs at public access centres in rural communities and the reason why people are not using these centres. The research design to be used for this study includes focus groups as well as a survey questionnaire. The aim is to draw a comprehensive understanding of adoption issues in relation to PACs. The literature is also used to develop a theoretical lens for the study that informs the questions probed in the research instruments. The concepts informing the questions for the focus group and survey questionnaire are primarily based on the UTAUT model. These questions cover

all major concepts of this model with minor adjustments in the questionnaire. All data collected is analysed by using qualitative and quantitative analysis techniques.

1.6 Delineation

This research explores ICT adoption in public access centres, specifically in rural communities, and the reasons for the failure to sustain such centres. A single community in the rural area of Barkly West in the Northern Cape was selected for this study. Despite being the hometown of the researcher, Barkly West was deemed a suitable choice because it faced similar challenges as other rural communities where ICT adoption was concerned. Moreover, the rural town had one PAC where community participation remained a crucial precondition for its operation. Furthermore, issues of sustainability were also identified as major challenges by the local people.

1.7 Contribution of the research

The research provides evidence that supports policy regarding community-based ICT programmes. Furthermore, this study explores factors contributing to the uptake and adoption of ICTs in the rural context. The analysis from this research should make it possible to compare the findings with already existing models to measure adoption.

1.8 Overview of the study

1.8.1 Chapter One – Introduction and Background

This chapter provides an overview of the research. It includes the research problem, research question, sub-questions and objectives as well as the research contribution.

1.8.2 Chapter Two – Literature Review

This chapter explores the key theories regarding the adoption of technologies and gives an overview of the digital divide in the South African context. This chapter also looks at policies regarding ICTs in South Africa. Furthermore, this chapter discusses challenges and success factors regarding public access centres in a rural context. Finally, an analysis of the application of technology adoption models is explored which contributes to the development of the conceptual framework.

1.8.3 Chapter Three – Research Design and Methodology

This chapter outlines the research design and methodology. The rationale for the chosen methods is discussed. Additionally, the research strategy is explored. This chapter also provides detailed sampling processes and procedures; moreover, how the focus groups are conducted. It includes interview techniques as well as how the interviews are designed. In addition, the quantitative and qualitative data analysis approaches are discussed and summarised. Finally, the ethical considerations employed are explored.

1.8.4 Chapter Four – Findings and Discussion

After taking into account the research problem, objectives and questions, the findings are addressed in this chapter. The findings are discussed through making reference to the conceptual model framing this study. Additionally, external factors not covered by the model framing this study are addressed. The categories are further discussed to provide evidence to the research questions. Finally, a summary of findings is provided.

1.8.5 Chapter Five – Conclusion

Based on findings and discussions in the previous chapter, this study makes inferences based on the evidence provided. For this single case study, factors are identified that contribute to the uptake and use of ICTs in this rural community. These should inform policy makers for future PAC deployment projects in rural communities. Finally, areas for further research are identified, including limitations of the research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter gives an overview of the recent history on the adoption of ICTs, especially in the PAC context. It starts off by discussing the concept of the digital divide in the South African context. It then goes on to discuss policies aimed at addressing the digital divide and how these policies have impacted the PAC initiative. Moreover, this chapter explores the PAC experience, and discusses challenges and success factors. In order to explore factors contributing to the uptake and use of ICTs in rural communities, the literature discusses models applied to understand adoption in different contexts. Finally, a conceptual framework is chosen after being informed by literature.

2.2 Digital divide

The subject of digital divide became a central issue in the mid-1990s (Van Dijk, 2006) after the expansion of the internet (Vehovar, Sicherl, Husing & Dolnicar, 2006). Digital divide has been studied in different contexts until now. Accordingly, DiMaggio and Hargittai (2001) state that the concern from policy makers and scientists started around the same time when the distribution of the internet as a mass medium emerged. Van Dijk (2006) draws our attention to more general concepts used before the time, such as inequality in information, the gap that existed in information or knowledge as well as computer or media literacy. According to Van Dijk (2006), these identified inequalities in the digital divide research may still be used as background when addressing the digital divide.

Traditionally, these information divisions have been labelled differently, namely haves and have-nots, want-nots and internet drop-outs among other things (Kruger & Gilroy, 2013). The distinction between the types of digital divides lacks clarity within research. It therefore suggests a general lack of historical perspective in studying the concept of digital divide. Furthermore, the above is regarded as oversimplifying the issue, given

the historical background of South Africa and the harsh realities associated with the degree of access to ICTs that still exists (Fourie, 2008).

The digital divide remains an issue in developing countries where most rural communities remain isolated in this fast-growing knowledge domain (Oyedemi, 2012). The digital divide is broadly defined as the gap between those who have sufficient access to ICTs such as computers and the internet, mobile phones, computers and traditional landline telephone technology (Odendaal *et al.*, 2008) and those without it. Apulu (2012) further adds that the limit to access to ICTs could be due to socio-economic influences as well as geographical reasons. Gudmundsdottir (2010), on the other hand, refers to the digital divide as the lack in accessing essential information as well as the social and human resources associated with using ICTs in a meaningful way. Yu (2011) describes the digital divide as the disparities between individuals or community members in gathering information resources within a society in order for the community to benefit and for their own development. As pointed out by Van Deursen and Van Dijk (2011), in the past, the digital divide could simply be addressed by providing access; however, it has become harder, especially with regard to the consideration of skills required to use these technologies. In addition, Towsend *et al.* (2013) have found that the digital divide is further widened because urban areas continue to benefit from improved technologies while rural areas are left behind. Particular issues relevant to rural people are not considered when the digital divide is addressed.

According to the Fourie (2008), ICTs are vital factors in any socio-economic development strategy. Sithole, Moses, Davids, Parker, Rumbelow, Molotja and Labadarios (2013) add that ICTs have been able to offer enormous opportunities to reduce social inequalities but have not been a universal solution for all development problems. The areas that still need much attention include income generation, the reduction of poverty, education, health, the environment and gender equality (Sithole *et al.*, 2013).

2.2.1 Overview of ICT Access in South Africa

Policy makers have made access the focal point in addressing the digital divide but it has not reached a lot of rural households. Based on the ICT survey of South Africa census data of 2011, 8.6% of the population have access to the internet at home and 64.8% with no access at all (see Figure 2.1). In addition, the General Household Survey found that close to six-tenths of South African households (59.3%) had a minimum of one member in a household who was using the internet at home, in the workplace or at an internet café (General Household Survey, 2016).

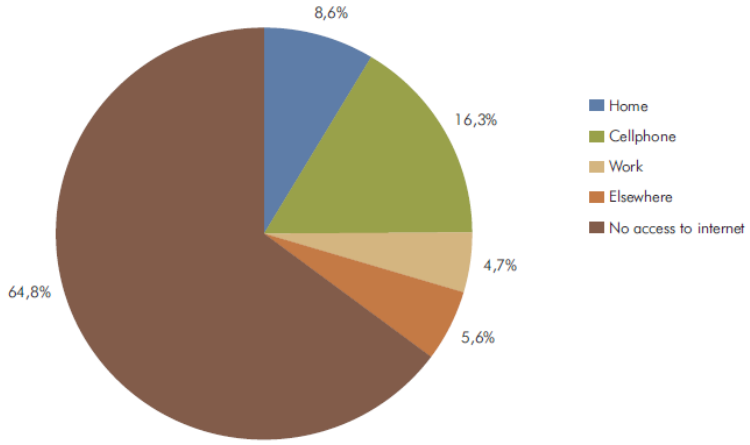

Figure 2.1 – Percentage distribution of households with access to the internet (SA Census, 2011)

South Africa is ranked 88th on the ICT Development Index (IDI) among 175 countries with its sub-index of skills at 79, access at 90 and use at 79 respectively (ITU, 2016). Compared to figures of 2013, there is a slight improvement from 2013 to 2016 in all three sub-indices, putting the overall IDI at 88 from 90 in 2013. This, however, does not mean South Africa is ready in terms of ICT since there is a mere slow improvement years later.

According to ITU (2013), 30% of the South African population could afford a handset-based mobile-broadband subscription for each household member whereas 70% could not afford a single subscription. There is a general lack of fixed broadband in South Africa because of price, contributing to the low levels of connectivity. Because

of the lack of fixed broadband infrastructure, wireless broadband has become very important in South Africa, with operators reporting its penetration reaching higher levels of 29% by end of 2013. Picot and Wernick (2007) describe broadband as the fast, uninterrupted enabling of various services using different end-user devices. In accordance with ITU (2013), improving the affordability of fixed broadband prices in Africa is considered feasible compared to other regions even without the Broadband Commission target being met. These targets were approved in 2011 at the Leadership Summit to assist in promoting digital inclusion in the country (State of Broadband, 2014). These targets were put in place to monitor advancements in broadband network roll-out as well as the affordability of services around the world (State of Broadband, 2014). The targets for 2015 included:

- Making the broadband policy universal and affordable
- Ensuring that homes are connected to broadband
- Ensuring people are online
- Reaching gender equality in access to broadband by 2020

Affordability is therefore a key issue in the South African rural context which makes the PAC model still relevant. In South Africa, the public access centre model has been used to bring access to rural communities but it has not reached its full potential yet. According to Gomez *et al.* (2012) and Oyedemi (2012), public libraries are found to be the least visited places to access internet services compared to internet cafes, cell phones and homes. Research on this subject of providing access of ICTs without careful consideration of usage and uptake has been mostly restricted.

Gomez and Pather (2012) assert that, in the South African context, the key to empower the poor and marginalised is to provide them with the necessary resources that will help in lifting themselves out of poverty. This can only be achieved when research is directed towards understanding the needs of rural people first. Obijiofor (2009) has also identified a strong link between uptake of new technologies and socio-economic growth and development. Bates, Malakoff and Kane (2012) state that access to ICT infrastructure as well as usage and skills is more favourable in poor and rural areas

where it has a significant impact but in South Africa, the rural people are the most marginalised. This therefore suggests that rural people do not see the value of home broadband internet service, since it is overshadowed by cost. Furthermore, as part of the National Development Plan (NDP) 2030 targets, education, training and innovation are highlighted as significant in order for South Africa to establish and develop life-long capacity and skills among its people (Government Gazette, 2014). These targets will assist in making programmes available that are directed at ICT for the under-serviced people to be utilised and sustainable over time.

2.2.2 ICT policies in South Africa

Connectivity is recognised as the third utility in South Africa along with power and water. The demand for connectivity has increased rapidly, creating opportunities for development approaches to evolve over time (State of Broadband, 2017). In addition, the government has realised the changes in social, political and economic transformation and inclusion, thereby opening up to ICT policies to change. According to the NDP 2030, a new policy framework is required in order to establish a society that is fully connected (Government Gazette, 2014). The idea is to have a fully integrated ICT policy that ensures the objectives of adoption, social appropriation and the effective use of ICTs which translate into sustainable social and economic improvements (Department of Telecommunications and Postal Services, 2015). The effectiveness of these ICT policies can be exemplified by ensuring that different players work together in order to attain achievable results (Government Gazette, 2014). This will require proper investment in the ICT sector as a key policy (Government Gazette, 2014) in conjunction with universal access, diversity, transformation and empowerment of historically disadvantaged individuals (Teljeur *et al.*, 2003). The Department of Telecommunications and Postal Services (2015) states that policymakers need to realise that citizens are key beneficiaries of services and should be a huge part of the policy-making process.

The South African government released a National Broadband Policy draft in April 2013 with a vision to ensure universal access by 2019, making sure all South Africans have access to broadband individually or as a household (Government Gazette,

2013). According to the Government Gazette (2010), the improvement of a broadband policy will make sure that South Africa stays in line with trends around the world to ensure an all-inclusive information society for all.

In 2007, the cabinet adopted the Information Society and Development Plan (ISAD) as a framework for building an inclusive information society. Given the absence of broadband in certain areas, the government would intervene among universal service providers of the Electronic Communication Act of 2005, while underserved areas were to be the responsibility of the USAASA. Government also approved allocation of R500m to Sentech in 2007 as an initial capital investment for the roll-out of s national broadband network (NBN). Sentech was mandated to ensure that the broadcasting signal distribution would focus on fast tracking the implementation of government ICT interventions in accordance with the NDP and the strategic integrated project for the expansion of access to ICTs (South African Government, 2014/15).

According to the Department of Telecommunications and Postal Services (2015), broadband connectivity has become the main target for universal service obligations (USOs) in terms of connected households through community broadband centres for all citizens (National Integrated ICT Policy, 2014). USOs serve as tools to promote the availability of infrastructure and services to all citizens. In addition, one of the mandates for the national broadband policy, also known as SA Connect, is to ensure that universal access, especially to rural areas, is provided (Ellipsis, 2015). SA Connect gives expression to the country's vision in the NDP of seamless information infrastructure by 2030 (SA Broadband Policy, 2013).

In addition, Yonazi, Kelly, Halewood and Blackman (2012) are of the opinion that ICT policies are not always accompanied by detailed implementation plans or commitment from the government. For instance, policies concerned with ICT and education are not complemented by relevant policies such as telecommunications that support such developments. These types of disparities have contributed to the state of ICT initiatives, especially in a rural context. Notwithstanding the aforesaid, steady progress has been achieved in a number of countries that have worked on their policy. This is

despite targets set in the National Broadband Plan not being fully met (State of Broadband, 2017).

2.2.3 Universal access in South Africa

The South African ICT sector is partially state-owned by the Departments of Communication, Public Service and Administration as well as Public Enterprises, among others, to provide access points for ICT in rural areas (Government Gazette, 2014). The South African government committed itself for over a decade to achieve universal access, especially for the poor in disadvantaged areas through a number of programmes (Attwood *et al.*, 2013). Initiatives such as the Strategic Infrastructure Plan (SIP15) is an example. The SIP15 initiative obligation was to ensure that households receive broadband coverage by 2020 through the establishment of core points of presence and fibre connectivity at municipality level (Department of Telecommunications and Postal Services, 2015). It was envisaged that this would result in penetrating the network into deeper rural areas. The Department of Telecommunications and Postal Services (2015) was of the view that a reasonable approach to address this issue of access was for government to co-invest in townships for rural access.

The Cape Access project is also a good example of the public access program that involves community buy-in participation (Ali & Bailur, 2007; Gomez *et al.*, 2012). The Cape Access project enables communities to access, utilise and share information and knowledge in order to empower themselves. Another interesting programme is called the Digital Doorway which offers a range of free-standing computers which are operational in robust conditions and secured enough to not be affected by extreme weather conditions in disadvantaged areas (Thinyane *et al.*, 2006). In addition, Thinyane *et al.* (2006) add that these computers offer freely accessible computers where even children can teach themselves without any formal training. Digital Doorways are also referred to as public access centre (PAC) venues for disadvantaged communities in order to provide access to ICTs and the benefits associated with using them (Gomez *et al.*, 2012).

Notwithstanding the above, the government agency USAASA has been operational for the last two decades regardless of its inability to deliver on its mandate (Gillwald *et al.*, 2012). Furthermore, USAASA reported to Parliament in 2011 that none of its targets were met in many of their projects. Mahlong (2011) brings our attention to projects that have failed during the time; one of which is the development of public access centre. This shows that USAASA has been operating without clear guidelines with regard to having a strategy for universal access and how to utilise resources (Gillwald *et al.*, 2012). In a policy paper, Gillwald *et al.* (2018) mention that traditional universal access policies, whose primary focus is on supply-side interventions, are known to create some of the necessary conditions for access and often fall short on the demand side.

Moreover, the barriers that limit meaningful access are often overlooked which also contributes to the digital inequality. Inequality exists not only between people online and offline but also between those who have the skills and financial resources to use the internet optimally and those who do not. Consequently, Gillwald *et al.* (2018) have found that the key component in achieving universal access and usage is affordability. This is especially evident in the level of internet penetration at PACs in rural communities.

2.2.4 Public access centres (PACs)

The objectives of PACs, also known as telecentres, are explicitly to develop connectivity among marginalized communities and to bridge the digital divide (Parkinson, 2005). According to Benjamin (2001), Heeks (2002) and Proenza (2002), these PACs are made up of a number of structural components (human, political and technical) that need to work together in order to achieve a functional telecentre. These components have impacted on the delivery of PAC services in South Africa as well as in other developing countries with the same challenges (Attwood *et al.*, 2013). Chigona *et al.* (2011) and Gomez *et al.* (2012) propose that, in light of the growth in the use of smartphones, perhaps universal access through telecentres needs to be assessed. Gillwald *et al.* (2018) draw our attention to the proposal by SA Connect of leveraging the growing availability of smart devices to enable citizens to be online by supporting

the roll-out of free public Wi-Fi hotspots outside urban areas. SA Connect is, however, being undermined because of its failure to meet targets to connect public buildings in under-serviced areas.

The importance of continuous evaluation of PACs needs to be realised in order for them to stay in line with community needs (Mphahlele & Maepa, 2003). Regular updates on these evaluations need to be made available to local people to encourage trust in the PAC programme.

2.2.4.1 Critical success factors and challenges of PACs

Mutula (2010) states that, in order for ICTs to positively transform the lives of communities, they need to be deployed wisely. Through researching the areas where public access centres are placed, USAASA then has an indication of whether placing a telecentre in an under-serviced area will be sustainable in the first place. Community participation for their own development is critical in public access centre deployment. The problem with public centre deployments in rural communities has always been the inability to significantly transform the communities they serve, hence the failure reports.

Mutula (2010) also states that the failure of PACs may be attributed to the lack of representation of the target audience; lack of attention to infrastructure, training and technical requirements; deploying complex technologies and a failure to contextualise ICT to meet specific needs. PACs are also known to fail because they don't strengthen existing social and organisational community structures for collective empowerment (Chisa & Hoskins, 2014). PACs are often seen as new ideas imposed in their own communities and are not relevant to them. Despite this, USAASA is actively providing rural communities with services they do not seem to need. The deployment thereof has not contributed in the digital divide ever since its existence; instead, money is wasted (Gillwald *et al.*, 2018) and no lessons learned from the past.

Structural constraints such as computers and internet not always working seem to be the dominant reasons why PACs fail (Attwood *et al.*, 2013). The issue of maintenance of PACs seems to be the most problematic issue. This is due to companies contracted

to service PACs being too far away from the area and taking too long to come and resolve recurring problems or having to come fix one computer at a time. Therefore, this creates uncertainty of especially those who use the PAC facilities to travel from far only to find computers and internet not being functional.

The management of PACs also has a great impact on the success or failure thereof. In some instances, telecentre managers are not originally from the area, making them ineffective in direct governance issues (Attwood *et al.*, 2013). This is due to the decision to integrate the use of technologies without linking good governance on how to manage it on behalf of the general public (Mutula, 2010). The term *governance* has become a prominent topic today and occupies a central place in the development discourse. Gisselquist (2012) describes good governance as systems that are in place to ensure capability, responsiveness, inclusivity as well as transparency. As cited by the United Nations former Secretary-General, Kofi Annan, good governance can be viewed as “the single most important factor in eradicating poverty and promoting development” (Anderson et al, 2018:434).

The implementation of PAC in rural communities has proven to lack good governance and can certainly benefit from it when considered as an important policy. Furthermore, good governance in the context of PACs refers to initiatives being deployed to follow specific guidelines that ensure their success. This will enforce the motion of accountability, among other things. This is important, especially for developing countries where resources are always scarce and demand is greater than supply (Biswas, 2013). The failures in PACs thus far suggest that policy makers responsible for the deployment of PACs have not been able to put proper governance structures in place in relation to the implementation of PACs in under-serviced areas (Gisselquist, 2012).

Research has reported that 95% of municipalities have ICT frameworks defined but none of these have been implemented (Delport *et al.*, 2015). The overseers of the ICT framework in how community affairs are managed comprise a number of actors like the voting public and government agencies (Gisselquist, 2012). There seems to be a general exclusion of the voting public in matters about their communities. This has

also contributed greatly to the success of services provided to the general public. The lack of effective governance has led to services not reaching the intended people; more importantly, services relating to ICTs which can add value to the lives of ordinary citizens.

2.3 Information and communication technologies for development (ICT4D)

The public access centre initiative relates directly to ICT for development in that these centres have the potential to assist the rural people in their development. Information and communication technologies for development (ICT4D) concerns itself with the direct application of information technology approaches in order to reduce poverty within the field of socio-economic and international development (Chao & Yu, 2016). This study, therefore, falls within the broader field of ICT4D.

There are many aspects to ICT4D but in essence all of the research done in ICT4D is about investigating how technologies are used in community contexts, and how they may lead to development. One area of ICT4D is community informatics (CI) which deals with the application of ICT to enable and empower community processes (Ginger, 2015). The application of the CI approach has the ability to encourage sustainable public access centre initiatives locally where adoption of ICTs is a problem. CI is considered a stepping stone in addressing issues of the digital divide, since it involves the communities within which these public access centres are supplied. Gurstein (2007) agrees that CI is built of and from community needs by responding to and integrating community resources and skills meant for the economic and social eco-systems of that local community.

Public access centres are often located in developing countries as central points where community organisations and processes take place. According to Gurstein (2007), having public access centres as part of an ongoing community process where services are managed through local capacity, can be seen as a long-term development process. Therefore, an understanding of the local community values coupled with the application of community informatics should be central in deploying public access centres in any community (Mutula, 2010). CI allows for networks to

develop in such a way that participants contribute to the diffusion of innovations potentially influencing more adopters. This framework also enables policy makers to assess the impact of ICTs on society in order to fully understand what works and what does not.

According to Carroll *et al.* (2015), CI is especially concerned with the challenges and opportunities for human communities in the increasingly technology-dominated age. This approach allows for rural people to be the drivers of change within their communities. Any initiative steered by people who will benefit from it, will make it possible for those initiatives to remain sustainable. The social challenge, therefore, becomes that the local people can do essential things with the technology to which they have access (Foth, 2014).

2.4 Adoption of technologies

According to Teich (2000), technology is such a universal and complex system that the cultural, political, social and intellectual aspects affect every part of modern human life. Rogers (1995), on the other hand, asserts that adoption is a decision to fully make use of an innovation in a strategic way. Technology adoption is the willingness of users to accept and make use of available systems (Davis, 1989). A further elaboration is given by Davis (1989) that the aforementioned is primarily determined by users' perception of how easy it is to use a particular system. Moreover, Ghorab (1997) adds that a user's perception can also be influenced by external factors, such as how the system is designed and its characteristics; how involved the user is in the system development as well as the reasoning behind how the system has been implemented.

According to Kabbar and Crump (2007), technology should not be viewed as a way out but should rather inspire people enough in order to fully participate in the information society. In addition, Kabbar and Crump (2007) state that the successful use of technology among disadvantaged groups to promote social inclusion relies primarily on the management of resources. Obijiofor (2009) agrees and adds that the implementation of new technologies is equally important, as this will make sure that future generations in such a society are not left behind. Kohler (2009), on the other

hand, believes that potential users or adopters should be given an opportunity to practise with innovation before deciding whether to adopt it or not. Adoption of technology has been studied over time and a number of theories explain the process.

In this study, the adoption of the technology process is therefore the focal point in addressing the primary research question.

2.4.1 Theories and frameworks in relation to ICT adoption

This section reviews a selection of theories and frameworks that have the potential to understand ICT adoption in relation to this study. Three theories are selected, given they are deemed to have a reasonable alignment with the study research problem.

2.4.1.1 Theory of reasoned action (TRA)

The foundation of the theory of reasoned action (TRA) framework is provided by the distinction between beliefs, attitudes, intentions as well as behaviours (Glanz *et al.*, 2015). This can be further explained as a feeling of an individual to perform a particular behaviour coupled with support and the belief that one can in fact perform that behaviour (Yzer, 2012). Additionally, it also becomes more likely for an individual to engage in the said behaviour (Yzer, 2012). Ajzen and Fishbein (1980) believe that an individual's attitude determines the performance of a behaviour in due course. Khanh and Gim (2014) agree that an individual with a belief that transformation is possible is most likely to accept and use the technology. This, coupled with the belief of being able to use technologies, can yield potential adopters but does not guarantee continued use once benefits are fully realised by individuals. TRA is, therefore, a predictive model used in a different discipline to predict individuals' actions, based on certain criterion (Mishra *et al.*, 2014).

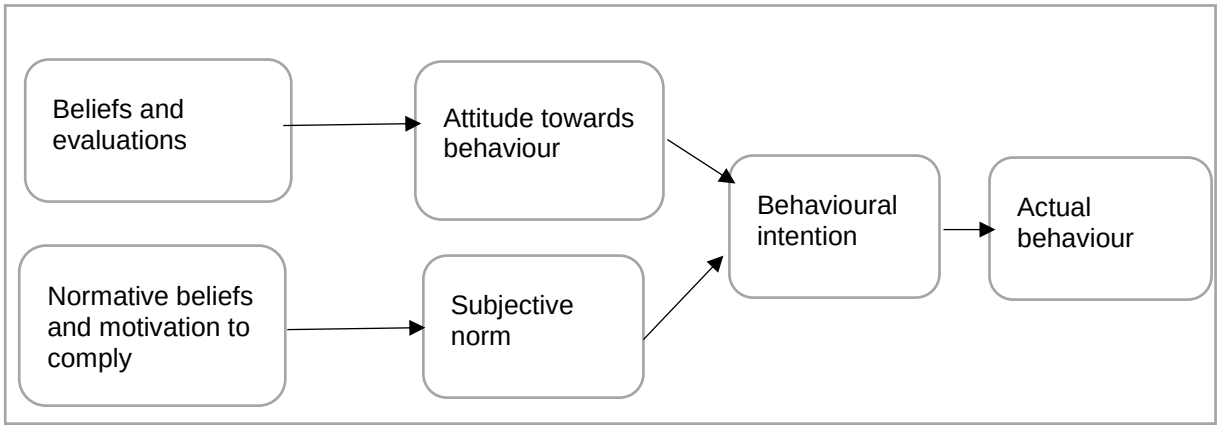

Figure 2.2: Theory of reasoned action (Ajzen & Fishbein, 1980)

As a predictor of actions, the TRA is a useful model when behaviour needs to be realised. In this research, the adoption of technology is being investigated. The above model in Figure 2.2 can be useful in identifying how people in rural areas will react when introduced to new or old technologies. This model can, therefore, serve as an indicator of what rural people need with regard to technology in order for them to facilitate the process of technology adoption in their own communities (Chang, 2009). This study acknowledges that this model alone is not enough to fully understand the technology adoption process within a community.

2.4.1.2 Technology acceptance model (TAM)

The technology acceptance model (TAM), as introduced by Davis *et al.* (1989), is based on the theory of reasoned action (TRA) developed by Fishbein and Ajzen (1975), particularly to explain the acceptance of a user to the different technologies (Ngai, Chan & Poon, 2007). TAM gives an understanding of how external variables may have an effect on one's belief system, attitude and intention to use a specific technology (Nasri & Charfeddine, 2012).

According to Park (2009), the decision to use a particular technology system is directly or indirectly influenced by the user's behavioural intention and attitude. The TAM is built on collective findings that suggest that technology is dependent on user acceptance and use (Ngai *et al.*, 2007). The value in the application of the TAM is that

it allows for external factors to be investigated once found (Hong, Thong, Wong, & Tam, 2001). Oye *et al.* (2014) have also found a limitation of the TAM, namely the ability to not take into account barriers that prevent a user from adopting a particular technology. Furthermore, an external variable that considers how different an individual is, has also received attention over the years in TAM research (Agarwal and Prasad, 1999; Hong *et al.*, 2001; Venkatesh *et al.*, 2000).

In addition, Nasri and Charfeddine (2012) have also found an external variable which considers the support of technology a user receives and which has shown a positive effect on perceived behaviour control. Technology support and its development can, therefore, be regarded as important factors to consider where adoption is concerned, and the lack thereof may impede the adoption of ICTs (Nasri & Charfeddine, 2012). The support of technology speaks directly to the contribution of government in terms of diffusion of technology within certain areas, thus suggesting that, if people living in the rural areas observed a level of support coming from government institutions installing public access centres, they might be more likely to use and adopt ICTs (Tarhini *et al.*, 2016).

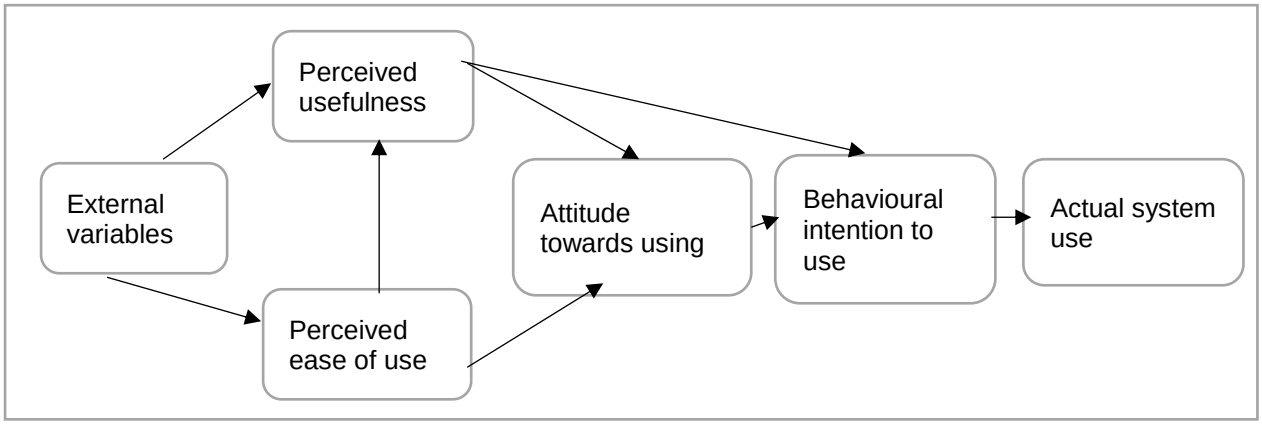

Figure 2.3: Technology acceptance model (TAM) (Davis et al., 1989)

The use of technology depends largely on how it is received and accepted when made available. This will assist in determining the usage behaviour of rural people towards technologies installed in their communities. The model above in Figure 2.3 provides a holistic view of the adoption process in technology because of its ability to look at

external factors not stipulated in the model. These external factors are unique in each case where technology adoption is determined. The reason the TAM is discussed here is because of its unique ability to identify external variables as per context being studied, thus giving a comprehensive understanding of the adoption process in different contexts.

2.4.1.3 Unified theory of acceptance and use of technology (UTAUT)

According to Schaper and Pervan (2007) and Oye *et al.* (2014), the UTAUT can explain about 70% of technology acceptance behaviour, whereas previous models could only explain 40% (Urumsah, 2015). The UTAUT is able to give a unified view of acceptance by combining eight technology acceptance models (Susilo & Kaufman, 2014). These models include the Technology Acceptance Model (TAM), the Theory of Planned Behaviour (TPB), the Theory of Reasoned Action (TRA), the Motivational Model (MM), the TAM, the TPB, the Model of PC Utilization (MPTU), the Innovation Diffusion Theory (IDT) by Touray (2015) and the Social Cognitive Theory (Gupta *et al.*, 2008). The actual UTAUT consists of four determinants of intention and use (Schaper & Pervan, 2007). These determinants describe the motivational factors associated with adoption. Accordingly, Venkatesh *et al.* (2003) describe the determinants as follows:

- *Performance expectancy* – the degree to which an individual believes that using the system will help them attain gain in performance
- *Effort expectancy* – the degree of ease associated with the use of the system
- *Social influence* – the degree to which an individual perceives that important others believe they should use the new system
- *Facilitating conditions* – the degree to which an individual believes that organisational and technical infrastructure exist to support use of the system (Venkatesh *et al.*, 2003).

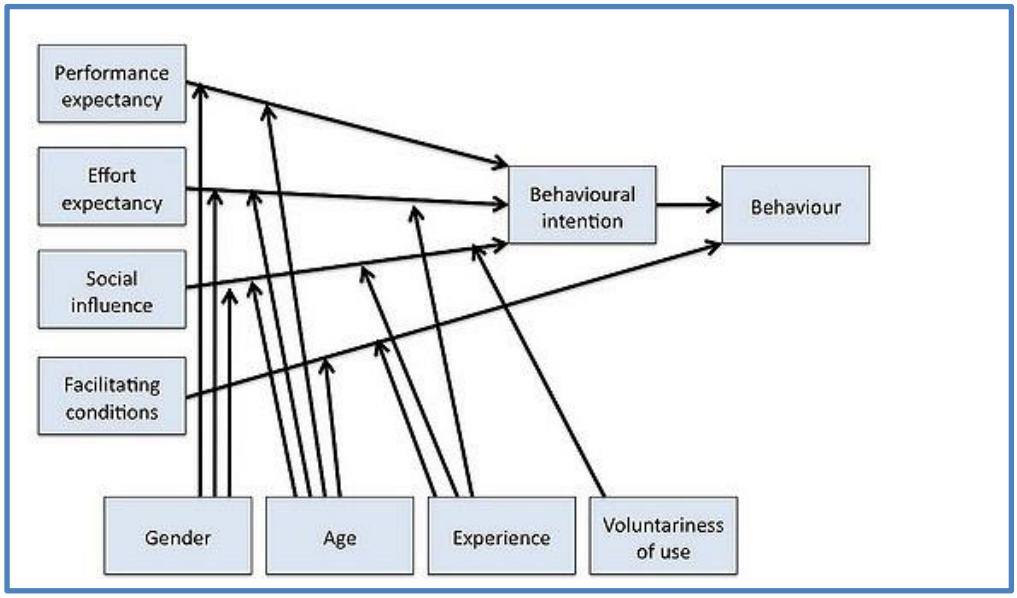

Figure 2.4: Unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003)

The UTAUT has been used in many contexts over the years and reported to have yielded diverse results. Williams, Rana, Dwivedi and Lal (2011) as well as Venkatesh, Thong and Xu (2012) all concur that this is due to the inability to include all constructs at the time, hence the inconsistent result. Researchers are prone to use only constructs applicable to the contexts they are studying. The original UTAUT model mainly focuses on how a user accepts a newly introduced technology as well as how that perception changes over time with gaining more experience (Akbar, 2013). Consistent with the original UTUAT model, this study examines user acceptance in public access centres in a rural context, and how perceptions and adoption decisions change over time.

This theory is discussed in this research because of the amount of bases it covers. The UTAUT model covers eight other models that examine different aspects of behaviour and usage behaviour, thus giving a broader view of the problem being discussed here.

2.4.1.4 Analysis of the application of technology adoption models

Given the problem statement of the study, this section examines technology adoption models, how the models has been applied; key findings as well as models' application to determine the adoption of technology. The purpose of this assessment is to show models that have studied the adoption of technology; also to assess and find the most appropriate model for this study.

Table 2.1: An Assessment of Technology Adoption Models

Author, Year, Model	**Objective of Study**	**Key Findings**	**Assessment of the Application of the Model for ICT Adoption**
Biljon and Kotze (2008), UTAUT	This study researched the influence of culture on mobile phone adoption	Cultural dimensions influence mobile phone adoption and usage	Belief systems have a vast impact on individuals' decisions. A very strict culture may prevent usage of ICTs. ICTs could also be seen as undermining some cultural practices, in particular towards women, for example.
Schaupp, Carter & Hobbs (2009), UTAUT	This study investigated the acceptance of e-filing by American taxpayers	The results suggest that performance expectancy and social influence predict behavioural intention. The study also found that effort expectancy was not a predictor of behavioural intention.	Performance expectancy (PE) is an important predictor of intention of use (Venkatesh *et al.*, 2003; Liu *et al.*, 2014). In this context, the convenience associated with using e-fling can be seen as a gain. For example, these taxpayers save time and can work on other things instead. With regard to social influence, those using e-filing are able to influence others to start using e-filing. The result of effort expectancy (EE)

Author, Year, Model	Objective of Study	Key Findings	Assessment of the Application of the Model for ICT Adoption
			indicates that most taxpayers have some training in computers and EE is therefore not a predictor of behavioural intention.
Attuqquayefio & Addo (2014), UTAUT	To determine the strengths of predictors for students' intention to accept and use ICT for learning and research	This study found that effort expectancy was the only variable that had influenced students' behavioural intention to use ICTs available for learning.	Most students have been exposed to ICTs; so, the results in this study are no surprise. Even in terms of adopting ICTs at college this is more likely to happen because the students' school work requires these ICTs to be used.
Chen *et al.* (2011), TAM	This study reviewed 24 studies to understand the past, present and future of the TAM.	The TAM has proven to be a useful theoretical model in helping to understand and explain user behaviour in information system implementation. This can guide researchers to design different user interfaces for different online customers and consequently achieve high user usage in different application areas.	While some studies have consistent results in terms of technology acceptance, other studies have yielded different results. Over time people and technology evolve; thus, behaviour is bound to change. This study opens up three different views of technology acceptance. These views may serve as guidelines in addressing the issues regarding technology acceptance research.

Author, Year, Model	**Objective of Study**	**Key Findings**	**Assessment of the Application of the Model for ICT Adoption**
Ngai *et al.* (2007), TAM	This study examined the adoption of WebCT. They used 836 university students to test their hypothesis.	The findings show that perceived ease of use is key in intervening variables linking technical support and perceived usefulness, attitude and system usage.	Compared to other contexts a university environment comes with technical support, and the need to use technologies contributes a lot to acceptance. In this context, students are forced to accept and use technologies.
Straub, Keil & Brenner (1997), TAM	They tested the TAM across cultures in three countries.	The results are consistent for two countries, suggesting that the model may not predict technology use across all cultures.	Different cultures have different needs. Some cultures may find that technology enhances their conditions and others not so much. Acceptance is, therefore, based on how useful it is.
Hansen *et al.* (2004), TRA	Predicting online consumer buying of groceries	Strong correlations between attitude evaluation and behavioural intention were found in this study.	Challenges in a new technology can shape the attitude towards it. In this case, the less challenging it is, the more likely it will be to instil a certain behaviour.
Mishra, Akman & Mishra (2014), TRA	To investigate behaviour for the adoption of green information technology	The study found that behavioural intention had influenced actual behaviours positively. External factors such as a person's belief could impact their attitude towards adoption of GIT.	A positive attitude towards technology will ultimately influence the behaviour of an individual. A negative attitude toward technology can also become positive over time.

Author, Year, Model	Objective of Study	Key Findings	Assessment of the Application of the Model for ICT Adoption
Peslak, Ceccucci & Sendall (2012), TRA	To explore social networking behaviour	The study found that attitude towards social networking and subjective norms were positively associated with intentions to use social networking.	Attitude is a strong indicator of a person's behaviour. Perhaps this should first be established in order to get an indication of how individuals will receive new technology.

The UTAUT model has been applied in three different settings in the above Table 2.1. It was able to show the strongest factors in each setting. In one of the assessments above, it is noted that, according to Venkatesh *et al.* (2003) and Liu *et al.* (2014), performance expectancy is an important predictor of intention to use ICTs. Conversely, in a different setting, effort expectancy has been found to be the only predictor of intention to use ICTs (Khalil & Nasrallah, 2014). The key lesson from these findings is that factors that influence the adoption of technologies are mainly dependent on the environment. The findings reported in the above table appear to support the assumption that perceptions of technologies in general are determined by the environment.

As discussed above, the environment ultimately shapes perceptions about technologies. The same result has been found in one of the studies where perceived ease of use is key in intervening variables in technology acceptance. The TAM is also able to help understand and explain user behaviour which can ultimately assist in developing technology innovations specific to the environment. On the other hand, the findings for TRA suggest that a person's attitude can be influenced by what they believe. A positive attitude towards technology is likely to influence behaviour towards it in a positive manner.

The key result from the assessments above shows that individuals' perceptions are largely shaped by the environment in which they find themselves. This has a huge influence on the attitude of the majority of people. The findings also suggest that attitudes can change over time. With regard to the model framing this study, the analysis above shows that the applications of the UTAUT model can assist in pinpointing the aspects that need work in the specific environment

2.5 Research framework

In light of what this study is trying to achieve, the framework that is deemed to be the most suitable for this study is mainly based on the UTAUT model because of its ability to encompass a variety of variables in measuring the adoption of technology. Based on the understanding of rural areas, Chau and Hu's (2002) adaptation of applicability

to technology acceptance within various sectors appears to be a more suitable lens for this study. This framework takes the positive elements of the UTAUT and introduces emerging variables not initially covered but specific to the environment.

The Chau and Hu (2002) framework looks at the acceptance behaviour of individuals and how that relates to their technical background as well as the implementation context (Chau & Hu, 2002). The factors under study include (1) performance expectancy; (2) effort expectancy; (3) social influence; (4) facilitating conditions, (5) attitude towards use; (6) anxiety; (7) self-efficacy, and (8) behavioural intention (Cordeiro, Hammoudi & Filipe, 2008; YenYeun & Yeow, 2009). This study, therefore, seeks to understand the adoption of ICTs in a rural context in the light of the Chau and Hu (2002) model.

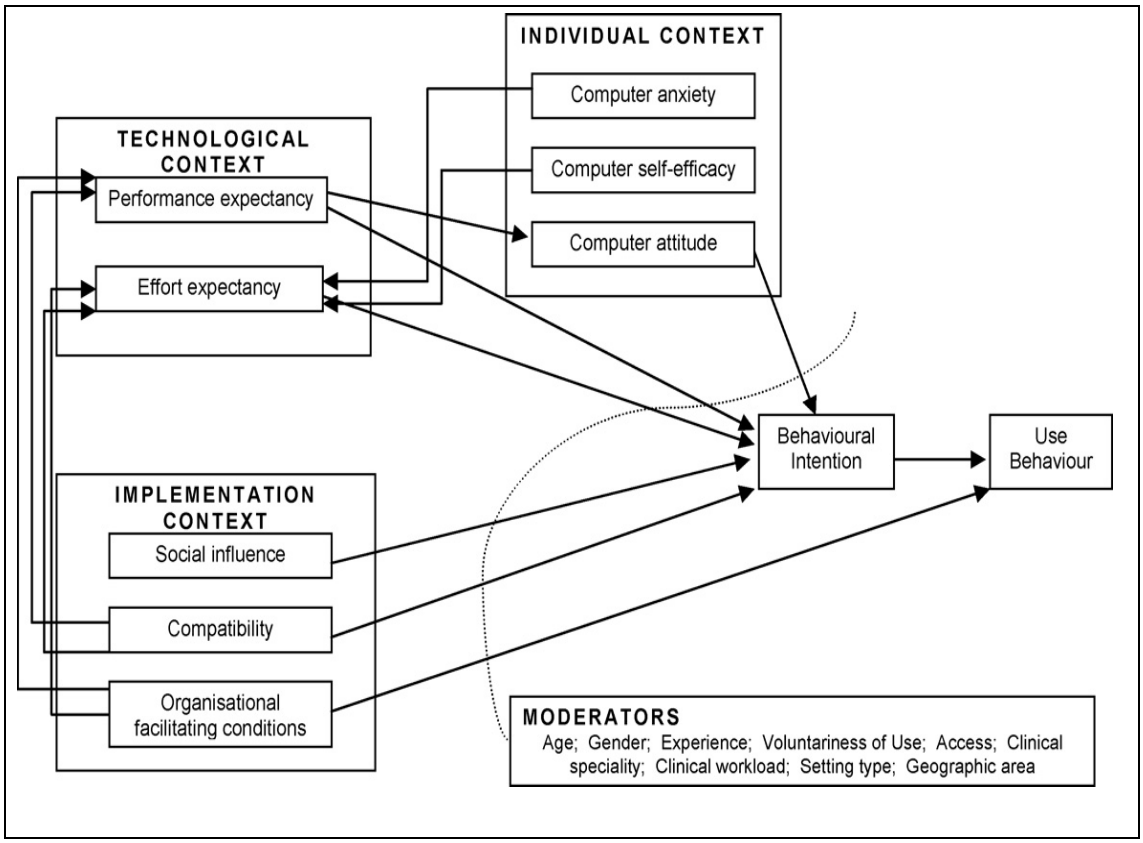

Figure 2.5: Generic Framework of Technology Acceptance (Chau & Hu, 2002)

The rationale behind the adaptation of the UTAUT model is due to how comprehensively it has been applied in its development and the high level of its explanatory power (Schaper & Pervan, 2007). The UTAUT model is also known for its dominance to explain user intention as well as user acceptance which makes it a good fit for this study. Additionally, Venkatesh, Thong and Xu (2016) point out that the UTAUT model can be integrated with other theoretical frameworks to study technology acceptance. This study aims to explore the factors that contribute to the uptake and use of ICTs. The model therefore plays a vital role in shaping the right type of questions to ask in order to gain an in-depth understanding of the adoption of ICTs.

According to Saravani and Haddow (2011), the UTAUT model has also been applied in different contexts over time in order to determine the intention of use of technologies. For instance, the UTAUT model has been applied to examine the adoption of an e-government in a developing country (Gupta, Dasgupta & Gupta, 2008). Similarly, in a study by Al-Gahtani, Hubona and Wang (2007), the UTAUT model was tested to validate cross-cultures in Saudi Arabia among employees for the acceptance and use of computers. In another study, Akbar (2013) highlights the application of the UTAUT model in higher education institution context. However, he has not been able to find strong support for the model. According to Akbar (2013), this is due to the original UTAUT model focusing on user acceptance of newly introduced technologies and how users' perceptions change over time. The higher education environment is known to study different sets of constructs not measured in the original UTAUT model.

Some researchers have used the UTAUT model as a baseline and extended it with other variables necessary for a particular study (Venkatesh *et al.*, 2016). Moreover, the UTAUT model has been applied successfully in previous ICT research (Anderson & Schwager 2008). Venkatesh *et al.* (2016) point out that the UTAUT model has been applied in organisational and non-organisational settings. In addition, Venkatesh *et al.* (2016) are of the view that a lot can be drawn from existing UTAUT-based studies for future research. In addition, the UTAUT model has been cited in a number of studies ever since its inception in 2003 (Akbar, 2013).

2.6 Conclusion

This chapter reviewed existing literature with regard to adoption of technologies, especially in rural communities. ICT policy issues relating to matters of adoption and access to technologies were discussed. The literature review analysed the relevant frameworks which could be used to study the adoption of ICT and it was found that the adoption process was very complex. Government agencies were addressing the digital divide by providing PACs in under-serviced communities. The researcher sought to understand the adoption of ICTs by applying the conceptual model in Figure 2.5 where user requirements were important factors in introducing such initiatives in communities.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction and background

This chapter describes and discusses the methods used in this investigation. The gap identified in the South African context in respect of addressing the digital divide in rural areas (Adukaite, 2016) has led to the following problem statement:

> *Although there is a continued effort to address the digital divide by deploying public access centres among underserved communities in South Africa, the success of these initiatives is threatened by a lack of understanding the issues relating to adoption of ICTs, especially in rural areas.*

The purpose of this study is, therefore, to explore challenges with the sustainability of public access centres in rural communities. The study also aims to provide evidence to support the development of a more robust policy regarding policy-based ICT programmes. This chapter outlines the research design and methodology which include details of how this study has been conducted. This is followed by details of the sampling techniques used, data gathering processes, ethical considerations and data analysis methods.

3.2 Research design and methodology

Burns and Grove (2003:195) define *research design* as a blueprint for conducting a study with a number of controls in place with regard to factors that may inhibit the validity of findings. Research design is about making choices and being able to explain the reasoning for the choices made (Creswell, 2003). Ngakhushi (2015) concurs and adds that research design entails decisions made with regard to the “what”, “where”, “when”, “how much” and “by what means” (Kothari, 2004) about an inquiry found by the research design.

Research methodology conversely is a way to solve a research problem in a systematic way (Rajasekar *et al.*, 2013). This includes clear and precise specifics of

what decisions are selected and why they are selected in order to be evaluated by others (Kumar 2008). Furthermore, Kothari (2004) is of the view that, when conducting a research study, it is imperative for the researcher to fully understand the difference between research design and research methodology. He further adds that this will allow for a researcher to know what methods or techniques are relevant and which are not; also, what they would mean and indicate (Kothari 2004).

The differences between research design and research methodology, as described by Babbie and Mouton (2004), are outlined in Table 3.1 below.

Table 3.1: Research design vs research methodology (Babbie & Mouton, 2004:75)

Research Design	**Research Methodology**
Focuses on the end product: What kind of study is being planned and what kind of results are aimed at?	Focuses on the research process and the kind of tools and procedures to be used
Point of departure is the research problem or question.	Point of departure is specific tasks (data collection or sampling) at hand.
Focuses on the logic of research: What kind of evidence is required to address the research question adequately?	Focuses on the individual (not linear) steps in the research process and the most “objective” (unbiased) procedures to be employed

In addressing the research problem, this study aims to answer the main research question:

> *How can the PAC model in the rural context be strengthened to improve the adoption and uptake of ICTs?*

This study seeks to gain an in-depth understanding of the problem; therefore, a mixed method approach has been adopted but with an emphasis on the qualitative component of the study.

3.2.1 Mixed methods research

Creswell *et al.* (2011) describe mixed methods research as a combination of both method and methodology for conducting research that involves collecting, analysing and mixing both quantitative and qualitative research in one study (Abeza *et al.*, 2015; Mung'omba, 2016).

The rationale for using the mixed methods approach for this study is to gain a better understanding of the phenomenon under study. Furthermore, this approach allows the researcher to take full advantage of the strengths and to minimise the flaws the accumulated data may have (Creswell *et al.*, 2010). In particular, Creswell *et al.* (2010) also explain what this study does is an integration of multiple forms of data. These forms include three approaches, namely merging data, connecting data and embedding data (Creswell *et al.*, 2011; Kanga *et al.*, 2015).

This study, therefore, implements the connecting data approach. This is explained as an integration involving the analysing of one dataset and then using it to inform the subsequent data collection (Creswell *et al.*, 2011). For this study, the main research design is descriptive in nature through qualitative methods, with the point of departure being quantitative data analysis. This is used to construct the main research design. The research approach is applied in two phases.

3.2.1.1 Phase 1 – Quantitative research design

According to Neuman (2011), quantitative research deals with positivist principles with an emphasis on precise measurement of variables and hypotheses. Creswell (2003) describes quantitative research as a process of data collection so that information should be measured and subjected to statistical treatment in order to backup or contest claims made. Quantitative research is about the measuring of variables and quantifying the relationship between them to test a theory (Hopkins, 2000). This phase

allows the researcher to ascertain the relationships between variables as outlined in the literature review.

For this study, the quantitative instrument is informed by Chau and Hu's (2002) proposed generic framework for technology acceptance which is primarily based on the UTAUT model of Venkatesh *et al.* (2003).

3.2.1.1a Designing the instrument

A survey questionnaire (refer to Appendix D) was developed based on the conceptual framework and administered to all participants before all focus group sessions. The content included in the questionnaire with 27 items intended to measure the UTAUT constructs as well as other factors identified in the proposed generic framework by Chau and Hu (2002). The items were measured by using a 5-point Likert-type scale, with 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree and 5 = strongly agree (Eze *et al.*, 2008). The questionnaire comprises eight sections, and the questions were grouped based on each section respectively. A demographics section was also included.

3.2.1.1b Sample

The study was conducted in a small town called Barkly West in the Northern Cape province which is about twenty minutes' drive from Kimberley. The rationale for selecting Barkly West as a case to investigate was because it typified a poorly resourced South African community in which issues of access and adoption were prevalent and affected mostly young people.

A non-probability sampling method was used (Mung'omba, 2016) due to its ability to allow for the selection of a unique sample of participants from the selected community. The method was especially informative (Neuman, 2011). The method used to develop the sample for this research was purposive sampling (Delener *et al.*, 2016). Purposive sampling can be described as a non-random method broadly used in qualitative research to select a sample that would contribute immensely to the subject of interest

(Patton, 2002). Tucket (2004) adds that, with purposive sampling, the purpose of the research guides the selection criteria of participants (Punch, 1998).

The approach used in this study is a homogenous approach. Homogeneous samples, according to Holloway and Wheeler (1996) and Patton (2002), are chosen because the individuals belong to the same subculture or have the same characteristics. As stated above the sample members have been selected on the basis of how much data they can contribute in discussions. They are typically not permanently employment young people, possible school dropouts, with a highest qualification of matric of Grade 12, are not computer literate and between the ages of 18 and 35. Richie and Lewis (2003) assert that sampling for focus group involves composition with each group. The specific age group is selected because they are affected by the same social ills contributing to the digital divide the most.

Notwithstanding the rationale of using the sampling process above, due to participants not showing up for sessions the researcher had to rely on initial participants for referrals. The snowball sampling was therefore adopted. This sampling method could be described as a non-random selection. It started off as one case and developed into the identification of other cases, based on information about the interrelationships from the starting case. Thereafter the process was repeated several times (Neuman, 2013).

3.2.1.1c Data analysis

The analysis involved three parts.

Cronbach's alpha

To determine reliability and validity of the survey instrument the Cronbach's alpha was used to measure the instrument used in phase 1 of this study (Šumak *et al.*, 2011). According to Tavakol *et al.* (2011), the use of Cronbach alpha allowed for the measurement of the internal consistency of a test. Even though Bagozzi and Yi (1988) recommended a threshold is 0.60, the most commonly acceptable alpha values range from 0.70-0.90. This study followed the 0.70 threshold. A computer-aided software

called SPSS was used to calculate the Cronbach's alpha score. This analysis pertains to the 96 completed responses.

Descriptive statistics

To understand the demographics of who had responded, descriptive statistics has been applied. Descriptive statistics can be explained as a method to analyse data (Havemann, 2011) with the aim of presenting it in a summarised and meaningful way (Best & Kahn, 2003). A further depiction is given by Best and Kahn (2003) that, with descriptive statistics, valuable information is provided about the nature of the subject matter.

The descriptive analysis is presented in two parts. The first part describes the demographics under study. The second part provides summaries of the particular group under study as well as the descriptive statistics of each of the factors. They are also used to assess the overall means for each dimension of factors.

Structured equation modelling (SEM)

Structural equation modelling (SEM) analysis was selected to assess the relationships between these exogenous and endogenous variables. Jenatabadi and Ismail (2014:1) defined structured equation modelling as "an estimation method that can handle a large number of exogenous and endogenous factors as well as unobserved variables that are specific and linear combinations of observed factors".

Furthermore, e Silva, & Alho (2017) add that the equation system of SEM operates in a simultaneous way and includes both measurement and structural components. The SEM model used in this study includes both endogenous and exogenous variables. Exogenous variables comprise effort expectancy, performance expectancy, attitude towards use, social influence and facilitating conditions (Gupta *et al.*, 2016). The endogenous variables are behavioural intention, assistance and anxiety (Gupta *et al.*, 2016).

Further, the standard regression weights were calculated. The purpose of the standard regression weights was to show the relative strength of coefficients by evaluating the

effects of the exogenous variables on the endogenous variables under study (Weinert, 2018).

3.2.1.2 Phase 2 – Qualitative research design

Creswell (1998) describes qualitative research as an investigative process to seek understanding by following unique methodological traditions in order to investigate a human or social problem. Further descriptions of qualitative research are given by Burns and Grove (2003) as well as Edmunds and Brown (2011). They maintain that qualitative research follows a systematic subjective order to refer to situations and life experiences for the purpose of giving them meaning. This point of view is further elaborated on by Creswell (2007). He points out a distinct characteristic of qualitative research which speaks to what this study is aiming to achieve: to explore a social or human problem (Hossain, 2011) or phenomenon (Khan, 2014) in this specific context.

The basis for using a qualitative approach in this research is to undertake an in-depth investigation into the adoption of ICTs in public access centres in a rural community. Additionally, the qualitative approach is also suitable in this study in order to enhance the quantitative data (Salleh, 2013). It provides for an avenue to capture the opinions of all stakeholders regarding the adoption of ICTs in the community. Furthermore, this approach allows for external factors to be discussed as they develop during sessions.

In the table below, Hoepfl (1997) explains the important features of qualitative research. This study explores these features and includes its relevance to this study.

Table 3.2: Features of qualitative research mapped against this study

	HOEPFL'S FEATURES	USED IN THIS STUDY
1	Qualitative research uses the natural setting as the source of data. The researcher attempts to observe, describe and interpret settings as they are (Patton, 1990)	The empirical study was conducted with all stakeholders at a municipal office. The idea was to get a holistic view of adoption. All factors were included in the particular setting.
2	The researcher acts as the human instrument of data collection (Lincoln & Guba, 1985).	The data collection was done by the researcher to collect primary data.
3	Qualitative research predominantly uses inductive data analysis (Bogdan & Biklen, 1982).	This research was informed by the literature discussed in previous chapters, including a survey and focus groups.
4	Qualitative research reports are descriptive (Eisner, 1991).	The findings are provided in detail in the next chapter, which speaks directly to the initial research question.
5	Qualitative research has an interpretive character aimed at discovering the meaning events have for the individuals who experience them (Eisner, 1991).	The primary data was interpreted and given meaning by observing participants in this setting.
6	Qualitative researchers pay attention to the idiosyncratic as well as the pervasive, seeking the uniqueness of each case (Eisner, 1991).	External factors from participants and focus groups were also included during interviews in order to gain a greater dataset (Nash, 2019).
7	Qualitative research has an emergent design, and researchers focus on this emerging process as well as the outcomes of the research (Lincoln & Guba, 1985; Patton, 1990).	Because of how the interviews were structured, they allowed for issues that had emerged to be dealt with accordingly which contributed to the outcome of this study.

8	Qualitative research is judged using special criteria for trustworthiness (Patton, 1990).	All relevant documents are attached to support the validity of the research data.

As detailed in Table 3.2 above, this study has adopted an inductive approach which is predominantly used in qualitative research. The researcher's role has therefore become a very pertinent one because this study draws from the experiences of the participants' perspective (Manamela, 2009) and this needs to be fully articulated by the researcher. In order for the researcher to capture this perspective, it becomes vital for the researcher to become part of the study. The researcher has become part of the discussions, particularly with regard to deriving meaning in the context of the discussions.

For this study, the researcher has sought to understand the adoption of technology in a rural context to inform research in dealing with similar situations in the future (Neuman, 1991:58). Therefore, this study has adopted a theoretical lens that guides the research process in exploring the problem under investigation. Neuman (1991:57) describes a theoretical lens in research as a framework or assumptions made of how the world is observed.

A paradigm, on the other hand, can be described as a "set of values and techniques shared by members of a scientific community" (Kuhn, 1970:75). Furthermore, Kuhn (1970) adds that these techniques are used by the scientific community as guidelines in identifying the type of problems scientists should address as well as the suitable explanations they should give.

Punch (1998) and Guba and Lincoln (1994) further expand on the above and state that qualitative research is based on three paradigms, namely positivist, interpretivism and critical. This study has adopted an interpretive paradigm. This approach is pertinent in this study because the researcher is expected to see the social world through the participants' perspectives and also report from that point of view (Edwards & Skinner, 2009; Khan 2014). Figure 3.1 below illustrates the research philosophy

discussed above and the importance of its influence to qualitative research. The philosophy functions guide research by seeking understanding from a phenomenon through the perspectives of different people.

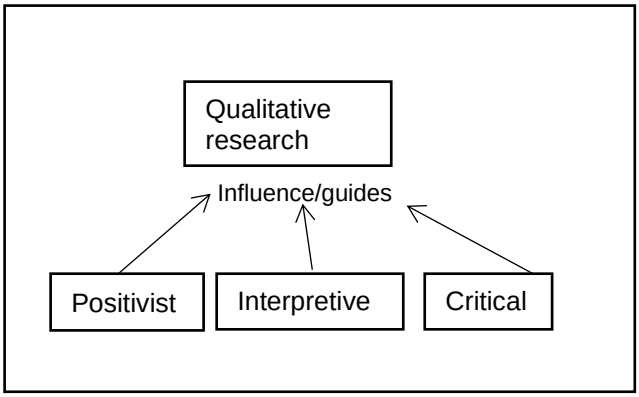

Figure 3.1: The underlying philosophical functions of qualitative research (Myers, 1997)

3.2.1.2a Interpretative research

Thomas (2010:296) states that, with the interpretive paradigm, the focus is to gain an understanding of individual experiences of what the world is like from a subjective perspective. Furthermore, this perspective is supported by observation and interpretation as well as the ability to draw meaning from the information between abstract patterns (Aikenhead, 1997; Denzin & Lincoln, 2003:296). This type of interpretation depends on both the views of the participant and the researcher. This allows the researcher to interpret in a particular way the meaning of the actions of the participants in order to draw meaning from their actions.

Accordingly, Walsham (1993) believes that, in the interpretive tradition, there is no theory that should be deemed correct or incorrect. It should rather depend on how interesting a theory is to both the researcher and those involved in the subject matter. This will allow for concepts to develop from the field by thoroughly examining the interest area under investigation to obtain the rich data that is required. This approach supports the aim of this study in that meaning of actions and concepts feed the understanding the study seeks. This study follows the principles as stipulated in Table 3.3 below.

Table 3.3: Application of principles of interpretive research to this study (Adapted from Klein & Myers, 1999)

Principle	Explanation	Application in this study
1. The fundamental principle of the hermeneutic circle (Carroll & Swatman, 2000; Klein & Myers, 1999; Lee, 1999)	This principle suggests that all human understanding is achieved by iterating between considering the interdependent meaning of parts and the whole that they form. This principle of human understanding is fundamental to all the other principles.	Iteration between transcripts from focus group interview discussions assisted with understanding technology adoption from participants' perspectives.
2. The principle of contextualisation (Klein & Myers, 1999:73)	This principle requires critical reflection of the social and historical background of the research setting so that the intended audience can see how the current situation under investigation has emerged.	The data-gathering techniques employed in this study as well as the literature review have led to the investigation of understanding the adoption of technology.
3. The principle of interaction between the researchers and the subjects (Klein & Myers, 1999)	This principle requires critical reflection on how the research materials (or data) are constructed socially through the interaction between the researcher and the participants.	The interaction between both the participants and interviewer allowed for the straightening out of any assumptions that had arisen during this process.
4. The principle of abstraction and generalisation (Klein & Myers, 1999)	This principle requires relating the idiographic details revealed by the data interpretation through the application of principles 1 and 2 to general theoretical concepts that describe the nature of human understanding and social action.	This principle was attained through the analytic generalisation process by combining the findings from the focus groups, survey questionnaire as well as the literature review.
5. The principle of dialogical	This principle requires sensitivity to possible	This research was informed by the technology adoption model

reasoning (Hirschheim & Klein, 1989:82)	contradictions between the theoretical preconceptions guiding the research design and actual findings (the story which the data tells) with subsequent cycles of revision.	and the literature. The actual findings were compared with the theoretical preconceptions informed by the literature but could not be taken as final truth but contextually bound.
6. The principle of multiple interpretations (Klein & Myers, 1999)	This principle requires sensitivity to possible differences in interpretations among the participants typically expressed in multiple narratives or stories of the same sequence of events under study. It is similar to multiple witness accounts even if all tell it as they saw it.	Multiple interpretations were achieved by the research design tools used in this study. The intention was to compare and reflect different interpretations in this study.
7. The principle of suspicion (Klein & Myers, 1999)	This principle requires sensitivity to possible biases and systematic distortions in the narratives collected from the participants.	The views of all participants were taken into account to achieve a thorough interpretation of the problem under investigation.

Rowlands (2005) explains that, with interpretive research, the close relationships between the researcher and what is being learned are recognised as well as the situational constraints that come with it. This approach is consistent with assumptions made by people about the world, and how reality is interpreted based on historical and social practices (Rowlands, 2005). The principles applied allow for discussions between the researcher and participants in order to draw meaning from their reality. As highlighted in Figure 3.1, principles 3 and 5 are consistent with the notion of understanding a phenomenon through accessing meaning that participants assign to them (Holstrom, 2004).

3.2.1.2b Research strategy

According to Myers (2009) and Steyn (2003), qualitative data sources include participant observations, interviews and the researcher's view as well the reactions

from participants about the subject matter. To derive meaning from lived experiences from participants, in-depth information gathering and participant perceptions are required for inductive qualitative research. The focus in implementing methods is to capture participants' multiple perceptions, the meaning of events and processes in adoption of technology, and for the researchers to understand them.

This study also seeks to address emerging concepts that it will uncover because of the methods adopted. The research strategies adopted in this study will also allow the researcher to draw an in-depth understanding of the research problem. Therefore, it qualifies the focus group as the most appropriate method to be used. The idea is to allow interaction within groups of individuals to gain greater insight on the subject matter. Additionally, the use of this type of data collection method assist in addressing issues that emerge from in the individual methods. The research strategies employed in this study are also explained.

3.2.1.2c Focus groups

According to Mack, Woodsong, MacQeen, Guest and Namey (2005), focus groups are effective in that they have the ability to elicit data from the norms of a group by creating a comprehensive overview of issues of concern to the group or subgroup as well as how concerns are viewed by the community at large. Focus groups are generally less structured which makes room for any issues that may arise from the interactions in the group. Furthermore, Mack *et al.* (2005) add that focus groups generally present a comprehensive understanding of the opinions of people about their own values and lives. Interactions within focus groups have the ability to exude rich data that might have been missed in individual interviews.

As observed in the focus group sessions and consistent with what Richie and Lewis (2003) have found, discussions in focus groups also allow for participants to hear from others. This gives them an opportunity to reflect and refine prior opinions. This can further deepen their insights into the subject and thus create richer opinions about their own realities, attitudes and behaviours. Therefore, focus groups have the potential to encourage deeper thinking about issues that directly affect them in a larger group.

Richie and Lewis (2003) draw our attention to common criticisms with regard to focus groups. These include the general pressures from other group members which have the potential to influence opinions of participants, especially when viewpoints are acceptable by the larger group. This could also let participants refrain from voicing their differences on a subject matter within a group.

Conversely, focus group interviews have advantages. Some advantages of open-ended questioning include:

- Their nature of being meaningful and culturally appropriate to the participant.
- They are not expected by the researcher.
- They are rich and explanatory in nature.

3.2.1.2d Semi-structured interviews

The focus groups were conducted by using semi-structured the interview technique. Semi-structured interviews allow for the same question to be posed to all participants within a flexible framework (Dearnley, 2005). As stated by Harrel and Bradley (2009), semi-structured interviews collect detailed information in a style that is conversational. Because this study seeks in-depth understanding, this data collection method allows for concepts to be explored as they arise. Fallon (2008) points out that semi-structured interviews are the most prevalent and require a great amount of detail; therefore, offering a true valuation of how life events impact on any individual.

According to Mouton (1996), the structure of this data collection method maximises the validity of the findings. Dearnley (2005) concurs with the above and states that the open-ended nature of semi-structured interviews encourages depth and validity for new concepts to emerge. A semi-structured interview also allows the researcher to probe participants (Hai, 2013). This characteristic is especially relevant to the kind of understanding this study seeks for the subject of interest.

The rationale for using the semi-structured technique was to:

- Focus on the participants perspective and needs

- Bring in the soft elements of conversing with participants face-to-face
- Capture real-time interests and feedback from participants adding to the richness of data needed
- Capture possible emerging concepts from discussions in the group
- Probe participants to gather detailed information about the subject
- Allow for further questions to be asked
- Allow for more flexibility

3.2.1.2e Focus group sampling procedure

The focus group sample was pre-selected through the researcher's own community networks. Due to time constraints groups that could exude rich data were identified. They included church group youth, youth employed at the local municipality under the Environment and Public Works Committee (EPWC) project and referrals from previous groups of participants.

Using purposive sampling, the idea was to recruit about eight groups of five to eight participants per focus group. Each focus group had a moderator sit in on each discussion which was led by the researcher. The sessions took place at the technical division of the municipal office. The venue required for transportation of participants to the venue as it was a bit far. For each session the researcher collected participants at a central point and drove them to the municipal office. The idea was to conduct these focus groups at a familiar and accessible location.

The researcher had earmarked the public library as an ideal venue for the focus group discussions; however this could not follow through since the public library building was under maintenance and closed to the public at the time. The researcher then looked for a new venue and this was provided by the municipality officer in charge of such matters. The venue had printing facilities when needed.

Sampling of the participants was done as follows:

- The researcher explained the research to all participants who were pre-selected.
- Everyone was given the option to choose whether they wanted to take part in the research or not.
- The researcher selected the potential participants for a focus group discussion.
- The sample required for adjustments due to identified participants who had met the initial criteria not showing up. Those who did show up were asked to refer their friends or family members with similar experience.

3.2.1.2f Development of focus group guide

A focus group guide (refer to Appendix B) was developed and the UTAUT framework by Venkatesh *et al.* (2003) was used to formulate questions for the focus group interviews (see Table 3.4). The UTAUT model's questions are structured around its four constructs, namely effort expectancy, performance expectancy, social influence and facilitating conditions (Venkatesh *et al.*, 2003). External variables were also anticipated to emerge during the focus group discussions. It was expected that some relationships would develop among constructs during the focus groups. As advised by Richie and Lewis (2003), this study was able to map together developing issues as they arose in the sessions and these were placed on a flipchart. This showed participants what they had done and encouraged them to take ownership. This was also of great help to the researcher and group in categorising issues and have participants check their contributions to the discussions.

Table 3.4: Designing the focus group interviews

Interview questions	**Objectives**
Introduction – Explain the purpose of the interviews. All processes are explained to the participants.	To prepare them to understand why the particular questions are asked. Also, to set some ground rules for the interviews.
Section A: Demographic data	To gain an overview of the participants involved in the interviews

Interview questions	**Objectives**
Gender Age Education level Employment status Area	To be true to the homogenous approach this study adopted To obtain rich data

Interview questions	Objectives
Behavioural intention ***Question 1*: *Users*** If you are currently using the internet and computers at the public library, what motivated you to start going to the public library to use computers and the internet? ***Non-users*** If you haven't yet used the internet here, what do you think are the reasons why you have not come to the PAC to use the internet and computers?	To establish whether there is intention to use computers and the internet in the future. Also, to identify non-users.
Performance expectancy ***Question 2: Users*** If you are currently using computers and the internet at the public library, how has using computers and the internet played a role in your everyday life? ***Non-users*** If you are not using facilities, how do you think you will benefit from using computers and the internet at the public library?	To determine expected performance benefits from using the computers and the internet at the public library.

Interview questions	Objectives
Effort expectancy ***Question 3: Users and non-users*** What makes it easy and what makes it difficult to gain access to the public library? **Users** Before you started using computers and the internet at the public library did you think it would be something easy to use? Explain. ***Non-users*** What do you think are the reasons why you have not come to the public library to use the internet and computers?	To determine the factors associated with how easy it is to use the computers and the internet at the public library
Social influence ***Question 4: Users*** Were there any influences that motivated you to use computers and the internet at the public library? Explain. **Non-users** Who would you trust to give you advice about starting to use the computers and internet at the public library?	To identify influential social actors and understand how their influence can contribute to using the computers and the internet at the public library

Interview questions	Objectives
User behaviour ***Question 5: Users*** What are you using the computers and internet for at the public library? What are some of the uses you expect from the computers and the internet at the public library that are not available to you? ***Non-users*** If you were to use the computers and internet at the public library, what sort of benefits would you expect?	To establish user needs and find ways to improve factors that can encourage continuous usage
Facilitating conditions ***Question 6: Users and non-users*** What would be your ideal type of venue and ideal type of equipment for you to make use of the computers and internet at the public library?	To determine the current state of infrastructural conditions and technical support required that may contribute to use and uptake of ICTs

3.2.1.2g Conducting the focus groups

Each focus group lasted about one to one and a half hours. The researcher facilitated the process of discussion. The focus group discussions were recorded using a voice recorder. In order to avoid problems of bias and validity, as proposed by Denzin (1978) and Soroush (2011), this study used multiple methods to capture the participants' perspectives. This process of using multiple methods is called triangulation. Triangulation is described as the process of comparing multiple sets of data in order to decide if it corroborates (Creswell, 2003; Patton, 2002; Richie & Lewis, 2003;

Thunaian & Saleh, 2013). Creswell (2003) and Patton (2002) believe that triangulation is one of the best ways to improve the trustworthiness of qualitative research.

The outcomes of the focus group were triangulated with the flipchart categories (see Figure 3.2) formed during the discussion. The views of the focus group were triangulated with the transcriptions on the voice recorder.

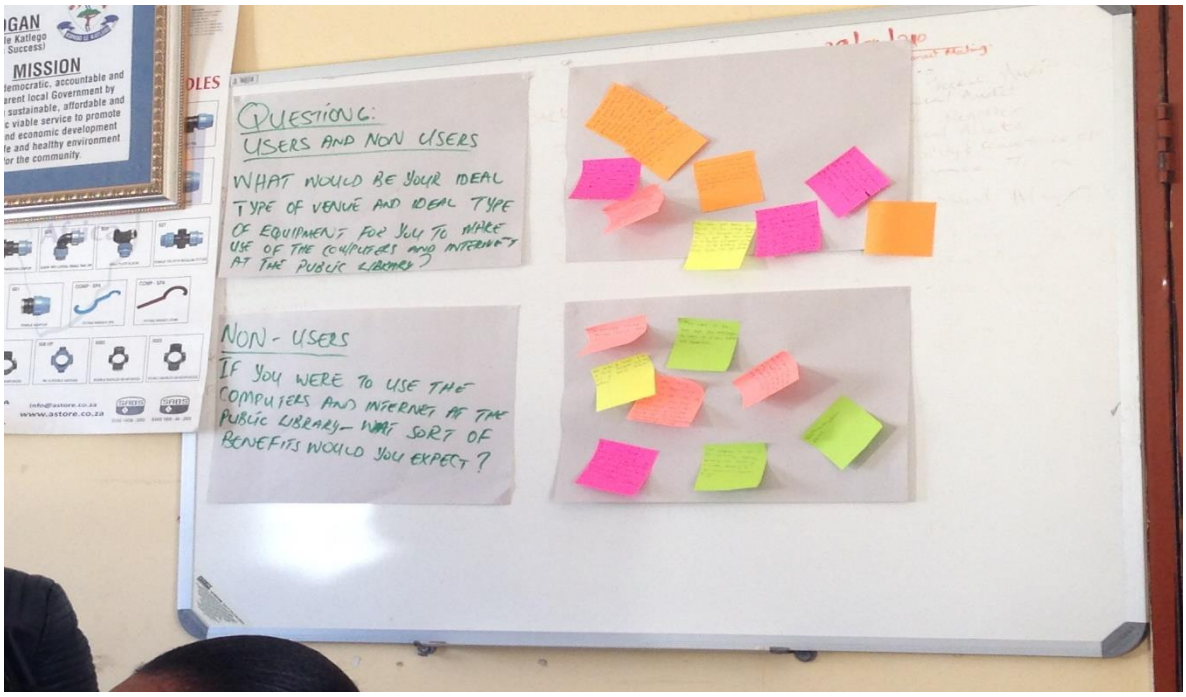

Figure 3.2: Participants' responses grouped in categories as agreed by the group

Before each interview a focus group guide (refer to Appendix B) was read to the participants. Subsequently, participants were asked to sign a consent form (refer to Appendix A) in agreement to what was read to them and also to sign the register (refer to Appendix C) before any discussions could take place. Participants were asked for permission to record before the sessions started (Afshari, 2016). Additionally to this, a questionnaire (refer to Appendix D) was handed to the participants to complete to obtain more information about the discussion. For each session, the group of participants was divided into users and non-users of facilities at the public library. The moderator (refer to Appendix E) in the focus group discussions took notes and reminded the researcher to revisit some questions that needed more information.

The small town of Barkly West consists of four main sections with three of them falling under the category of “rural community” with basic services from the local municipality and one where services are paid for and provided. The participants were only from the rural parts as mentioned above. The rationale was to capture different perspectives, as the use or non-use of the public library was also affected by the part of the town they had originated. The focus group interviews were conducted in English and responses given in the languages commonly used in the area (Setswana and Afrikaans). The researcher was also from Barkly West; therefore, she knew the commonly used languages in the town.

Figure 3.3: Focus group discussions and signing of consent forms

Figure 3.4: Focus group discussions

3.2.1.2h Implementation of the focus group semi-structured interview

The researcher followed these techniques for the group discussions:

- The researcher used an interview guide to conduct the focus group discussions and asked the participants semi-structured questions to allow for flexibility.
- The researcher maintained eye contact with the participants at all times.
- To gain as much information as possible from the participants, the interviewer asked a lot of open-ended questions. This technique allowed for probing where the interviewer used phrases like “Could you elaborate more on the point?”, “Can you give an example” and “You mentioned that…”

After each discussion the researcher summarised the discussion in her own words in order to ensure that participants had understood properly. This required a consensus from the group on certain concepts.

3.2.1.2i Data sources

The participants’ accounts of their experiences were the primary source of data. Additionally, the literature review served as theoretical guidance for this research. The empirical research involved data collection, analysis and interpretation. The data collection process included gathering information by means of the qualitative method as well as a quantitative survey. The researcher also consulted the literature to get a well-rounded understanding of the topic under study. The focus group interview data consisted of transcripts from the recordings and notes from the moderator (refer to Appendix E) and the researcher.

3.2.1.2j Qualitative data analysis

According to Forman *et al.* (2008), qualitative analysis is inductive and makes specific observations to identify recurrent themes and patterns in data. Bowen (2009) further adds that the analytic process includes discovery, selecting, making sense of and synthesising the collected data. Holloway and Wheeler (2002:235) state that, with

qualitative research, the analytical process starts at the data collection point; this is then further analysed and therefore, it shapes the ongoing data collection process.

To make sense of the data, this study has adopted the following steps which are deemed necessary for data analysis (Parahoo, 1997:355):

Responses during the focus group discussions were transcribed verbatim and read in order to verify what was discussed during sessions.

Statements were used to formulate meaning and grouped according to the main UTAUT model constructs guiding this study.

Concepts were then drawn from statements which were grouped based on users or non-users of ICTs.

Themes were used to provide full descriptions of the experience. The researcher returned the descriptions to the original source for confirmation of validity. The process above allowed that formulated meaning from the extracted statements could be generated. The meaning was later grouped into themes in order to draw an inclusive meaning of the entire experience. The focus group interviews allowed for openness to a wide range of responses. During the analysis process a computer-aided qualitative data analysis software package (CAQDAS) called ATLAS.ti was used to interpret the data, using coding and annotating activities. Muhr (1991), Smit (2000) and Smit (2002) agree that the ATLAS.ti software package is designed to offer qualitative-oriented social researcher support in analysing data. Furthermore, Muhr (1991) and Smit (2002) point out an important concept, which is central to ATLAS.ti, is the hermeneutic unit which facilitates immediate search and retrieval functions. This specific paradigm serves as guide for collection and analysis of qualitative data (Patterson & Williams, 2002). In addition, Patterson and Williams (2002) believe hermeneutics to be an appropriate research approach for researchers utilising conceptual frameworks as a basis for their empirical studies.

This study uses the UTAUT model to categorise concepts for the initial data collection phase. The analysis starts off with several constructs from the UTAUT model such as

performance expectancy, effort expectancy, social influence and facilitating conditions (Cordeiro *et al.*, 2008; Venkatesh *et al.*, 2003). These concepts are deemed to be categories which are further analysed in order to develop patterns for further analysis.

As mentioned above, this study starts off with pre-concepts from the conceptual framework adopted for this study. During the focus groups participants were asked to write their responses on sticker notes in addition to the recordings. After each discussion the group was required to participate in grouping concepts shared on sticker notes as well as labelling them accordingly (see Figure 3.2). This activity was used to create focus group concepts. The process allowed for the identification of connections between categories and concepts which are discussed in the following chapter. These concepts are mapped against the three key dimensions from the Access Capacity and Environment (ACE) framework by Gomez (2010).

This is to ascertain the fit between what the study found and the public access landscape as described by Gomez in the ACE framework. This point of departure then directly responds to the main research question which seeks to strengthen the PAC model to address the issues of uptake and adoption of ICTs in this particular location. Table 3.5 gives a detailed description of each of these dimensions as well as the variables that influence them.

Table 3.5: Schematic representation of the ACE framework

Schematic representation of the ACE framework		
1. Access	**2. Capacity**	**3. Environment**
1.1 Physical access to venue	**2.1 Human capacity and training**	**3.1 Socio-cultural factors**
• Location of venue •Venue distribution (urban/non-urban)	2.1.1 Staff • Level of librarian/operator training (libraries only) • Digital literacy	• Gender discrimination • Age discrimination • Education discrimination

• Basic infrastructure (space) • Hours of operation	• Operators' attitude to support information needs	• Religion discrimination • Socio-economic discrimination • Ethnicity discrimination
	2.1.2 Users • Perception of venue • Venue offers training in skills to use services (libraries only) • Venue offers ICT training • Digital literacy of users (independent of training in venues) • Programmes for underserved populations • Trust in the venue	
1.2 Suitability of venue	**2.2 Meeting local needs: relevant content and services**	**3.2 Political will, legal and regulatory framework**
Universal access (differences between venues serving rich and poor) • Venue meets local needs and conditions • Physical safety of venue, people and materials • Venue as a place people want to go	2.2.1 Local needs • Local needs are met (resources, skills and operator capacity) • Locally relevant content (meeting local needs) • Produced in local languages	• National and regional economic policies support of venues • Political will for venues • Long-term government strategies to support the venue • Coordination of national and local policies • International policies to support venue networks
	2.2.2 Local services • Sharing between venues • Sharing between venues	

	• Urban/non-urban distribution	• Use/censorship of materials (including ICT) in venues • Legal and regulatory framework particular to ICT
1.3 Affordability of venue	**2.3 Social appropriation**	**3.3 Popular support**
• Cost in relation to daily needs • Financial sustainability of venue • Sustainability for ICT • Competent services (including ICTs)	• 2.3.1 Venues • Space for collaboration • Integration into culture • Adapt venue to suit local needs (including ICTs)	• Popular support to improve venues (including ICT) • Involved stakeholders (including NGOs, civil society, community organisations, etc.) • Champion for the cause
	• 2.3.2 Technology in venue • Space for collaboration • Integration into culture	
1.4 Technology access 1.4.1 Infrastructure • Availability of technology (hardware, software, telecommunications networks, internet services) • Basic infrastructure (electricity) • Appropriateness of technology		

• Physical access to technology		
1.4.2 Affordability of technology and technology use • Cost in relation to daily needs • Financial sustainability of technology		

3.2.1.2k Using Atlas.ti for data analysis

Gallagher (2007) found in his study that using computer aided software like CAQDAS was effective for data management. In this study, the interview transcripts were loaded onto Atlas.ti for better management and later use for analysis. The data was coded during data collection and after. Despite others attesting that coding and analysis were not synonymous, the starting point of this study included both coding and analysis. This made way for how the data would be managed later using CAQDAS. As mentioned above, the UTAUT model constructs were used to form initial categories. Using the method of categorising concepts, as shown in Figure 3.2, initial codes were developed before loading data on CAQDAS. The codes were then aligned to their labels of focus group concepts as shown in Table 3.6. This method related to the notion of codifying which allowed for data to be split up, grouped, reorganised and then linked in order to merge meaning so that explanations were improved (Grbich, 2013).

As stated above, labels were assigned to each category in order to find any correlation from the transcriptions. The software facilitated the linking of categories to the matching quotations from the transcribed focus group interviews as shown in Figure 3.3. In coding, a category stands for a phenomenon which has been defined by the researcher as informed by the UTAUT model. This is linked to focus group concepts that have been defined by respondents as being significant to this study. This process also allowed for the identification of concepts that recurred in different categories; for example, ‘empowerment’, ‘unprofessional staff’, ‘knowledge gain’ and ‘development’ appeared in more than one category.

Axial coding was used to put the identified labels in the focus group to their connecting categories. Saldana (2016) refers to this method as the linking of categories with their sub-categories and asking how they relate to one another. Smit (2002) further explains that the linking of categories begins on a conceptual level which means that text is converted into concepts.

Table 3.6: Initial grouping of UTAUT categories mapped against users and non-users

Category	Focus Group Concepts	Categories Questions	Users	Non-users	Users and non-users	Themes
Performance Expectancy	Improves communication channels, business empowerment, knowledge gain, improved education, more informed, access to unlimited information, self-development, updates on current affairs, open-minded, alternative source of information	Role ICT plays in everyday life	✓			Enhancement Improved education Access to unlimited information Knowledge gain Empowerment in business
	Save money, access, download, career guidance, job	Expected benefits		✓		Employability Jobs

Category	Focus Group Concepts	Categories Questions	Users	Non-users	Users and non-users	Themes
	searching, stay informed, typing, computer skills, online application					Computer skills Access to job opportunities
Effort Expectancy	Prior exposure, follows instructions, support/help, time, background, can read, fear, cell phone versus computer, no knowledge, looks easy, computer at home	Ease of use			✓	Ease of use Exposure Guidance Assistance Anxiety Perception
	Short distance, free access, availability of information, self-empowerment, close	What makes it easy using	✓			Ease of Access Close to communities

Category	Focus Group Concepts	Categories Questions	Users	Non-users	Users and non-users	Themes
	to communities, access to all, knowing what you doing	gaining access?				Easily accessible Knowledge Understanding self-empowerment
	unprofessional staff, insufficient information, unsafe location, infrastructure unstable, slow learners, closing hours, lack of resources	What makes it difficult to gain access?	✓			Lack of resources and services Operating hours Unprofessional staff Location unsafe Resources Infrastructure

Category	Focus Group Concepts	Categories Questions	Users	Non-users	Users and non-users	Themes
	Ignorant, no educational programmes, personal affiliation, no support from staff, unskilled staff, scared of technology, no computer skills, lack of interest, not aware, inconsistent service, far, non-availability of internet	Reasons for non-use		✓		Professionalism Association Lack of educational programmes Unqualified staff Anxiety Poor service Support No skills Disinterest No internet Unawareness

Category	Focus Group Concepts	Categories Questions	Users	Non-users	Users and non-users	Themes
Social Influence	Lecturers, self-motivation, free internet, access to internet, reading club, friends, high school teacher, others using, family, unemployment, school work, current affairs, global news	Influences to use	✓			Family and friends Brother Cousin Sister Other users Educators Teachers Lecturers Unemployment Empowerment Global news

Category	Focus Group Concepts	Categories Questions	Users	Non-users	Users and non-users	Themes
						Current affairs Reading club
	Regular users, self, no-one, someone with IT background, patient library staff, computer skilled, passionate IT professionals, IT qualified, feel free around, those who benefited, knowledgeable	Who to trust for advice for using ICTs		✓		Experienced individuals IT professionals Beneficiaries Library staff Comfortable around Skilled people
	Flexible operating hours, organised library, hire computer literate people, excellent service,	Ideal venue			✓	Attracting environment Attracting venue

Category	Focus Group Concepts	Categories Questions	Users	Non-users	Users and non-users	Themes
Facilitating Conditions	professional staff, art work displayed, appealing, equal treatment, friendlier staff, no time allocation, youth-friendly, managed noise level, advertise services					Youth friendly Service awareness Excellent service Flexible operating hours and time Professional staff Computer-skilled staff
	Fast internet, Wi-Fi, printing facilities, updated material and software, relevant resources, educational programs	Ideal equipment			✓	Working equipment Updated software and hardware Teaching programmes

Category	Focus Group Concepts	Categories Questions	Users	Non-users	Users and non-users	Themes
						Relevant teaching programmes
Behavioural Intention	free internet, doing research, eagerness to learn, easy access, brother, passion, reading club, best seller, no motivation, updated about current affairs, prior computer knowledge	What motivated use of ICTs	✓			Self-Improvement Achieving Saying updated Eager Community reading club Family Brother Knowledge Research Access

Category	Focus Group Concepts	Categories Questions	Users	Non-users	Users and non-users	Themes
						Free internet
	Unprofessional staff, inconsistent service, lack of feedback, no awareness programs, distance, equipment not working, no school education, staff gives attitude, not community-friendly, no internet, closes early, no interest, will never use, angry at staff, shortage of learning programmes, no need to use, unskilled staff, not used	Reasons for no-use		✓		Lack of quality service Unprofessional staff Poor service Operating hours Lack of learning programmes Unskilled staff Faulty equipment Distance Ignorance

Category	Focus Group Concepts	Categories Questions	Users	Non-users	Users and non-users	Themes
						Disinterest No need Mad Not educated
Use Behaviour	Research, improved education, information gain, typing, internet, online application, search for jobs, email, fax	Using ICTs to:	✓			Self-Sufficiency Research Education Jobs Knowledge Online application

Category	Focus Group Concepts	Categories Questions	Users	Non-users	Users and non-users	Themes
						Type Internet
	Unlimited access, educational programmes, free Wi-Fi, printing, working computers, decent internet, enough computers, scanner, typing assignments, downloading, childhood development programmes, mobile library, teaching computer programs	Uses Not available			✓	Learning programmes and facilities Educational programmes Decent internet Enough resources Computer-related facilities

Category	Focus Group Concepts	Categories Questions	Users	Non-users	Users and non-users	Themes
	Computer skills, great service, skilled staff, new place for us, knowledge gain, independence, enough time allocation, exposure, save time, receive assistance	Expected benefits		✓		Skills Development Skills Excellent service Skilled staff Knowledge Independence Support

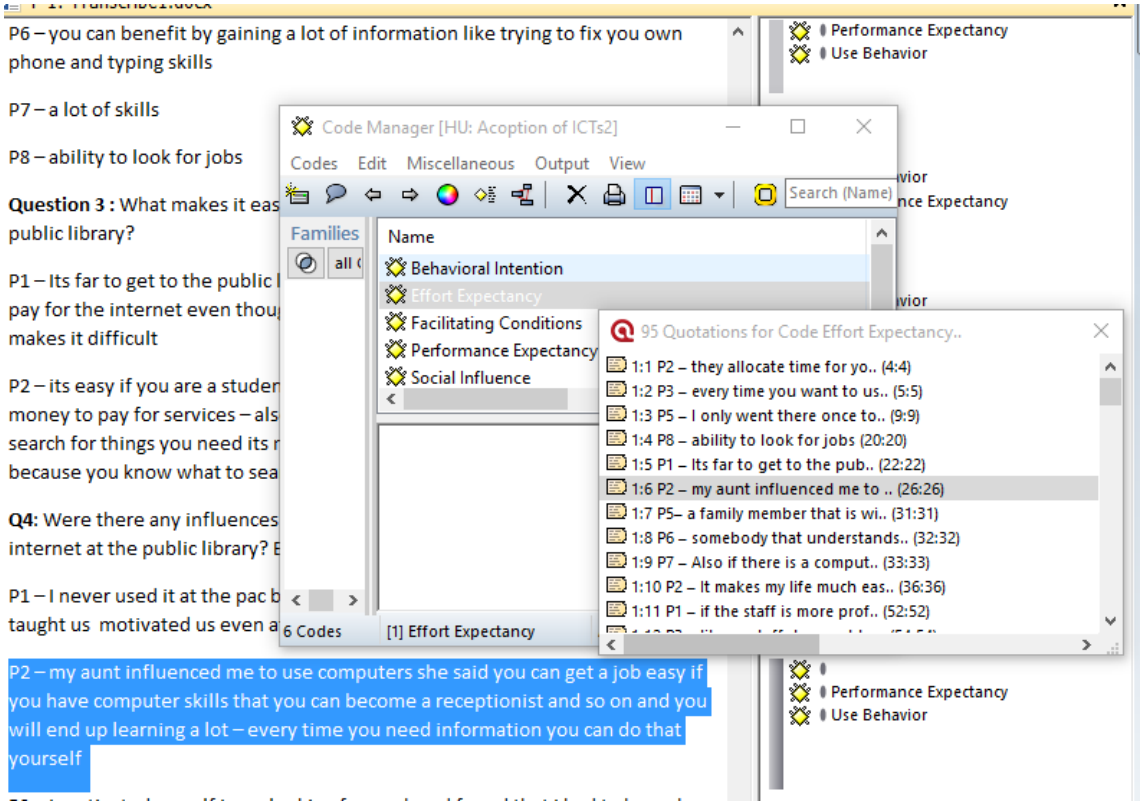

Figure 3.5: Linking of categories

The conceptual model developed by Boonsiritomachai (2014) and adopted for this study contributed to the first cycle of coding as it gave the research a solid starting point. A number of concepts emerged from the focus groups, as agreed upon by participants. Both users and non-users formed part of the expansion of these concepts. The concepts were than grouped based on the respective UTAUT model constructs.

Furthermore, Figure 3.5 shows the links between direct quotations to each category. In identifying factors that contribute to the adoption of ICTs in the context of this study, the model has allowed for questions that could uncover these factors in this specific community (Chigona *et al.*, 2010). The original UTAUT model states that performance expectancy, effort expectancy and social influence directly contribute to behavioural intention which later leads to use behaviour (Zalah, 2018). It further states that facilitating conditions directly influence use behaviour (Venkatesh *et al.*, 2003). Figure

3.6 below shows the connections or relations between categories based on the concepts identified by participants in the focus groups. At this point the linking of concepts to categories starts to give some more clarity than the initial impressions.

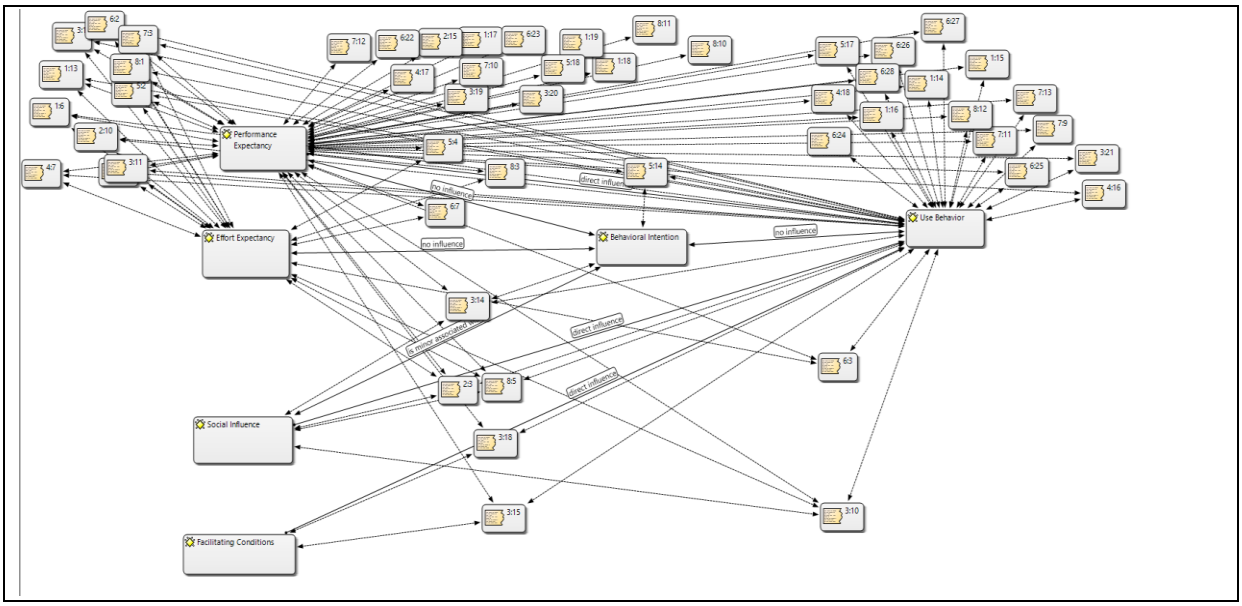

Figure 3.6: Quotations linking to categories

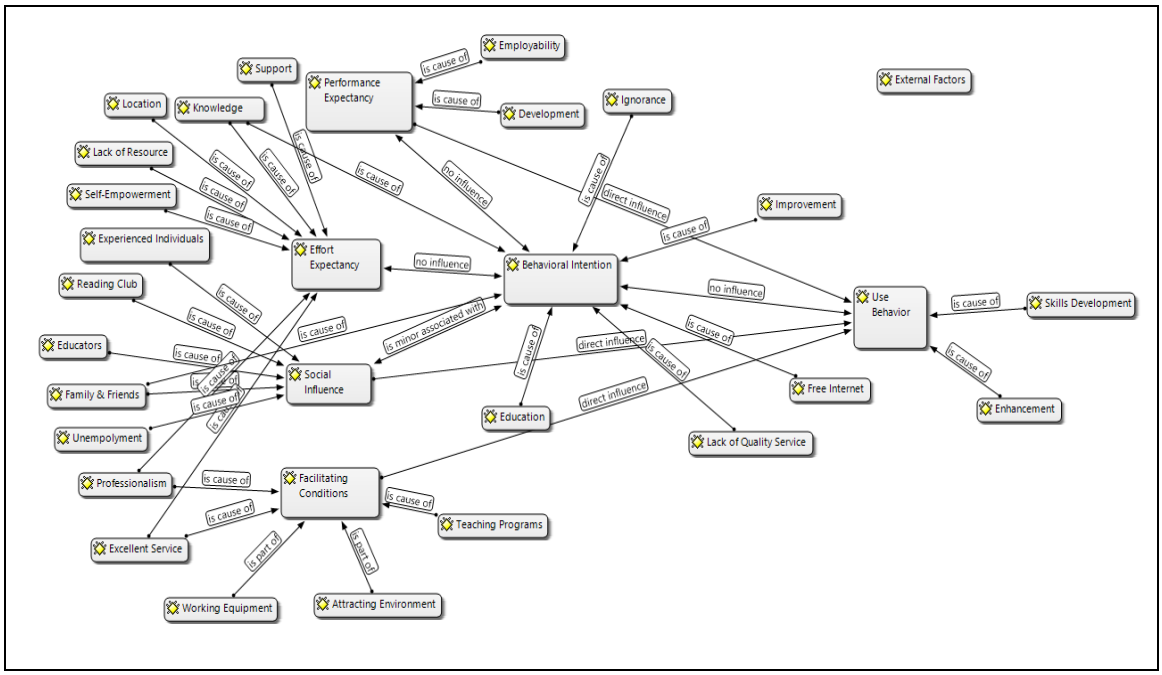

Figure 3.7: Developed themes linked to categories

As shown in Figure 3.7 above, the UTAUT constructs are positioned closely to those of the original model (Al-Qeisi, 2009). The quotations developed into themes which started to shape the findings in this study for thorough analysis.

3.3 Summary of data analysis procedure

3.3.1 Quantitative data analysis

- Survey responses were all recorded and later calculated using the Cronbach's alpha score to test for validity and reliability.
- The data was then analysed using regression modelling to establish the relationships between the key variables.
- The statistical tests were facilitated using SPSS to estimate the standard regression weights.

3.3.2 Qualitative data analysis

- The recordings were listened to, translated where participants responded in Setswana or Afrikaans and transcribed. Listening to the voice recordings allowed the researcher to have a clearer understanding of the data (Almazroi, 2017).
- The sticker notes were revisited and concepts were captured per category. The analysis process started with pre-concepts derived from the theoretical framework framing this study.
- These categories were assigned labels which emerged from the focus group sticker notes. The coding of the categories and concepts was then undertaken through Atlas.ti software.
- Connections or relationships between categories and concepts started emerging from the coding and the data started showing some direction.
- External variables were also identified during this process.
- Themes served as the basis to the findings.

3.4 Ethical considerations

Ethical clearance in the first place was granted by the University Ethics Committee. Before each focus group discussion, participants were informed about the purpose, the process and how their participation would benefit the study as well as risks associated with doing it. Participants were also reassured about privacy and confidentiality issues; their consent was then obtained (Graffigna & Bosio, 2006). The option to withdraw at any given time was communicated to the participants (Katheeri, 2016).

All consent forms were signed personally and allowed participants to ask for any clarification they needed (Graffigna & Bosio, 2006). Before any audio-recording was done, participants were made aware of this and asked for their permission to record the discussions. Each participant was given a number sticker and they were referred to by those numbers during the focus group sessions. This assured the participants that no personal data would be disclosed in the research. The researcher was the principal person with access to the data provided by the participants.

3.5 Conclusion

This chapter described the research methodology and design. A distinction between the two was included. A mixed method approach was adopted and relevance of features was highlighted. The research included the theoretical lens for this study which supported the choices for the methods selected. This choice was supported by the principles for the paradigm selection choices.

The purpose of a research design is to support the posed research question with valid answers. Because this study seeks an in-depth understanding of adoption of ICT in a rural context, focus groups and semi-structured data collection methods were selected (Alhirz & Sajeev, 2015). The researcher was the main data collection instrument.

The non-probability sampling technique applied in this research was purposive sampling. Participants were chosen based on how much they could contribute to the subject matter. The participants were morally and ethically protected. This was

communicated to all participants to enhance interaction among groups and during interviews.

To maximise the richness of the collected data, support from computer-aided qualitative data analysis software was employed. This program was able to assist in identifying patterns in the collected data. Every concept that has been adopted has also been justified.

The next chapter discusses the data analysis and findings.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

In response to the research question, this chapter reports on research findings and discusses the adoption of ICTs in public access centres in a rural context. The findings are drawn from the focus group interviews, survey questionnaire and the analysis process deliberated in the previous chapter. In addition, the literature review informs the conceptual framework adopted in this research which plays a pivotal role in how the findings have been developed. This chapter thus provides a response to the main research question and the relevant sub-questions.

The main research question reads as follows:

- How can the PAC model in the rural context be strengthened to improve the adoption and uptake of ICTs?

Research sub-questions have also be stated. These are:

- What is the understanding of community members of a public access centre?
- What are the factors which promote and inhibit the use of ICTs at a typical public access centre?
- What are the key issues which are associated with adoption of technology at a community level, and how do they relate to each other?
- How does the challenges associated with technology adoption relate to access, capability and environmental issues?

In order to answer the questions posed above this study drew from the literature which gave guidance to the framework. The framework allowed for high-level concepts to form the basis of this research and guided the investigation process. These concepts were used to uncover factors that contributed to the adoption of ICTs at a public access

centre (PAC) in this disadvantaged community. The findings are discussed in two phases.

Phase 1

In this phase, the quantitative analysis from the 96 questionnaire results are discussed. The aim of this questionnaire has been to ascertain the relationship between factors as outlined by the framework guiding this research. The discussion is based on the three parts as outlined in the quantitative analysis.

Phase 2

The results under this phase emanate from the qualitative analysis which was discussed in the previous chapter. In this phase, the objectives were to identify factors contributing to the uptake and use of ICTs in this community. Therefore, the analysis commenced with the categories derived from the UTAUT model which subsequently developed into high-level themes.

4.2 Overview of the unit of analysis

The unit of analysis in this research is the users of the PAC in relation to adoption of ICTs. Barkly West has only one PAC to service about three communities that are continuously growing in numbers. The PAC was initially a public library that was dissolved into the new PAC. A new structure was built and became the PAC with the purpose of serving the people from Barkly West. Most participants still refer to the PAC as the library. This research set out with the aim of assessing the factors contributing to the use and uptake of technologies at the PAC. These factors should aid in improving the PAC model. The findings for ***Phase 1*** are based on the results obtained from the survey questionnaire.

4.3 Phase 1: Survey questionnaire

A questionnaire was administered to 96 participants to assess the relationship between factors that contributed to the adoption of ICTs in a PAC in a rural context. A total of 96 usable questionnaire responses were collected out of 100 handed out. The

questionnaire required respondents to provide their demographic information like age, gender, educational level as well as employment status to provide a better understanding of this particular group. The items of the questionnaire comprised nine factors which were based on the adaptation of the UTAUT model. Self-efficacy was discarded due to its Cronbach's alpha score not meeting the threshold of 0.70 followed by this study. The items were drawn from the generic framework developed by Chau and Hu (2002). This study will discuss the following eight factors:

- Performance expectancy
- Effort expectancy
- Social influence
- Facilitating conditions
- Behavioural intention
- Attitude towards use
- Anxiety
- Assistance

Subsequently, the results give an indication of the relationships between factors and how these lend themselves to the adoption process. This assessment in Phase 1 serves as foundation for the in-depth investigation that follows in the qualitative findings and discussions in Phase 2. This foundation was accomplished through various procedures.

4.3.1 Reliability of the instrument

The reliability or consistency of the questions relating to the key factors contributing to the adoption of ICT was established by calculating the Cronbach's alpha score. Figure 4.1 shows the formula for calculating the alpha scores. The formula calculation is explained by Goforth (2015) as the alpha being equivalent to the number of items in a test, c-bar is the average inter-item covariance among the items and v-bar equals the variance of the total score.

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}}$$

Figure 4.1: Cronbach's alpha formula

Furthermore, an alpha score that is too high may imply that some items are redundant and may be testing the same question but in different pretexts. An alpha score should not be more than 0.9. The Cronbach alpha scores for each factor are illustrated in Table 4.1 below.

Table 4.1: Reliability statistics

Construct	**Cronbach's Alpha**	**No. of Items**
Performance Expectancy	.795	4
~~Social Influence~~	~~.565~~	~~3~~
Social Influence	.701	2
~~Facilitating Conditions~~	~~.607~~	~~3~~
Facilitating Conditions	.703	2
~~Self-Efficacy~~	~~.377~~	~~2~~
Anxiety	.757	4
Behavioural Intention	.790	3
Effort Expectancy	.755	4
Attitude Towards Use	.779	4
Assistance	.638	2

According to Hair *et al.* (2010), factor loadings should not be more than 0.7 in order to get a good measurement indicator. Based on the highlighted scores in Table 4.1, the fit of the analytical model was slightly improved to get a goodness-of-fit measure for the suggested values (Schaufeli *et al.*, 2002). After the initial factor loading, the constructs of social influence, facilitating conditions and self-efficacy produced scores below the recommended threshold of 0.7. The data was then subjected to further analysis using Structured Equation Modelling (SEM) (Kumari & Prakash, 2018) to identify whether the constructs with the low scores could be improved through the removal of scale items (Chau, 1997). As a result, the reliability scores for both social influence and facilitating conditions were improved.

During this process it was also found, intuitively, that two scale items that were removed from both constructs were related to a need for 'support' and 'help' exclusively. The scale items removed are listed below.

- There is someone usually available to support me in the use of computers and the internet.

- There are people available to help with difficulties I may have with computers and the internet.

These two items were then grouped to form a new construct called 'Assistance' which yielded a Cronbach alpha score of .638. Given the historical background of participants who lived in the midst of a digital divide, assistance was deemed pertinent to retain. After all repeated modifications, one dimension of self-efficacy was removed as an item due to its factor loading being lower than 0.7 (Hair *et al.*, 2010). Once the reliability has been confirmed, the finalised constructs are discussed in the following section in more detail.

4.3.2 Descriptive analysis of data

Demographics

Table 4.2: Demographic data (*N=96)*

	Variable	Frequency	Percentage
Gender	Male	45	46.9
	Female	51	53.1
Age group	18-26	70	72.9
	27-35	26	27.1
Employment status	Employed	1	1.0
	Unemployed	94	97.9
	Self Employed	1	1.0
Education level	Grade 10	1	1.0
	Grade 11	7	7.3
	Grade 12	36	37.5
	Tertiary	4	4.2
	Missing	48	50.0

According to Venkatesh *et al.* (2003), age, gender, experience and voluntariness of use are considered moderating factors when investigating the adoption of technologies. For this group, only two of these moderating factors were applied, namely age and gender which is consistent with the original UTAUT model.

The average age of the participants, as shown in Table 4.2, is 22 with 46.9% male and 53.1% female. Respondents were almost equal between female and male; however, it was dominated by the younger age group of 18-26. This group is typically those individuals who have finished their high school training and are expected to further their studies or get a job. In an environment such as Barkly West, it is well-known that in this age group, young individuals normally abandon whatever aspirations they have and rather conform to ills such as unemployment or crime. About 97.9% of respondents are unemployed which is an indication of the state of affairs in the small town of Barkly West. Nearly 50% of the respondents have not completed their high school education. In addition, 37.5% of respondents' highest qualification is Grade 12 and 7% were still in Grade 11.

The following tables (4.3 to 4.11) depict the descriptive statistics; i.e., the mean scores for each question. The table further lists the final set of factors derived after reliability assessment as discussed in Section 4.3.1 above.

Table 4.3: Performance Expectancy

Key Factor	Questions	Average Score Weight
Performance Expectancy	I find using computers and the internet useful in my everyday life.	4
	The use of computers and the internet allows me to increase my productivity in my everyday life.	4
	If I use computers and the internet, I will increase my chances of broadening my knowledge and undertake various tasks more efficiently.	4
	Having access to computers and the internet will contribute to my development.	4

Performance expectancy is described as the degree to which “an individual believes that using computers and the internet will help them attain in performance” in using computers and the internet (Venkatesh *et al.*, 2003:447). The literature refers to performance expectancy from a job performance viewpoint where technology is able to assist users in performing tasks in their daily jobs. However, in this context, 97.9% of participants are unemployed; therefore, they expect that the use of ICTs will result in performance gain of typing skills, knowledge and access to e-mail, among other things.

The average response to the questions in this factors was a 4, indicating overall agreement with the statements. This evidence shows that participants see the value of the use of computers and the internet can bring in their everyday life (Mokhtar, 2013). They also view the use of computers and the internet as a contributing factor to their own development (Kumar & Singh, 2012).

Table 4.4: Effort Expectancy

Key Factor	Question	Average Score Weight
Effort Expectancy	It is easy to use computers and the internet.	4
	When I use computers and the internet I seldom have any difficulties understanding what I need to do.	4
	It is easy for me to become skilful at using computers and the internet.	4
	It is easy to learn how to operate computers.	4

Effort expectancy is the “degree of ease associated with the use of computers and the internet” (Venkatesh *et al.*, 2003:450). Similarly, in the context of this research, ease of use refers to a level of effort relates to using computers and the internet (Gomez *et al.*, 2017). Despite the lack of training in computers and the internet at school level the

average response to the questions in this factor was a 4, indicating an overall agreement with the statements. Participants have perceived the use of ICTs to be effortless. Although the PAC has been closed down in the small town, participants' responses indicate a level of optimism with regard to using computers and the internet.

Table 4.5: Attitude towards use of ICTs

Key Factor	Questions	Average Score Weight
Attitude Towards Use	Using computers and the internet is a good idea.	4
	Computers, the internet or other technologies are interesting to use.	4
	Working with computers, the internet or other technologies is fun.	4
	I like using computers, the internet or other technologies.	4

According to Fishbein and Ajzen (1975), attitude towards use refers to an individual's positive or negative feelings in relation to the use of computers and the internet. The average score of 4 indicates that participants have a positive attitude about using computers and the internet. The evidence shows that participants sees the using of

computers and the internet at the PAC as an opportunity to learn new technologies.

Table 4.6: Social influence

Key Factor	Questions	Average Score Weight
Social Influence	People in my life who influence my behaviour think I should use computers and the internet.	3
	People who are important to me think I should use computers and the internet.	3
	There is usually someone available to support me in the use of computers and the internet.	3

According to Venkatesh *et al.* (2003: 451), social influence is the "degree an individual perceives that important others believe they should use computers and the internet" at the PAC. The average score for questions posed for this factor was 3. According to the Likert scale used in this research, this implies a neutral response from participants. The evidence suggests that participants are not able to identify important people who influence them in using computers and the internet at the PAC. This may be attributed to the lack of social pressure from the external environment surrounding the participants.

Table 4.7: Facilitating conditions

Key Factor	Questions	Average Score Weight
Facilitating Conditions	I have the resources necessary to use computers, the internet or other technologies.	4
	I have the knowledge necessary to use computers, the internet or other technologies.	4
	There are people available to help with difficulties I may have with computers and the internet.	4

Facilitating conditions is the "degree to which an individual believes that an organizational and technical infrastructure exists to support the use of computers and the internet" (Venkatesh *et al.*, 2003:453). Participants agreed that the technical and organisational infrastructures were available. This was, however, not consistent with the state of the PAC that had not been available for use (refer to Chapter 3, Section 3.2.1.2, VI). The PAC had reportedly been under maintenance until early this year. This result could imply that participants had the necessary resources to access computers and the internet in their personal capacity (Chiwara *et al.*, 2017). Participants have also alluded to having the necessary skills to use resources available to them.

Table 4.8: Self-Efficacy

Key Factor	Questions	Average Score Weight
Self-Efficacy	I could finish everything I need to do using computers and the internet without asking for help.	3
	I could complete most things using computers and the internet if I have someone to help when I am stuck.	4

Self-efficacy refers to an individual's belief in their ability to accomplish certain tasks required for them to yield specific performance achievements (Bandura, 1997). The overall mean value for this factor was 4. That indicated that participants agreed with questions asked for this factor. Participants were, however, impartial in answering the question pertaining to their capability to perform some tasks in the PAC without asking for help.

They agreed, however, that once help was available, they were able to do tasks that related to computers and the internet. The general impartiality in this regard stemmed from the lack of exposure to computers and the internet (Lee, 2015). The little knowledge participants had was mostly self-taught. This response could, therefore, not constitute being accurate enough to draw a conclusion from it. In addition, this factor was discarded due its low reliability score and will, therefore, not be discussed further.

Table 4.9: Anxiety

Key Factor	Questions	Average Score Weight
Anxiety	I feel nervous about using computers and the internet.	3
	It scares me to think I could lose all my data by just clicking the wrong button.	2
	I hesitate using computers and the internet for fear of making a mistake I cannot correct.	2
	I am frightened to use computers and the internet.	2

Anxiety of using computers and the internet is the amount of fear or uneasiness felt by individuals when the possibility or opportunity of using computers and the internet arises (Henerson, Morris & Fitz-Gibbon, 1978). The overall score of questions asked for this factor was 2 which indicated that participants strongly disagreed. This implied that participants were not intimidated by the use of computers and the internet. The use of computers and the internet showed a positive result, namely that these young individuals were eager to make use of such facilities.

Table 4.10: Assistance

Key Factor	Questions	Average Score Weight
Assistance	There is someone usually available to support me in the use of computers and the internet.	3
	There are people available to help with difficulties I may have with computers and the internet.	3

The Oxford Dictionary (2018) defines *assistance* as the action of helping someone. The mean value for this construct was 3 which indicated impartiality in responses to the questions posed. These questions were to ascertain whether participants had support available at the PAC when required. This response could be due to participants not understanding the roles of people working at the PAC. The response could also imply that some assistance was available but possibly not as required. The result might also be a combination of those receiving assistance and those not.

Table 4.11: Behavioural intention

Key Factor	Questions	Average Score Weight
Behavioural Intention	I intend on using computers, the internet or other technologies in the next <n> days.	3
	I predict I will use computers, the internet or other technologies in the next <n>days.	3
	I plan on using computers, the internet or other technologies in the next <n>days.	3

Behavioural intention is the degree to which an individual has made a conscious decision and makes a plan to complete or not complete a specific behaviour in the future (Warshaw & Davis, 1985). Participants' responses implied that they intended on using the computers and the internet in the next 4-7 days. This decision of using computers and the internet in the next 4-7 days could be due to participants thinking of the state of the PAC. The PAC was closed to the public for more than six months at the time. In addition, this could mean that participants understood the value of computers and the internet but had not developed a pressing need to utilise facilities there.

4.3.3 Assessment of the relationships between factors

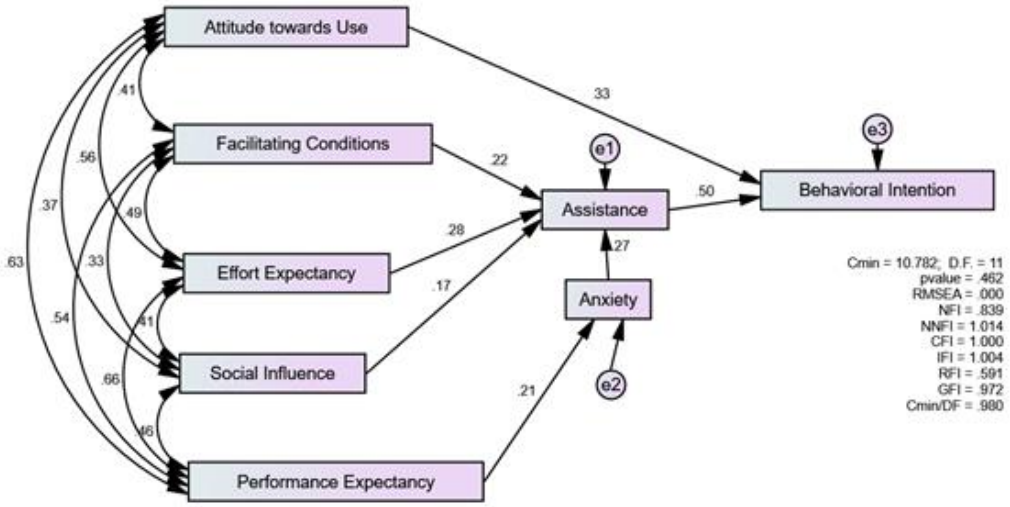

Figure 4.2: Results of structural equation modelling analysis

Table 4.12 and Figure 4.2 show the relationships between the exogenous variables of behavioural intention, assistance and anxiety and the endogenous variables of effort expectancy, performance expectancy, attitude towards use, social influence and facilitating conditions. The results also show that most relationships between the exogenous and endogenous variables are statistically significant (Alkhatib, 2013). The

standard regression estimates in Table 4.12 have been able to show the level of cause and effect between exogenous and endogenous variables (Rouibah, 2017). The relative strength of coefficients is shown below and further discussed in Section 4.3.4:

- performance expectancy (PE) significantly influences anxiety (Anx) (0.21; $p < 0.05$);
- effort expectancy (EE) significantly influence assistance (0.28; $p < 0.05$);
- facilitating conditions significantly influences assistance (0.22; $p < 0.05$);
- anxiety significantly influences assistance (0.27; $p < 0.05$);
- attitude towards use has the significantly influences behavioural intention (0.33; $p < 0.05$);
- assistance significantly influenced behavioural intention (0.50; $p < 0.05$); and
- social influence (SI) significantly influences assistance (0.17; $p<0.05$).

Table 4.12: The relationship between exogenous and endogenous variables

			Estimate	P
Anx (Anxiety)	<---	PE (Performance Expectancy)	.211	.045
DEF (Assistance)	<---	FC (Facilitating Conditions)	.216	.030
DEF (Assistance)	<---	EE (Effort Expectancy)	.277	.007
DEF (Assistance)	<---	SI (Social Influence)	.174	.066
DEF (Assistance)	<---	Anx (Anxiety)	.266	.002
BI (Behavioural Intention)	<---	AtU (Attitude towards Use)	.330	<.0001
BI (Behavioural Intention)	<---	DEF (Assistance)	.500	<.0001

4.3.4 Discussion

The results of the survey questionnaire give insight into the uptake and use of computers at the PAC in Barkly West when the generic framework by Chau and Hu (2002) is applied. This research introduces an integrated model developed by Basar (2012) consisting of the abovementioned framework variables and the new construct of assistance which is a relevant predictor of participants' intention to use computers and the internet in this context. This construct has been able to explain the reasons behind participants' willingness to use computers and the internet at the PAC. The quantitative findings conclude that all structural regression paths are significant except the one of social influence. It does not predict the related variables of assistance which causes behavioural intention in using computers and the internet at the PAC.

4.3.4.1 The effect of social influence on assistance

The results show that the impact of social influence on assistance to use ICTs at the PAC have been statistically insignificant with a p-value 0.66. This relationship implies that important others have not been able to influence participants to ask for assistance when using computers and the internet at the PAC. This may also imply that individuals have that urgency within themselves to want to use the facilities provided; therefore, they do not need any influence to make use of the ICTs at the PAC. Following the insignificant result, no evidence has been found for important others in participants' lives. The encouragement to use computers and the internet (Lee, 2018) may also be attributed to social factors such as unemployment that exists for people in this rural community.

4.3.4.2 The effect of performance expectancy on anxiety

According to research, performance expectancy is the most important predictor of intention to use ICTs (Liu *et al.*, 2014; Venkatesh *et al.*, 2003). The effect of performance expectancy on anxiety to use computers and the internet at the PAC was statistically significant with a p-value of 0.045. The effect could be due to participants being aware of the value that computers and the internet bring, and this becomes equally intimidating to them. The nervousness could be as a result of a lack of formal computer training; thus creating a sense of resistance. Furthermore, participants might

hold the perception that the gain here implied that they needed to get ready to apply the skills they had attained.

As shown in Table 4.12, the estimate value for performance expectancy is .211. This indicates the strength of the effect performance expectancy has on anxiety. This indicates that participants become anxious when they think about gain in performance from using computers and the internet. In comparison with results from social influence, the effect of performance expectancy is slightly stronger. In addition, this creates a sense of uncertainty in their abilities even before getting started. The anxiety felt by participants seems to outweigh the gain in performance.

4.3.4.3 The effect of effort expectancy on assistance

The effect of effort expectancy on assistance to use computers and the internet (Lee, 2018) at the PAC was statistically significant. This result implied that individuals' perceptions about using computers and the internet had made them believe that they required assistance. This perception from participants might also be explained by the lack of previous exposure to computers and the internet.

Further statistical analysis shows that, as ease associated with using computers and the internet increases, participants require more support. Furthermore, this strong effect is able to indicate that most participants do not have computer skills; therefore, they require some level of training. Thus, if participants find using computers and the internet at the PAC easy to use with minimal effort, they are more likely to buy in into using them.

4.3.4.4 The effect of facilitating conditions on assistance

The results show statistical significance in the relationship between facilitating conditions and assistance in relation to using computers and the internet at the PAC. There are several possible explanations for this result which include a lack of support, resources and infrastructure in general.

The results show that, because of the state of affairs with regard to resources and infrastructure at the PAC, participants require assistance. It seems possible that

resources at the PAC are not set up to be understood by an average person with no computer training. Another possible explanation for this result may be the reported infrastructure issues that have caused the closure of the PAC. Furthermore, results suggest that assistance in the actual infrastructure is required in order for the people of the rural community to make use of the available facilities.

4.3.4.5 The effect of attitude towards use on behavioural intention

The effect of attitude towards use on behavioural intention to use computers and the internet at the PAC was statistically significant. Additionally, the results showed attitude toward use had the second strongest effect on behavioural intention. This strong significant results could be due to a number of explanations that might be drawn from the demographical information. It is reported that 97.9% of these individuals were unemployed and 4.2% were at tertiary level. It seemed that individuals were faced with far deeper issues that could not be solved immediately by the use of computers and the internet.

As stated by Thomas *et al.* (2013), an improved attitude of individuals and the acquisition of appropriate skills may also result in a positive perception of computers and the internet. Similarly, Jairak et al. (2009) and Nassuora (2012) also found that a positive attitude led to behavioural intentions.

The results also showed that an increase in positive attitude towards use Anasi (2018) of computers and the internet caused readiness within participants to want to perform the behaviour. Improved attitude in this context could be achieved through computer skills training and the creation of an inviting environment for the rural community to visit the available facilities. It seemed possible that the lack of resources might contribute to the attitude towards use of facilities at the PAC.

4.3.4.6 The effect of anxiety on assistance

The effect of anxiety on assistance to use computers and the internet (Lee, 2018) at the PAC has been statistically significant. Table 4.12 shows the impact. The results indicates that, because of fear, individuals require assistance to use computers and

the internet. This fear may be explained by individuals not knowing how to express the problems they may encounter during the use of computers and the internet (Van Dijk & Van Deursen, 2014). Furthermore, participants may feel threatened by the PAC staff members who are not friendly and helpful. Computer training and support from trained staff are therefore essential in encouraging individuals to engage and be more confident in asking the right questions in order for them to acquire proper assistance when required.

4.3.4.7 The effect of assistance on behavioural intention

The effect of assistance on behavioural intention to use computers and the internet (Alkhunaizan, 2014) has been statistically significant. The impact is also the strongest among the other relationships that have been identified. Venkatesh *et al.* (2008) suggest that, leading up to an execution of a behaviour, an individual first forms a perception about the behavioural intention. As a consequence, individuals perceive the use of computers and the internet to be complicated and thus require help to use these ICTs. In this case, the perception may also be worsened by the lack of computer skills training among participants.

4.3.4.8 Summary of survey data

This study aims to contribute to this growing area of research by exploring factors contributing to the use and uptake of ICTs in PACs in rural communities. The results of Phase 1 show that there is still a low uptake of computers and the internet use among rural people. The evidence shows that rural communities require computer training in order to fully engage with ICTs. The lack of support from the local PAC has contributed to the low level of uptake and interest. The results of the analysis show that performance expectancy and effort expectancy, together with the new construct of assistance, have been able to be significantly predict adoptions of ICTs of rural participants' behavioural intention to use computers and the internet at the PAC.

Assistance was found to be the strongest predictor of behavioural intention while social influence showed no significance (Slade *et al.*, 2015). Through the analysis, self-efficacy was removed because of factor loadings being lower than the suggested

threshold of 0.7 by Hair *et al.* (2010). This section of the questionnaire required respondents to provide information on their ability to use computers and the internet at the PAC. According to Snyder (1995; 2002), self-efficacy is the expectancy that one can use to perform a particular behaviour. This suggests that participants do not feel comfortable in their abilities to perform tasks on computers and the internet.

In the next section, the qualitative findings are discussed.

4.4 Phase 2: Focus group interviews

This section presents findings that have developed from the qualitative analysis described in Chapter 3. This section further explores relationships discussed in Phase 1 in more detail. Together, Phase 1 and Phase 2 provide important insight into the adoption of ICTs in a rural setting. The two phases allow us to find similarities or differences in how participants respond. To do this, the UTAUT model by Venkatesh *et al.* (2003) is further applied as an analytic lens. Consequently, the findings are presented from high-level categories to low-level themes derived from the analysis process discussed in Chapter 3. This is illustrated in Figure 4.3 below.

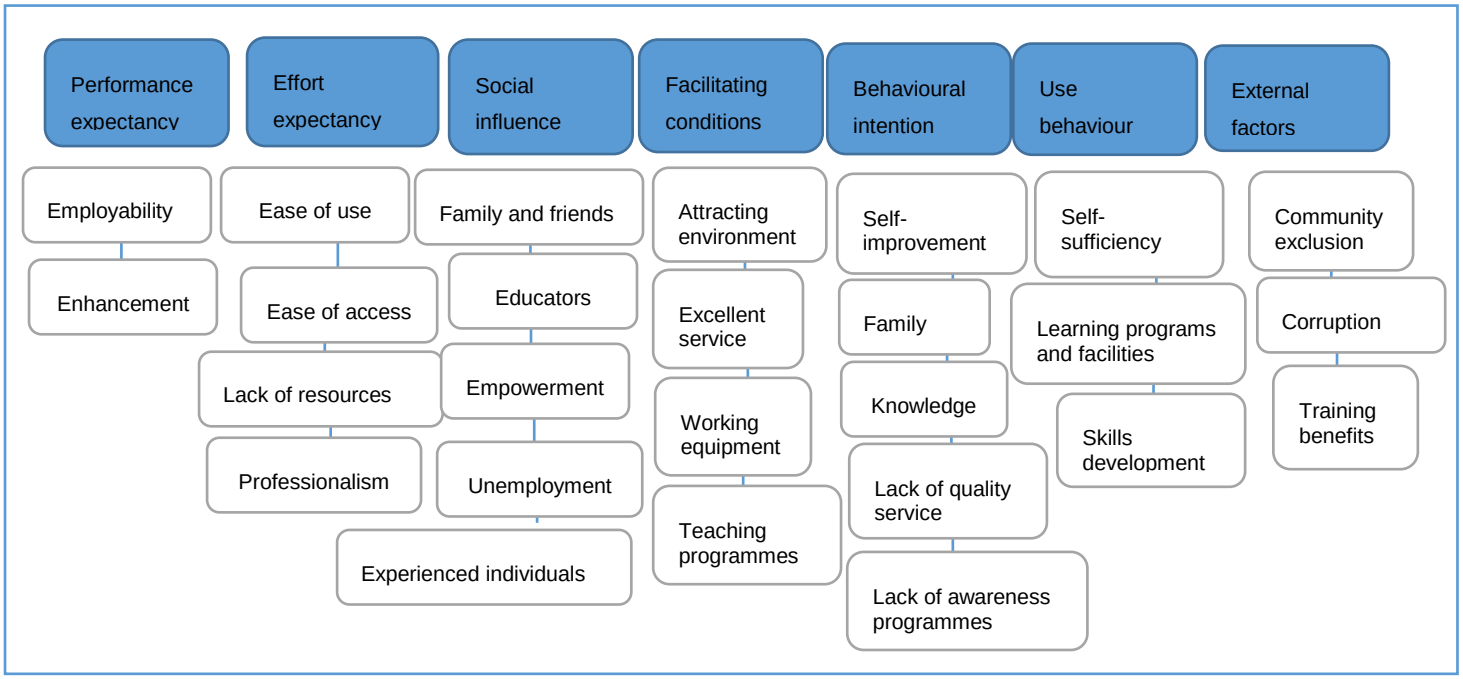

Figure 4.3: Themes emerging from the analysis

Following the main research question, findings from the conceptual framework are mapped against the Access, Capability and Environment (ACE) framework in order to find the fit between factors identified in Barkly West and the ACE framework. This application will give a better understanding in relation to the political, educational, infrastructure, cultural, organisational and other factors that affect the way people use ICTs in public access centres (Clark & Gomez, 2011).

As shown in Table 4.13 below, factors that influence PAC and the use to ICTs based on the ACE framework are applicable in this research. The mappings are further discussed in the following section. In comparison to the UTAUT model the ACE framework has recurring themes for relating variables. These will be discussed against themes developed in the conceptual framework findings.

Table 4.13: Mapped factors to ACE variables

Variables that influence the use of PACs	Concepts that developed into themes	Mapped ACE variables
Physical access to venue		
	Unsafe location	Location of venue
	Infrastructure unstable	Basic infrastructure (space)
	Closes early	Hours of operation
Suitability of venue		
	Unsafe location	Physical safety of venue, people and materials
	Appealing	Venue as a place people want to go
	Irrelevant resources, shortage of learning programmes, no support from staff, inconsistent service	Venue meets local needs and conditions

	Access to all, access granted based on personal affiliation, no equal treatment of users	Universal access (differences between venues serving rich and poor)
Affordability of venue		
	Users generally need money for printing which is a service not provided. Venue is close to most communities and users can walk there.	Cost in relation to daily needs
	No maintenance	Financial sustainability of venue
	No maintenance done on equipment	Sustainability of ICTs
	The resources need to be upgraded, computers are slow and not working most of the time	Competent services (including ICTs)
Technology access		
	General lack of maintenance of equipment in the PAC	Availability of technology (hardware, software, telecommunications networks, internet services)
	No educational programmes, no Microsoft Word or other basic programs available	Appropriateness of technology

	No printing facilities, only five computers in the library	Physical access to technology
Human capacity and training		
	Unprofessional and unskilled staff, staff themselves don't know how to use computers and the internet	Level of librarian/ operator training (libraries only)
	Staff rude and impatient with users	Operators' attitude to support information needs
	Staff attitude keeps people away	Perception of venue
	No training provided	Venue offers training in skills to use services (libraries only)
	Users have no computer skills	Digital literacy of users (independent of training in venues)
	Irrelevant resources	Programmes for underserved populations
Meeting local needs: relevant content and services		
	Irrelevant resources, shortage of learning programmes, unskilled staff	Local needs are met (resources, skills and operator capacity)

	Insufficient information, content is not focused on people of community	Locally relevant content (meeting local needs)
	Content is in English but local languages are Afrikaans and Tswana	Produced in local languages
	One public access centre in town	Sharing between venues
Social appropriation		
	Unmanaged noise level	Space for collaboration
	PAC operates in isolation	Integration into culture
	No visible progress in this regard	Adapt venue to suit local needs (including ICTs)
Socio-cultural factors		
	Collected data shows usage is split evenly between males and females	Gender discrimination
	Mostly used by black and coloured users; visible discrimination towards these users	Ethnicity discrimination
	Collected data shows the younger group is 18-26	Age discrimination

Political will, legal and regulatory framework		
	No visible support, focus remains on service delivery issues	National and regional economic policies support venues
	Non-existent – computers stay broken with no technical support	Legal and regulatory framework particular to ICT
	Not clear; the assumption is that the local municipality is in charge	Use/censorship of materials (including ICT) in venues
	Not visible	International policies to support venue networks
	Not visible to the ordinary people	Coordination of national and local policies
	Lack of support from even the local government	Long-term government strategies to support the venue
	This has taken a backseat.	Political will for venues
Popular support		
	Not enough community people using the PAC, lack of resources influences the decision from local people	Popular support to improve venues (including ICT)

	Youth on Community Social media pages	Champion for the cause
	Not knowing who is responsible for the PAC divides community members in collaboration.	Involved stakeholders (including NGOs, civil society, community organisations, etc.)
Community exclusion		
	Lack of awareness programmes for local people	
	Political affiliation issues	
	Distribution of available resources	
Corruption		
	Control of resources/services meant for the local people are in the wrong hands.	
	Lack of governance	

4.4.1 Performance Expectancy

Performance expectancy (PE) is defined as the “degree that individuals believe that using computers and the internet will help them gain in performance” (Venkatesh et al., 2003:447). In this context, performance expectancy measures the level that participants believe that using computers and the internet will help them gain in performing tasks.

Focus group respondents were required to provide information regarding the role ICT played in their everyday lives as well as its expected benefits. The analysis yielded two keys themes and these are be discussed under the following headings (Figure 4.4):

Figure 4.4: Factors related to performance expectancy

4.4.1.1 Employability

In response to the above-mentioned question, a range of responses were elicited which gave form to the following theme called ‘employability’. According to the respondents, employability refers to a set of skills and personal qualities that one needs which will make one more likely to be employable and successful. Based on the evidence, the presence of a PAC allows community members to gain typing skills which offers them an opportunity to apply for jobs online. Some participants also found that by using computers and the internet at the PAC helped them to stay informed.

Participants especially expressed confidence in gaining computer skills which can enhance their ability to find jobs. Access to job prospects are limited in a small town

like Barkly West, and participants alluded that by having access to the internet and computers their chances to secure jobs were improved. This could be due to Barkly West being located in such a remote area of the country where jobs are usually found in newspapers or posted on notice boards. Participants identified having access to computers and internet as a platform for vast opportunities. A respondent said that:

You can get a lot of information from the internet and computers and you can also get access to jobs advertised online (refer to Appendix F).The evidence suggests that the value of computers and internet is indeed seen in terms of what it can offer ordinary community members. Participants have expressed that using computers and the internet can play a positive role in their daily lives (Clark & Gomez, 2011; Cumps, 2014). Some participants did, however, point out that, in order for them to gain in performance, they required support and assistance in using computers and the internet at the PAC. This result correlated with earlier observations which showed that participants felt nervous about using computers and the internet, and thus required assistance in order for them to derive any value from the ICTs.

4.4.1.2 Enhancement

Having studied the data, enhancement in this research refers to the improved lives of individuals based on knowledge gained and education for the better. Users of facilities at the PAC find their self-development to be a pertinent part of their daily lives. They are of the view that computers and the internet plays a positive role in gaining knowledge as well as improvement of communication (Cumps, 2014). Some of the participants consider improved education to play a particularly significant role in their family lives. For example, they can help their children with schoolwork. Being updated about global news for some is also an important factor as it impacts their individual development.

The presence of computers and the internet at the public access centre (Lee, 2018) offers community members an alternative source of information compared to the usual newspapers or notice boards. A common view among participants is that computers and the internet generally bring a sense of improvement to their daily lives.

Based on the ACE framework, the challenges that impact the gain in performance for the rural people are identified under the 'Human capacity and training' variable. These challenges include:

- No training for users is provided.
- PAC users have no computer skills.
- Programmes not relevant to the rural people
- Unprofessional and unskilled staff are not capable of giving support with using the computers at the PAC.
- Staff display a negative or bad attitude towards users.

4.4.2 Effort expectancy

This factors refers to the amount of effort associated with using computers and the internet at the PAC. As described by Venkatesh *et al.* (2003), effort expectancy is the easiness that participants associate with the use of a particular system (Gupta *et al.*, 2016). Respondents were asked to discuss how easy it was to use computers and the internet as well as reasons for non-use. Four broad themes emerged from the analysis which are discussed under the following headings:

Figure 4.5: Factors related to effort expectancy

4.4.2.1 Ease of use

Ease of use refers to the tasks related to using computers and the internet that makes it easy to use. When asked to discuss ease of use associated with using computers and the internet at the PAC, some participants found it easy to use because they had prior exposure to computers and the internet (Mohammed *et al.*, 2019). Conversely, the majority of the participants who responded to ease of use felt that it would be much easier with guidance from PAC staff when they struggled with some computer activities. They largely related the ease of use to the amount of support given at the PAC.

The majority of the respondents mentioned that they had never received computer training before and support provided would be required when using computers and the internet at the PAC. A participant was cited as saying she was “too scared” to use computers and the internet because “she might break something”. Interestingly respondents were able to associate ease of use with operating a cell phone which was much easier for them to operate compared to computers and the internet.

4.4.2.2 Ease of access

According to the respondents, ease of access refers to accessibility of the PAC or the lack thereof. Based on the evidence, most of the participants allude that the PAC is located close to the most communities, therefore, making it easily accessible for all. Several participants disagree, especially those situated in the newly developed communities as these are typically located far from the PAC and the inner town.

Participants find that knowing what to do when using computers and the internet has made it easy to access the facilities at the PAC (Lee, 2018). According to participants, there is no support staff who have knowledge of computers or the internet and this hinders accessibility to the ICTs. Access to computers and the internet is to be enhanced by support from PAC staff.

4.4.2.3 Lack of resources and services

This factor refers to the components that make access to the PAC difficult. Participants felt that the lack of resources made it difficult to access the PAC. Some focus group participants suggested that the PAC did not serve the communities around it. Problems that were highlighted included a general lack of maintenance of equipment in the PAC. Participants mentioned about five computers being operational and this created recurring problems as community members never have an opportunity to utilise these facilities.

It was interesting that operating hours of the PAC were also deemed problematic as staff members did not adhere to specified working hours. One participant mentioned in the focus group discussion that sometimes the PAC closed around 15:00 or earlier. This was decided by PAC staff, depending on how quiet the day had been. In a typical town like Barkly West, this was the time when school learners flocked to the PAC only to find it closed. One participant said the service provided was “inconsistent”. This inconsistency might be due to PAC staff not treating users the same and it had been noticed by others.

4.4.2.4 Professionalism

This term refers to the expected conduct from staff working in the PAC such as competence and good behaviour. The evidence shows that the main reasons for not using computers and the internet at the PAC are due to the lack of professionalism. In a small town like Barkly West where everyone knows everyone else, there is concern that service provided in the PAC is based on being known to the staff. A major concern in this is that computers and the internet are limited to a selected few, thus further excluding those interested in usage.

There also seems to be a general feeling that PAC staff members are not able to assist with computer problems encountered when required. The evidence indicates an increasing concern that PAC staff are not skilled in supporting users in the centre. One participant stated that “the PAC staff themselves don’t know how to use computers and the internet” and can therefore not offer assistance. It may also be that the PAC

has funding issues. Perhaps the lack of funding is attributed to the employment of persons not qualified for the job.

The ACE variables that impact the perception of users with regard to using computers and the internet under effort expectancy relate to the following:

Human capacity and training

- Ease of use – operators' attitude towards users and the inability to support information needs
- Users find it challenging with no computer skills and the lack of support from library staff.
- Small town syndrome – the level of unprofessionalism in how service is provided to the rural people is highlighted as a serious concern.

Access to technology

The access to technology is hampered by the limit to available resources at the PAC.

Meeting local needs: relevant content and services

- Challenges identified under this section include insufficient information and available content not being relevant to the people in this community.

4.4.3 Social influence

Venkatesh *et al.* (2003) explain this factor as the degree to which an individual perceives that important others believe they should use computers and the internet. Important others can include family members, peers and teachers. Respondents were asked to share what influences motivated them to start using computers and the internet at the PAC.

The analysis shaped the following themes:

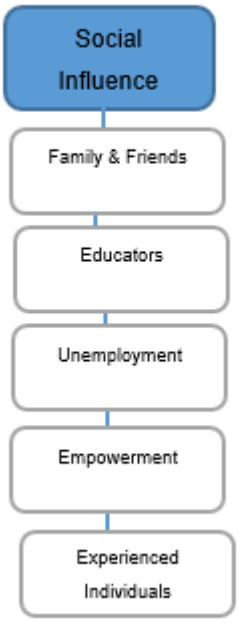

Figure 4.6: Factors related to social influence

4.4.3.1 Family and friends

Family and friends refer to people in an individual's life within the household as well as close outside relationships. A variety of perspectives have been expressed when it comes to influential people in the participants' lives. In a poor community like Barkly West, young people are mostly at home and surrounded by family and friends. These persons have been identified as 'influential important others'. One participant stated that:

> *My aunt influenced me to use computers she said you can get a job easy if you have computer skills that you can become a receptionist and so on and you will end up learning a lot – every time you need information you can do that yourself* (refer to Appendix F).

And another commented by saying:

> *My sister influenced me because she used to do a lot of things for me since she was no longer there I was forced to go to the library because I needed information and things from the library* (refer to Appendix I).

The following statement shows how the influence of friends can contribute to using the ICTs at the PAC:

> *My friends and surroundings motivated me to use computers and the internet Lee (2018) they had access there- because they explained to me that I could have access to knowledge around the world and I was interested* (refer to Appendix L).

Family members are generally important people in anyone's life who encourage one to do one's best in life. The evidence shows that family support can play an important role in one's life choices (Levesque, 2011). Similarly, a study by Malhotra and Galletta (1999) has found that social influence is able to determine the acceptance and use behaviour of new adopters to new technologies. Therefore, supportive family members and friends can influence change in one's behaviour and attitude towards computers and the internet. Especially if the same people are successful in their own lives and using computers and the internet to help in their success.

The people with whom one spends most of one's time away from the family are one's friends. In this context where friends are identified as important, social actors are the one who have influenced the usage and uptake of computers and the internet (Tajudeen, 2014). During the focus group interviews most participants showed up with their friends. Friends are, therefore, considered to be significantly influential.

4.4.3.2 Educators

Educators are those individuals in the education profession who influence learners during their schooling. A small number of the interviewees have indicated that educators have been influential in their use of computers and the internet at the PAC and in general. These include teachers at school level as well as lecturers at college. The evidence implies that social actors like educators can be identified at school level for many young people. Barkly West has five schools and most of them do not offer computer classes even though there are resources available. One participant stated that:

> *I remember when I was in high school, we had a computer class but we didn't have any teacher to teach the subject* (refer to Appendix H).

A recurrent issue that emerged during the interviews was that participants mentioned that it would have been beneficial for them to have received computer training at school. They saw it as a missed opportunity that might have given them basic knowledge about computers at that level. The evidence, therefore, suggested that educators could be especially influential if computer classes were offered at school level.

Educators are the persons to whom most young people look up in a community like Barkly West as this is one profession that people from such a small town opt for in terms of a career option. However, with only a small sample size alluding to educators being influential in the use of computers and the internet, caution must be applied as this number may not be enough to conclude this finding.

4.4.3.3 Unemployment

Wilkinson (2014) and Svitkova (2014) report that South Africa has one of the highest unemployment rates in the world that is especially felt by the younger population group. The evidence shows that one of the influences that has motivated participants to use computers and the internet at the PAC is due to unemployment. In this context, unemployment has encouraged participants to go to the PAC and see what is available online. The typical jobs found in Barkly West include tellers at banks, supermarket jobs, municipal projects and working on nearby farms. In a small town where jobs are limited the only option is to find alternatives. Participants have found value in the PAC because of the opportunity it avails them. This is what one participant had to say:

> *For someone like me who is not working I am taking advantage of the opportunity to use free internet* (refer to Appendix J).

In addition, community members regard the PAC as a means of dealing with the issue of unemployment. In accordance with the present result, Harpur (2013) mention that, in developmental terms, technology should be fundamental in providing solutions to

problems that people in the communities have. Community members, therefore, find the use of ICTs to be a powerful tool to eradicate unemployment and find new opportunities outside of where they are. It may also seem that community members' perception of PAC brings forth solutions to the issue of unemployment.

4.4.3.4 Empowerment

Empowerment in this context refers to the choice of consciously deciding to develop oneself for the sake of growth. Participants find using computers and the internet to be an opportunity to empower themselves. Following the nature of the town itself, it is interesting to observe young individuals involved in their own development regardless of their environment. A few participants are particularly interested in global news and want to stay updated. One participant who is known around town for his love of reading shares his view on computers and the internet:

> *I was part of a reading club at primary school so that motivated me, my cousins my surroundings, we ended up using the computers and the internet and we also ended up finding computers interesting and we learned to fix them and it became a passion because we enjoyed fixing computers as well* (refer to Appendix L). Participants are also self-motivated to use computers and the internet at the PAC. This type of participant can see the advantages of using computers and the internet. They are willing to benefit from and empower themselves in this way. These are potential uptakers and users of computers and the internet. The results show that no influence is needed here for participants of this calibre. They have seen the importance of ICTs and can only benefit from it.

4.4.3.5 Experienced individuals

Experienced individuals include professionals in the field of information technology as well as those who have benefited in terms of acquiring skills or having had some formal training in the field. Participants were asked to indicate whom they would trust to give advice about using computers and the internet at the PAC. The majority of those who responded to this question felt that they would accept advice from IT professionals.

They explained that those people knew what they were doing and advice from them carried more weight. The extracts below show from whom they would accept advice:

> *Somebody that understands computers and the internet so that they can help you when you need help* (refer to Appendix F).

> *Someone who have knowledge of computers and the internet – someone who loves computers and the internet and have patience to teach other people someone with skills and is accredited* (refer to Appendix H).

In a few focus group sessions, the name of someone whom all participants trusted for advice was mentioned.

> *We would also trust this young man Tebogo Kopeledi he studied IT and he is knowledgeable about computers and he always encouraging when he meet you in the street* (refer to Appendix K).

Evidently there were also divergent opinions brought forward by a few participants that they would not trust anyone to give advice on using ICTs at the PAC. They explained that their lack of trust of anyone stemmed from those claiming success later in life. Below an extract from one such participant:

> *I won't trust anyone to give me advise because when you walk around in the streets they will claim that they taught you so I would trust myself rather than someone else* (refer to Appendix J).

Some participants expressed their need of being comfortable around people first before trusting them for advice. The statement below is what one of them had to say:

> *I would trust someone who I feel free around and can ask them anything* (refer to Appendix I).

However, this UTAUT dimension does not fit any of the variables identified in the ACE framework and therefore does not apply.

4.4.4 Facilitating conditions

The term *facilitating conditions* refers to the current state of infrastructural conditions, technical support and resources that may be required for the uptake and usage of ICTs at the PAC. As explained by Venkatesh *et al.* (2003:453), facilitating conditions are defined as "the degree to which an individual believes that an organizational and technical infrastructure exist" to support the use of ICTs.

Participants were asked what their ideal venue and equipment were that would make them want to use ICTs at the PAC. Several themes emerged during analysis under this construct which are discussed under the following headings:

Figure 4.7: Factors relating to facilitating conditions

4.4.4.1 An attractive environment

An attractive environment refers to the features of the venue that appeal to young individuals and will encourage them to enter the PAC. Participants' responses relating to the venue were especially positive. They indicated that the PAC looked good from the outside; therefore, it was appealing to them. The following extracts show the positive feedback from participants regarding the venue:

> *I don't have any problems with anything with the venue* (refer to Appendix H).

*For me the library is fine from outside (*refer to Appendix I).

*The library from outside looks very appealing but I just wish they can do something about how the computers are placed (*refer to Appendix K).

They also felt that a lot can be done to make it more attractive from outside. More especially with regards to services provided at the PAC. The extract below illustrates the type of awareness required in terms of what is available inside the PAC:

Maybe they can expose pictures of computer programs available and Wi-Fi even the best authors just so you know what is available (refer to Appendix K).

One participant agreed to the venue looking fine from the outside but added that he wished it could be located at a more convenient place:

Our library is very nice from outside – I wish they can have it at a more convenient place – I don't think the location is good (refer to Appendix K).

In addition to the above, another participant spoke about how unsafe the location of the library was. This library is located next to a very busy main road and therefore unsafe, especially for school children. The participant shared this view:

The venue is fine but the books are not in our languages – they need to hire more skilled staff it will create interest in some of us that doesn't know much of computers and the internet – I think the library is also not located at a very safe area (refer to Appendix J).

Another commented on the topic and added:

Perhaps a mobile library could also help the library is too far also (refer to Appendix L).

In this section, there is a recurring theme which has been discussed in the above section of unprofessional staff that creates an environment that is not friendly towards the youth. Participants said the following in this regard:

The library staff are not very welcoming, and they rush you to finish (refer to Appendix J).

The place needs to create a nice vibe where they follow some sort of programs for instance one day can be used to teach Microsoft word and so on (refer to Appendix H).

The people working there have not created an environment that attracts young people to come (refer to Appendix H).

Participants agree that unprofessional staff also makes the environment unattractive. Overall, this evidence shows that participants consider an attractive venue a factor that can influence the adoption of ICT at the PAC (Kumar *et al.*, 2018). Furthermore, participants regard PAC staff as a factor in the attractiveness of the venue which influences community members to come to the venue.

4.4.4.2 Excellent service

Excellent service addresses the expected service that should be provided at a professional setting such as the PAC. An ideal venue also means the service provided within the PAC should be excellent. The analysis shows that excellent service creates an expectation from participants of support that exists within the PAC. Accordingly, participants feel that PAC staff needs to be trained for this to become a reality. This is evident in the following interview transcript:

A better service – library staff needs to be trained too – school kids are assisted by securities – even the books are old and in Afrikaans (refer to Appendix J).

Another issue that had emerged was that of operating hours at the PAC. Participants shared views of the PAC not being operated under stipulated working hours. Some felt for this reason the library should also open during weekends since the library staff can close the PAC anytime they wanted.

4.4.4.3 Working equipment

This factor refers to the working condition of software and hardware that are available for public use at the PAC. In this section of the focus group discussions, participants were asked about the ideal equipment that would make them feel they were supported to use ICTs at the PAC. Some indicated that the PAC had only five computers and not all of them were working. The reason for this was not clear but it might have had something to do with the PAC not having an in-house technician to fix the equipment; therefore, they had to rely on service providers from out of town. The following extracts illustrate the above scenario:

> *Faster computers they freeze too much* (refer to Appendix F).
>
> *More equipment in the centre there is about 5 computers in the library (*refer to Appendix G
>
> *The resources needs to be upgraded* (refer to Appendix J).

4.4.4.4 Teaching programmes

“Teaching programs” refers to applications or programmes available on computers and the internet at the PAC that individuals can learn. Participants indicated that the library did not have teaching programs on the computers; therefore, they were not able to learn much. Some participants felt they could learn typing skills at the PAC even though the facility was not always available. The PAC seemed to have been built for those with some computer skills and those with none could not benefit.

Moghaddam and Khatoon-Abadi (2013) concur that the adoption of ICT depends largely on prior computer skills among users. In the context of this research, most rural people do not have pre-existing skills from using ICTs. The following interview illustrates this situation:

> *The place needs to create a nice vibe where they follow some sort of programs for instance one day can be used to teach Microsoft word and so on – right now*

everybody just does whatever there are no educational programs (refer to Appendix H).

The ACE variables that impact the infrastructural conditions, the technical support and resources in relation the use of computers and the internet under facilitating conditions are shown below.

Human capacity and training

- Unprofessional and unskilled staff
- No training provided for unskilled users at the PAC
- Bad attitude from library staff
- Users of the PAC with no computer training

Affordability of venue

- Lack of resources – there are only five computers at the PAC.
- There is no sustainability of or maintenance on ICTs at the PAC.
- The venue is accessible to most communities.
- Daily needs are taken into account.

4.4.5 Behavioural intention

This factor refers to the influence of performance expectancy, effort expectancy and social influence (Schaupp & Carter, 2009) to predict intention (Mardiana *et al.*, 2015) and behaviour based on the evidence from organisational outcomes, social actors as well as new technology use.

The question posed in this section was to ascertain the motivating factors that encourage participants to start using ICTs at the PAC and the reasons for not doing so. The quantitative data from the survey indicated an overall mean response of 3 to

the behavioural intention questions. Thus, users were neutral in respect of their intention to continue using the ICTs in the PAC.

In this section, the underlying motivations that are positively associated with behavioural intention are probed. The following themes have emerged from the analysis:

Figure 4.8: Factors relating to behavioural intention

4.4.5.1 Self-improvement

Self-improvement relates to activities in which individuals take part for their personal development. Based on the evidence, participants are motivated to use ICTs at the PAC because they want to improve themselves. By doing this, they are able to achieve much more and be technologically advanced. Some participants expressed eagerness to learn and staying updated as reasons for using ICTs at the PAC. One participant has a passion for reading and has indicated he wants to become a best-seller author, and the PAC allows him to know what is available to reach this goal.

4.4.5.2 Family

The analysis yielded family members as motivation to start using ICTs at the PAC. A participant said that his brother motivated him to use the facilities at the PAC. Family members include brothers, sisters, uncles and aunts. As mentioned above in Section 4.4.3.1, someone like a brother is classified as an important other in the participants' lives; therefore, motivation from important others can influence behaviour positively. In the context of Barkly West where many young people are not motivated by their environment, motivation from important others to use ICTs plays a significant role in ensuring that they don't become absorbed by their environment.

4.4.5.3 Knowledge

Though the environment is not conducive for young people in Barkly West, a few participants feel the need to be empowered. In discussing issues surrounding motivation to use ICTs at the PAC, they mentioned that they are motivated by the need to be knowledgeable. This need requires them to go the PAC and use ICTs to research and access a vast amount of information on the internet. They have specifically expressed gratification about the internet being free at the PAC. In a town where resources are limited they regard this as an advantage.

4.4.5.4 Lack of quality service

In response to the question about the reason for not using ICTs at the PAC, a range of responses was elicited. A common view among the participants was that of unprofessional staff at the PAC. Possible explanations for unprofessional staff was discussed in Section 4.4.2.4. In the context of this research, most young individuals were not computer literate; thus, they needed more support from the PAC staff. The issue of unprofessionalism among the PAC staff received a lot of critique from participants.

In addition, participants also stated the lack of assistance from staff members gave rise to the view that they were not computer literate themselves. Terms such as

inconsistent service, *lack of feedback* and *no awareness programs* were cited in the evidence. These were some of the common views among participants in general.

The issue of awareness programmes was in particular surprising as participants claimed that they did not even know of services being provided in the PAC. The assumption was the PAC was a typical library with only books for school learners and subsequently referred to as such. One participant alluded to this situation being due to relevant parties not included in programmes such as these. He shared this view:

> *I think because of our community or surroundings has affected us in such a way that we don't pay such things to mind it's not because of ignorance - for a mere fact the major opened the library but no schools were invited at primary-higher level* (refer to Appendix H).

In order for people of Barkly West to use ICTs at the PAC they need to first know of its existence. Furthermore, the evidence shows that the PAC does not offer any educational programmes for them to gain something substantial from the centre. People who do not have computer skills in particular have voiced that by having educational programmes they can benefit by gaining these skills.

One major shortcoming of the PAC is the lack of working equipment, especially with aforementioned issues such as poor service based on personal associations. A key problem with the above is that potential uptakers can further lag behind because of the poor service provided at the PAC. Furthermore, the evidence shows that the poor service has contributed immensely to the non-use of services provided at the PAC. A participant has this to say about service provided based on association:

> *I saw with my own eyes that those computers there are for certain people – I was turned away because I did not come during the time assigned for searching the internet* (refer to Appendix K).

Moreover, the evidence also shows that the lack of quality service is attributed to the PAC's inconsistent operating hours. Staff members have been found closing the centre before the scheduled time and community members having to turn back.

4.4.5.5 Lack of awareness programmes

The evidence showed that some participants were not interested in using ICTs at the PAC. Some stated that there was *no need* for them to use ICTs when asked the reason for non-use. One participant said her reason for not using ICTs at the PAC was because of the treatment she had received there. She was still mad at the staff there.

> *The staff attitude was not good so from that day I never went back because I'm still upset* (refer to Appendix K).

One participant stated that the reason for non-use was because he was not educated and had no place at the PAC.

4.4.6 Use behaviour

Azjen (1991) describes behaviour as the actions taken towards a target set. In this context, use behaviour refers to an individual's readiness to start using computers and the internet at the PAC. In order to understand this, participants have responded to what ICT facilities they use at the PAC, what is not available as well as the expected benefits from using the ICTs at the PAC. The following themes emerged:

Figure 4.9: Factors relating to use behaviour

4.4.6.1 Self-sufficiency

The evidence reveals that participants are using ICTs for research, typing, internet use, educational purposes, searching for jobs, online applications, sending emails and other purposes. The use of the ICTs reflects a positive attitude among PAC users as it represents determination on the part of the participants. An important factor to consider is that the majority of the participants do not share this view. In a group of eight participants only two or three share this view. These participants share a common view of wanting to empower themselves and this desire has led to them to utilise the facilities available to them.

4.4.6.2 Learning programmes and facilities

Further analysis shows that ICT facilities not available at the PAC include educational programmes, a properly functioning internet, resources and computer-related facilities. It seems that participants require facilities conducive to their own development. The issue of educational programs was mentioned in discussions relating to ideal equipment (Section 4.4.4) as well as reasons for non-use (Section 4.4.2). The presence of educational programmes at the PAC has the potential to increase the use and adoption of ICTs. In addition, the lack of resources has also received a lot of critique.

4.4.6.3 Skills development

In this section, participants were required to share their views with regard to the benefits they expected from using ICTs at the PAC. As alluded in earlier sections, participants would like to gain computer skills from using the ICTs at the PAC. Lack of computer skills was mentioned as one of the reasons for non-use of facilities at the PAC. Some participants expressed support from the library staff having the potential to contribute to their development of computer skills. They expected skilled staff from the PAC to provide computer skills training and excellent service in general. Participants believed that the gain from this would make them knowledgeable as well as independent.

The ACE variables that impact the readiness of users with regard to using computers and the internet at the PAC under this heading relates to the following:

Technology access

- Facilities do not serve the needs of the local people.
- There are not enough resources.

Human capacity and training

- There is no computer skills training provided for PAC users.
- Resources provided at the PAC are irrelevant to the local people.

4.4.6 External factors

The analysis yielded additional variables that fell outside the questions being posed. These are discussed under the following headings:

Figure 4.10: External factors relating to adoption

4.4.7.1 Community exclusion

In a small town like Barkly West the initiatives are commonly implemented in a similar manner to how the PAC has started. Similarly, an ongoing initiative from the local municipality involves getting young individuals into apprenticeships so that they are later able to utilise the skills they have acquired to apply for jobs. Most people usually find out about these initiatives after the fact. Therefore, this gives rise to the issue of community exclusion in matters from which they can benefit.

A participant alluded that the PAC did not serve the community, with others nodding their heads in agreement. There were several possible explanations for this result which might be related to how resources were controlled as well issues surrounding local politics. A participant shared his view:

> *You see in town nothing will ever change, it will not change because it is ANC that is in charge* (refer to Appendix J).

4.4.7.2 Corruption

According to the Oxford Dictionary (2017), ‘corruption’ is defined as the dishonest or fraudulent conduct by those in power. Participants attributed the failure of the PAC to corruption of those in charge of Barkly West. Claims of corruption in Barkly West have been strongly contested by community members in the past but not much has changed. Some participants have expressed their belief that resources in Barkly West are controlled by the wrong people, thus the current state of affairs. Accordingly, they state that, because of the corruption, people with no skills are employed to work in the PAC.

This is also evident in the current status of the PAC where the centre has had issues of maintenance for more than a year now with no intervention from those in charge. The general view about this is that those in charge *do as they please* for their own gain. This situation has considerably affected the uptake and use of ICTs at the PAC because of the perception participants have of those in charge.

4.4.7.3 Training benefits

Most participants have pointed out that, in order for them to use facilities and benefit (Santhanamery & Ramayah, 2015) from these facilities, the people in charge need to put training programmes in place first. As explained earlier in the research, most participants have no formal computer training, not even at school level where resources are available. Participants have expressed interest in having computer and typing skills; therefore, training in ICTs available at the centre can make this a reality. It can also encourage more users of ICTs at the PAC. With training benefits, more participants are open to using computers and the internet at the PAC.

Factors that have developed under this heading in the mapping against the ACE framework include:

- Lack of awareness programmes
- Political affiliations
- Lack of distribution of available resources

In mapping the ACE framework indicators under the heading of 'Human capacity and training' the perception of users towards the venue is largely influenced by those in charge. For the ordinary user, PAC staff members are their first points of reference. Accordingly, users see PAC staff as corrupt as they control access and treat users differently.

4.4.7 Summary of findings

In this investigation, the aim was to assess the adoption of ICTs at a PAC in a rural context. The findings have shown that the low uptake of ICTs can be ascribed to the lack of resources and largely how the centre is managed. The research has shown some positives in that some individuals want to change their lives and have seen the benefit of ICTs. However, others have found no value in using ICTs at the PAC.

A number of factors also emerged during analysis as discussed above. Computer skills and training were also highlighted as areas that needed attention. Participants

expressed eagerness in participating in the use ICTs but also highlighted the need for support from the PAC staff.

4.4.7.1 Performance expectancy

Performance expectancy in this context refers to how using computers and the internet can play a positive role in the lives of community members for the better. Similarly, Taiwa & Downe (2013) assert that information systems of which users generally approve are systems that add value to their daily lives.

In this research, performance expectancy is considered an enabler for the adoption of ICTs on condition that assistance is provided. Participants have revealed that having access to computers and the internet has significantly improved job-seeking opportunities as well as self-enhancement. This evidence indicates that computers and the internet have a positive effect on opportunities of development.

The evidence shows that more noteworthy aspects related to performance expectancy have to do with employability and development.

4.4.7.2 Effort expectancy

This research found that ease of use was closely related to prior exposure to ICTs. In some instances it was reported that ease of use could be supported by guidance as well as assistance from the PAC staff. The analysis found that in this context, no support was provided at the PAC. There were cases where participants expressed fear towards using ICTs.

The lack of resources and unprofessional staff were major concerns at the PAC. The lack of resources impacted on the ease of use and made it difficult for those wanting to use the ICTs at the PAC to do so. The analysis displayed an emphasis on the unprofessional staff which had inherently contributed to the non-use of facilities at the PAC. These factors might explain the low uptake of ICTs at the PAC.

The results obtained from the preliminary analysis of the effect of effort expectancy on assistance was consistent to the findings in this section. One unanticipated finding

was that some participants were not aware of services provided in the PAC, more especially those regarding access to computers and the internet as they still regarded the PAC as a library and nothing more.

4.4.7.3 Social influence

The qualitative results show that family and friends, educators and experienced individuals are important others who influence the participants to use ICTs. Other important factors that influence the use of ICTs include unemployment and empowerment. These factors indicate that the participants are interested in their own growth and concerned by the high unemployment rate in town. They regard the use of ICTs as an opportunity to better themselves in order for them to become employable.

This research has not only identified social actors who may influence the use of ICTs as well as social ills that underpin the uptake and use of ICTS at the PAC. Preliminary results shows that social influence does not have an impact on the intention to use computers and the internet at the PAC, which is not consistent with findings in this research (Bashar, 2015).

4.4.7.4 Facilitating conditions

According to the literature, it is recommended that infrastructure such as working computers and internet should exist at a typical PAC to have a positive effect. Muinde *et al.* (2009) state that the lack of understanding with regard to how ICT contributes to development has affected prioritisation when it comes to budgeting and resource allocation. Participants have revealed that the environment as well as the service provided at this rural PAC is pertinent in the use of ICTs.

They have also revealed unprofessional and unskilled staff being among the factors that need attention. The slow rate of the diffusion of innovation in rural areas (Venkatesh *et al.*, 2013) is further exacerbated by unprofessional staff in this context.

Additionally, the analysis reveal that the lack of infrastructure is among the factors that contribute to the small number of people utilising the ICTs at the PAC. Conversely, Moghaddam and Khatoon-Abadi (2013) add that the failure of technological innovation

is mostly due to a disregard for the actual factors that relate to the adoption of ICTs by users. In this context, the technical features are neglected, thus further contributing to non-use and adoption of ICTs at the PAC.

Furthermore, participants regard educational programmes as being an important service that is needed, especially in the context of this research (Arham, 2014). They have expressed the need for gaining computer skills, and the establishment of educational programmes could be the answer.

4.4.7.5 Behavioural intention

Analysis shows that participants are interested in their own development; thus, their motivation for using ICTs includes aspects like self-improvement, being knowledgeable and motivation from family members. Behavioural intention is known to be directly influenced by performance expectancy, effort expectancy as well as social influence.

The evidence has shown a minor influence from performance expectancy specifically. This inconsistency may be due to the results pointing to expected benefits being of internal value. These benefits are not tangible; hence the minor influence.

The evidence has also been unable to demonstrate the influence of effort expectancy on behavioural intention. The research has shown that ease of use does not influence behavioural intention.

These findings further support the notion that important others can influence behavioural intention. There is a general feeling of self-motivation and their need of wanting to know more influences the behavioural intention of the participants.

4.4.7.6 Use behaviour

The evidence reveals a positive relationship between facilitating conditions and use behaviour (Alkharang, 2014). The moderating factor here is computer experience. The quantitative analysis shows that participants require assistance in order to use facilities at the PAC. Participants are generally eager to learn and empower themselves;

therefore, they regard the use of computers and the internet making this desire a reality (Vainikainen, 2012).

In the context of this research, the majority of the participants do not have formal training in ICTs and perhaps the presence of educational programmes could increase the use and uptake of ICTs.

4.4.7.7 External factors

This research has examined the factors that contribute to the adoption of ICTs at a typical rural community in the context of a PAC (Albar & Hoque, 2017). These factors have evolved into the themes discussed above. The findings show the reasons behind the low uptake of ICTs at the PAC in Barkly West. The centre now being closed is another major contributing factor to lack of uptake and use of ICTs.

In addition, it was asked in one of the sub-questions how these factors related to each other. In this research, the UTAUT model was used as a conceptual framework to answer the research question. The four model determinants were used as high-level categories. The conclusion drawn from this research was that, to a large extent, the determinants relied on each other for adoption to be realised. Performance expectancy, effort expectancy and social influence could not be measured with no facilitating conditions existing.

It was also found that technical infrastructure had contributed immensely to the non-use of ICTs at the PAC. The presence of resources, according to the construct of facilitating conditions, had strengthened participants' belief that they were supported. This was, however, not been the case at the PAC and resulted in a number of concerns. This in essence implied that the lack of resources had a direct impact on their view that ICTs would improve their lives for the better. The aforementioned related to issues of how the participants could be motivated or influenced when there was a problem with sufficiently available resources. This could also create the impression that ICTs were not easy to use.

This research can, therefore, conclude that the presence of working technical infrastructure can assure the individuals that support exists and they can benefit from the ICTs in terms of their own development.

4.5 Conclusion

This research has investigated the acceptance of ICTs at the PAC by young individuals in Barkly West. Both the qualitative and quantitative results show that users require assistance in order for them to engage with facilities at the PAC. Moreover, moderators such as educational levels and employment status have an effect on the identified relationships.

The research deems it necessary to remove the construct of self-efficacy as the reliability score for it is lower than the recommended threshold of 0.7. Furthermore, there seems to be a definite association between the two constructs of self-efficacy and assistance. Therefore, there is a strong possibility that once participants receive assistance and gain basic understanding with regard to using computers and the internet, they may start believing in their own capability of using ICTs.

The following chapter offers a brief summary of the findings, and reports on recommendations for future research.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter concludes this research by drawing from the entire study and bringing together various theoretical and empirical components in order to assess if the research question, sub-questions and research problem have been addressed. Furthermore, this chapter includes a discussion of the limitations of this research. In addition, this chapter includes recommendations with regard to the implementation of PACs in rural communities. Moreover, recommendations are made in this section to further explore research into this area of knowledge.

The key purpose of the research was to identify the factors that contribute to the adoption of ICTs at public access centres in a rural context. The UTAUT model was applied as the conceptual framework which guided the understanding of the adoption process in a rural context. The research further applied the ACE framework to factors identified in Barkly West that impacted the use and uptake of ICTs at the local PAC. These factors were mapped against variables identified in Table 4.13 to find a fit between what had been found and what the ACE framework considered.

The research was able to achieve its research objectives set out in Chapter 1. The evidence has shown that:

- The richness of the UTAUT model as well and the adapted generic framework has been able to give an understanding of the adoption of technologies in a rural community.
- The level of uptake and use of ICTs, especially at the PAC, is still very low.
- The PAC programme without skills development will not produce the desired results.
- The lack of computer training in rural schools is a huge contributor to the digital divide.

- Rural people are faced with other social issues which have contributed to the low level of uptake of ICTs at the public access centre.
- The PAC landscape in Barkly West has the same challenges as identified in the ACE framework.

5.2 Summary of findings

The use and uptake of ICTs are considered powerful tools in facilitating poverty reduction and empowering citizens with choices for their own development. The researcher has investigated the factors that contribute to the adoption of ICTs in a rural community of Barkly West. The rationale for this investigation has been to ascertain factors contributing to the adoption of ICTs in this context in order to better address the issue of digital divide.

The quantitative component of the research comprised a sample size of 96 participants with an almost equal gender split. Of this sample, 72.9% of the participants were between the ages of 18 and 26. In addition, 97.9% of respondents were unemployed. The selected sample was administered a questionnaire comprising the dimensions framework by Chau and Hu (2002) and a focus group discussion which was based on the UTAUT model of Venkatesh *et al.* (2003).

The research employed both quantitative and qualitative methods with the intention of acquiring a deeper understanding (Torland, 2013) of the adoption of ICTs in this particular rural community. To achieve the aforementioned the investigation was done in two phases.

Phase 1 investigated the relationship between the dimensions as guided by the generic framework postulated by Chau and Hu (2002). Through this investigation, relationships emerged that were significant. In particular, the assistance and behavioural intention relationship had the strongest coefficient compared to others; thus, it was the most significant relationship. In general, this particular result of the quantitative phase suggested that people in this rural community required assistance in order for them to engage in the ICTs available to them. This phase also extended

knowledge with regard to the importance of computer training within rural communities in order for ICTs to advance.

Turning to Phase 2, the researcher further probed in order to gain a deeper understanding of the phenomenon under study in this particular context (refer to Chapter 3, Sections 3.2.1.1 and 3.2.1.2 respectively). The purpose of this section was to allow for further discussion regarding the adoption of ICTs which also gave the researcher a platform to further probe where clarity was lacking. In this phase, the UTAUT model dimensions were unpacked and respondents given the opportunity to discuss them in detail. The discussions gave way to concepts that had emerged and on which respondents had agreed. The analytical procedures and the results obtained showed additional factors for this rural community that contributed to the adoption of ICTs.

In addition to the UTAUT model of Venkatesh *et al.* (2003) and the generic framework of Chau and Hu (2002), the research found factors that had contributed to the adoption of ICTs in this context. These included community exclusion, corruption, poor assistance and the lack of training benefits.

5.2.1 Factors that influence the adoption of ICTs at the PAC

The evidence shows the factors that contribute to the uptake and use of ICTs at the PAC in the rural community of Barkly West. These have been discovered from the analysis in Chapter 4. The findings show the factor of assistance to be the strongest predictor of behavioural intention, while social influence shows no significance. The evidence also shows that rural communities require computer training in order to fully engage with ICTs. The lack of support from the local PAC has contributed to the low level of uptake and interest.

The evidence shows the following factors to influence the adoption of ICTs at the PAC:

- Performance expectancy
- Effort expectancy
- Facilitating conditions

- Attitude towards use
- Anxiety
- Assistance
- Community exclusion
- Corruption
- Training benefits

5.2.2 Assessment of qualitative and quantitative research

In assessing technology adoption models (refer to Chapter 2, Section 2.4), the literature has informed the applied conceptual framework. The framework formed the basis of how the investigation would unfold. This research initially started off by identifying relationships between factors. The goal of this investigation was to ascertain the relative strength of coefficients before acquiring an in-depth understanding of the framework.

This analysis shaped the following relationships between factors that had contributed to the use and uptake of ICTs at the PAC (Afshari, 2016):

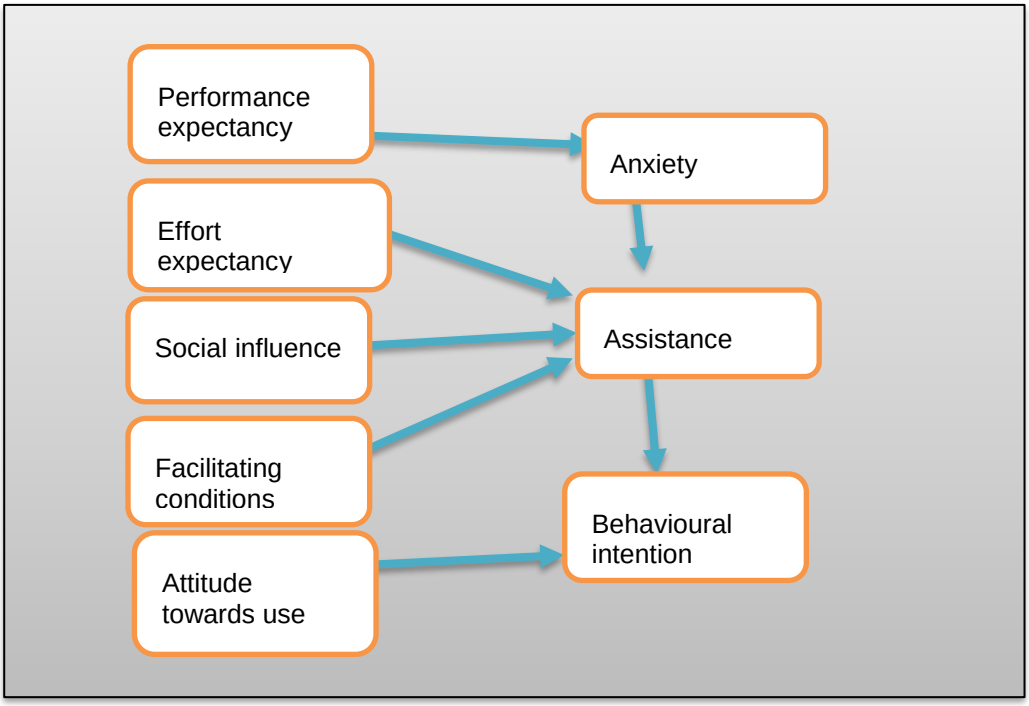

Figure 5.1: Relationships between factors (Adaptation from Chau and Hu, 2002)

In addition, the analysis yielded the below graphical overview which depicts a deeper understanding this study was seeking.

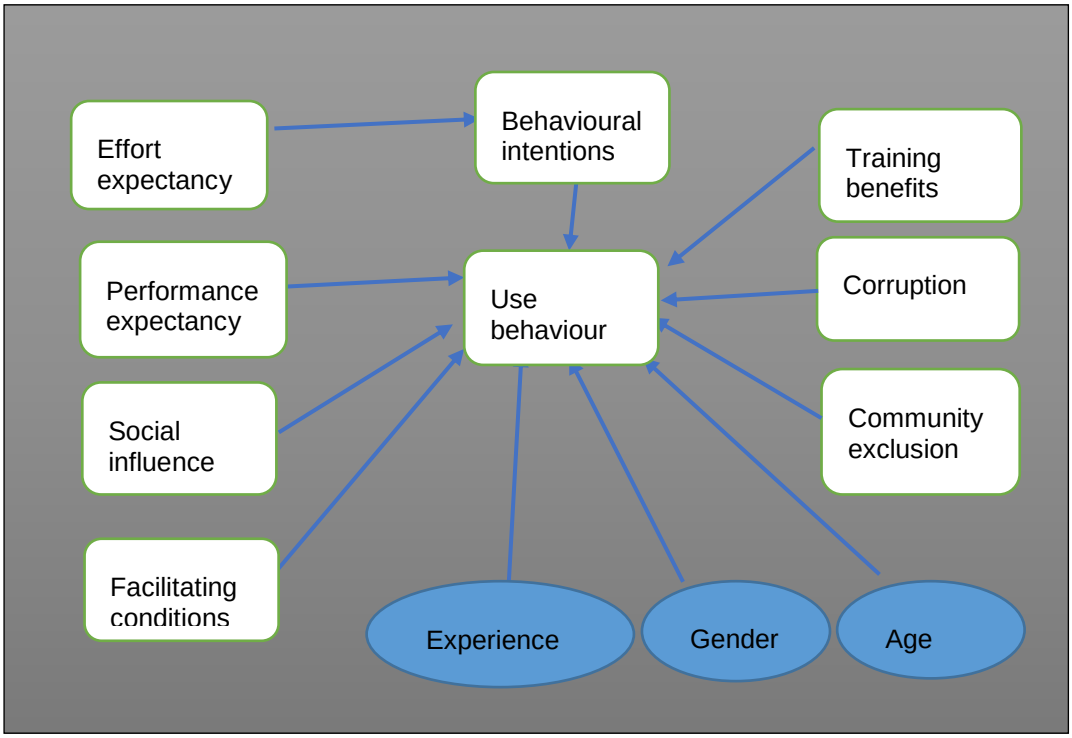

Figure 5.2: Factors for technology adoption in a rural community (Adaptation from Venkatesh *et al.*, 2003)

The digital divide is a global phenomenon as indicated by the literature by Viljoen (2003) and is evident in the status of Barkly West. The sample studied is considered 'disadvantaged' as they have not been supported with regard to the use of technology. The research has shown that the PAC programme has not been able to address the issue of a digital divide, as people in the rural community are faced with worse challenges. Policy makers have not been able to reach the underserviced persons with their interventions of bridging the digital divide. Although the research is based on a small sample of participants, the findings suggest that the young people of Barkly West require a lot of support to facilitate the use of ICTs at the PAC.

Having illustrated the factors that had contributed to the use and uptake of ICTs, various strategies aligned with both quantitative and qualitative research methods (Chauke, 2014) were employed to show how the research outcomes had been achieved.

5.2.2.1 Research reliability and validity for quantitative data

Reliability, according to Heale and Twycross (2015), relates to the consistency of a measure. McMillan and Schumacher (2006) and Neuman (2003) add that reliability can also be viewed as the level to which a test is free from measurement errors. This further means that the more error occurrence in a measurement, the less reliable the test results become.

The second measure of quality in quantitative research is validity. Heale and Twycross (2015) describe validity as the level of accurate measurement of concepts in a quantitative study. Validity can, therefore, be seen as an evaluation made on the interpretations of test scores. This is in essence to check whether correct interpretations are made and actions are taken accordingly. As a result, an assessment cannot be considered valid but the inferences about the test itself are deemed valid.

Below is the evidence for the process undertaken to ensure reliability and validity in this research.

To test for reliability or internal consistency relating to the factors contributing to the use and uptake of ICTs, the Cronbach's alpha score was calculated. This study was guided by the recommendation from Hair *et al.* (2010) which is 0.70. The survey instrument comprised eight factors which included (1) performance expectancy; (2) effort expectancy; (3) social influence; (4) facilitating conditions; (5) behavioural intention (Venkatesh *et al.*, 2003); (6) attitude towards use; (7) anxiety; (8) assistance, and (9) self-efficacy (Chau & Hu, 2002) (refer to Chapter 2, Section 2.5).

Initial factor loading showed that social influence, facilitating conditions and self-efficacy test scores were not reliable. These factors were then subjected to further analysis using structural equation modelling (SEM) to ascertain whether the Cronbach's alpha scores could be improved. This resulted in both social influence and facilitating conditions improving and these factors were then deemed reliable. However, the self-efficacy alpha score was lower than the acceptable level and therefore not considered.

5.2.2.2 Credibility and trustworthiness for qualitative data

Pilot and Beck (2014) refer to trustworthiness as the level of confidence from data gathered, how the data is interpreted as well as methods applied to ensure quality of the study. Equally, credibility is described as the criterion applied in assessing the true value of qualitative research (Hammarberg, Kirkman & De Lacey, 2016). Furthermore, Hammarberg *et al.* (2016) add that, in a qualitative study, the value stems from results being shown with acceptable background descriptions and displays familiarity to those who share the experience. This research, therefore, employed a number of checks when recording the qualitative data.

In order to check for credibility of the data gathered, respondents participated in member-checking their contributions to the focus group discussions (refer to Section 3.2.1.2). This allowed for clarification in some areas even though this was not the main purpose of member-checking.

Furthermore, to improve trustworthiness of the qualitative data, triangulation (refer to Section 3.2.1.2, viii for a definition) was adopted. This involved multiple methods which included:

- Recording all focus group discussions. The researcher transcribed all recordings and checked them against all other data from the focus groups.
- The moderator's notes (refer to Appendix E) during discussions. The moderator's notes helped to improve the data gathered from the focus groups.
- In addition to discussions, participants wrote down their answers to questions posed on sticker notes which they later had to recheck (refer to Figure 3.2).

The above allowed for the researcher to have multiple perspectives of the data, thereby enhancing the verification of all raw data gathered.

As previously explained, the objective was to seek a deeper understanding of the adoption of ICTs in the context of the PAC in Barkley West. Therefore, all methods employed were deemed necessary. To support the findings, the participants' direct quotations were cited in this research to show the reality of participants. The researcher also received guidance from her supervisor in order to better interpret the evidence.

5.3 Evaluation of the research

This section summarises the evaluation of the responses to the research questions and the outcomes of both research methods.

5.3.1 Evaluation of whether the research questions have been answered

In this section, the responses to the main research question and sub-questions are assessed. Responses were gathered in two phases to provide a holistic view to the main research question. Table 5.1 below illustrates these responses.

Table 5.1: Responses to sub-questions

Research Sub-question	Research Responses to Questions
How can the PAC model in the rural context be strengthened to improve the adoption and uptake of ICTs?	Chapter 5, Table 5.2 includes an integrated ACE framework with factors found in this study.
What are key theories, models and frameworks related to ICT adoption?	Chapter 2, Section 2.4.1 Key Theories and Frameworks This study discussed the models and theories (Sezgin *et al.*, 2018) use to investigate the adoption of technology. An assessment of these technologies was also done in order to find the most appropriate one for this study.
What are the key issues which are associated with adoption of technology at a community level, and how do they relate to each other?	Chapter 4, Research Findings and Discussion Section 4.3.4 Assessment of relationships between factors - Section 4.4 Phase 2: Focus group interviews Dimensions from the generic framework by Chau and Hu (2002) with dimensions from the UTAUT model. These were found to be relevant to the adoption of ICTs in this context. External factors such as community exclusion, corruption and training benefits were found to contribute to the low uptake and use of ICTs at the PAC. One dimension, self-efficacy, was removed due to its low reliability score.
What are the factors which promote and inhibit the use of ICTs at a typical public access centre?	Section 4.3.3 Phase 1: Survey Questionnaire Including dimensions from the UTAUT model, this study found a new dimension

	called ‘assistance’ which was the strongest predictor of behavioural intention.
What are the recommendations based on the above?	Section 5.6 Recommendations This is based on the factors found in this study which included assistance, training benefits, corruption and community exclusion.
How does the challenges associated with technology adoption relate to access, capability and environmental issues?	Section 4.4 The factors found by applying the study’s framework allowed for this comparison. Some factors fit the ACE variables discussed in this section.

5.4 Contribution of the research

The findings in this research contribute to literature in the field of ICT adoption in rural communities as well as to informing policy makers in order to address issues concerning ICT adoption. This research is based on the understanding of factors that contribute to the use and uptake of ICTs in a rural context. A number of studies has been applied under different contexts; however, this is one of very few studies which undertakes an in-depth investigation into a typical rural area of South Africa, namely the town of Barkly West.

This research may inform policy makers of adoption factors which should be considered before deploying PACs, especially in rural communities. In addition, policy makers could incorporate some of these findings as a basis of addressing the digital divide in the same context. More effort could also be put into strategies for sustainability of PACs in rural communities.

5.5 Research limitations

The researcher experienced numerous limitations during the research for this study. The researcher was based in the Western Cape while the research was conducted in

the Northern Cape. The issue of where the researcher was based had a limitation in that the researcher could not observe matters at the PAC full-time to confirm statements from participants. Time constraints and limited resources were the availability of the necessary funds and the researcher working fulltime.

The population for this study was relatively small (Basar, 2012). Additionally, the initial intended purposeful sampling was not fully followed since not all members of the intended sample did not show up for the discussions. This scenario caused limitations to the generalisability of the findings.

The venue provided for these focus group discussions could also be considered a limitation. The pre-selected groups expected the venue to be the local PAC which was located close to most participants. Most participants from the pre-selected group were also regular users of ICTs at the PAC and might have regarded the discussion as the PAC reopening. The change in venue might have affected the expected turnout; therefore, some participants did not show up.

The distance to the provided venue also required participants to be picked up and driven to the venue.

5.6 Recommendations for future research

The number of people wanting to use the PAC can significantly increase by applying innovative measures to serve the local people in ways that ensure that the venue encourages access and support.

For a small town such as Barkly West programmes need to be put in place that are easy to follow and train the users to utilise the facility to its full potential. Such programmes should have the background of a typical rural person in mind.

Support from local government is also required to ensure that staff members are empowered and trained to deal with the needs of users with no computer skills.

In addition, as part of empowering the staff and users' computer skills, workshops can be made available at the PAC on a regular basis with awareness programmes in place

at the facility. These workshops can include local relevant content for the residents to prove to them that the PAC is there to service them all and not a select few only.

Table 5.2 shows the modified ACE framework for a PAC in an underserviced community like Barkley West.

Table 5.2. Modified ACE Framework for a rural PAC

Modified ACE Framework for a Rural PAC	
1.	**Access**
1.1.	**Physical access to venue**
-	Traffic control to ensure safe crossing of road for school learners
-	Regular maintenance of infrastructure
-	Consistent operating hours
1.2.	**Suitability of venue**
-	Traffic control to ensure safe crossing of road for school learners
-	Attractive venue incorporating visuals that speak to what the town represents
-	Provide relevant local resources - Have learning programmes accessible and available to all - Technical support from staff needed - Consistent service
-	Equal treatment of all users, irrespective of personal affiliation
1.3.	**Affordability of venue**
-	Provide services like printing at the venue

- A maintained venue
- Servicing of equipment
1.4. Technology access
- Working computers and internet service
- Access to educational programmes and basic computer programs like Microsoft Word
- More computers and equipment needed
- Availability of printing facilities
2. Capacity
2.1. Human capacity and training
- Professional and skilled staff to provide support to users
- Basic training for users with no computer skills
- Relevant resources and programmes for the local people
2.2. Meeting local needs: relevant content and services
- Relevant resources, availability of learning programmes, skilled staff to provide support
- Local relevant content focused on the people of the community
- Option for content in local languages of Afrikaans and Tswana
- Mobile PAC to rotate around to local people
2.3. Social appropriation

-	Appropriate operation of PAC
-	Inclusion of local people in the services provided
2.4.	**Socio-cultural factors**
-	Gender discrimination
-	Race discrimination
-	Age discrimination
3.	**Environment**
3.1.	**Political will, legal and regulatory framework**
-	Support from local municipality
-	ICT services to be regulated
-	Political will from local government in support of the sustainability of the PAC
3.2.	**Popular support**
-	Involvement from community people in PAC issues
-	Youth becoming champions with regard to the operations and sustainability of the PAC
-	Collaboration between communities and local government
4.	**Community Exclusion**
-	Awareness programmes for local people
-	Resolve political affiliation issues
-	Distribute available resources

5.	**Corruption**
-	Control of resources/services
-	Suitable governance structures

Recommendations for future research are discussed in the following section.

5.6.1 Assistance

This study has found that rural people require assistance in order for them to use ICTs at the PAC. Given that there is a PAC in Barkly West and participants have shown that they regard the value of using ICTs, it is recommended that future research be done into the implications of having ICTs available with limited support, especially in a rural context.

The following suggestions offer possible areas to investigate in the future based on the findings from this study:

- How to provide training and support for young individuals in rural communities in order to for them to participate in ICT innovations in their communities
- How policy makers can curb the digital divide through the provision of ICT initiatives in rural schools.
- To evaluate technological resources at failing PACs

5.6.2 Training benefits

In light of what this study has found, it is recommended that future research be done on how to integrate ICT training in rural schools as well as in future PAC programmes. For these benefits to become a reality, possible areas to pursue in the future from findings of this study are:

- Re-modelling of current PAC programmes to include training benefits.

- Policy makers ensuring good governance in relation to PAC training benefits.
- Sustainability of PAC training benefits in the rural context

5.6.3 Community exclusion

The success of any community-dependent initiatives relies on the people of that community. It is, therefore, recommended that future research be done on better management of ICT programme implementation.

The following may offer possible areas to further explore in the future based on findings from this study:

- How to include rural communities in the implementation of PACs in their communities
- Integration of rural communities by policy makers in PAC programmes with no ICT background knowledge.
- How to encourage participation from rural communities in ICT initiatives.

5.6.4 Corruption

Corruption in South Africa in general has taken centre stage. The rural communities seem to mostly be affected by decisions made by those in power.

The following questions offer possible areas to explore in the future:

- Measures to ensure auditing of ICT initiatives in rural communities.
- How ICT resources are allocated in rural PACs.
- Dealing with lessons learned from failed ICT initiatives.

Future research should be restricted to areas similar to this one under investigation. For instance, areas close to Barkly West like Longlands, Delportshoop and Pniel can benefit from these recommendations.

This research has shaped the following proposals to consider when dealing with the adoption of ICTs in similar rural contexts in the future:

- Technology initiatives require assistance for the rural people to fully engage in ICTs.
- By providing community members with state-of-the-art facilities that are able to enhance their livelihoods, and facilities for their own development.
- The exclusion of community members in community projects meant for them contributes to the behaviour projected in relation to ICT initiatives
- Community members have shown an understanding of the value of using ICTs, and with training benefits they may find ICTs easy to use.

Finally, in reflection on the entire process, the researcher now has a sense of accomplishment that factors may provide a better understanding for policy makers when dealing with ICT adoption in a rural context in South Africa.

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APPENDICES

Appendix A: Consent Form to Participate in Focus Group

Consent to Participate in Focus Group

Purpose:

You have been asked to participate in this focus group as part of my Masters research. The purpose of the group is to try and understand why public access centres are not sustainable. We want to also understand why you are not using facilities in the centre. The information learned in the focus groups will be used to inform policy makers about issues raised before they provide communities with such centres.

Procedure:

If you participate in this study, you will be in a group of approximately 5 – 8 participants. There will be a facilitator who will ask questions and facilitate the discussion, and a note-taker to write down the ideas expressed within the group. If you volunteer to participate in this focus group, you will be asked some questions relating to your experience with public library, in Barkly West. These questions will help us to better understand the adoption of ICT in your community. You can choose whether or not to participate in the focus group and stop at any time. There are no right or wrong answers to the focus group questions. We want to hear many different viewpoints and would like to hear from everyone.

We hope you can be honest even when your responses may not be in agreement with the rest of the group. In respect for each other, we ask that only one individual speak at a time in the group.

Confidentiality:

Although the focus group will be tape recorded, your responses will remain anonymous and no names will be mentioned in the report. All materials will be stored in a secure location and will be administered by the facilitator.

Consent:

I understand this information and agree to participate fully under the conditions.

Participants Signature: _____ Participants Number: B.w 25

Date: 21 · 09 · 2016

Appendix B: Focus Group Guide

FOCUS GROUP

Hand out consent forms and sign the register BEFORE GROUP BEGINS.

Hand out of questionnaires to be filled in AFTER the register is signed and ask for completion before the discussion ends.

Welcome

Good morning/afternoon Thank you for taking the time to join our discussion of access to the public library. My name is ____Cecilia Frans____, and I'm __Facilitator____. AND our moderator is E. Tshwaneng. We're conducting research on issues relating to non-use of the public library. We hope to learn why it's not used and what factors contribute to non-use.

Please help yourselves to some refreshments!

Explain the process

We want to talk with you about your experiences as young individuals with regards to computers and the internet in the public library. We will be talking about reasons for using the computers and internet in the public library as well as why you are not using them. You will also be asked to write down your answers on the sticker notes handed to you.

I also want to put on record that this discussion is for Research ONLY. We are not collecting any personal information. Any information collected like your age, employment status etc. is done so anonymously. In addition note that anything you say in this discussion is regarded as confidential.

Ground Rules

Before we begin, let me suggest some things to make our discussion more productive:

- We are recording the discussion. The purpose of the recording is to allow us to make accurate notes for the purpose of the research. It is important that you speak up and that you only speak one at a time. We don't want to miss any of your comments.
- We'll only use the numbers assigned to you and no names will be mentioned. In this way, we will maintain your confidentiality. In addition, we ask that you also respect the confidentiality of everyone here. All views are important here, it is also important for everyone to participate.

Logistics

During the 1 hour we'll be here, I will pose a series of questions.

For each question:

- I will put the question in front of you – read it out loud and make sure you understand it
- The group will then have a short discussion, but you are still required to put you answer on the sticker note given to you. Please write your response in large case

- After the discussion we will as a group place the responses on the board and you will help me group the response cards in categories.
- Please try to speak no longer than ONE minute so that everyone gets a chance to speak
- I will ask you the questions and I will listen to what you have to say. I will not participate in the discussion but will offer guidance when needed. So please, feel free to respond to each other and to speak directly to others in the group. We want to hear from all of you.

This focus group is being conducted for the Masters Study on [21.09] by C. Frans and G. Tshwanagae.

The START TIME - 2:30 pm.

Are there any questions before we start?

Turn on the voice recorder.

Thank you again for taking the time to participate in this discussion. END TIME - 4:10pm.

Appendix C: Focus Group Register

Focus Group Sign-In

Project: Adoption of ICT in Disadvantaged communities Date: 19.09.2016
Facilitator: Time: 09 56am
Place/Room: Technical Municipality offices.

	Print Name	Location	Gender	Phone	Email
1.	BW2	Matateng Loc	F	0606533422	
2.	BW3	Matateng Loc	F	0737414408	
3.	BW4	Matateng loc	F	—	
4.	BW5	Matateng Loc	F	0840114090	
5.	BW6	Matateng	f	0733919810	
6.	BW7	Matateng	F	0833774686	
7.	BW8	Makweteng	F	076 043 6995	
8.	BW1	Matateng	F	0 78 82 7866	
9.	BW9	New Stands	f	0787115441	
10.	BW10	New Stands	F	—	
11.					
12.					

Appendix D: Survey Questionnaire

BW12

Assessing Information and Communications Technology (ICT) in a Disadvantaged Community

Please take some time (+- 40 minutes) to complete this questionnaire. Your responses will provide important information that will help in my research to determine ICT adoption in a disadvantaged community.

Please mark one box per question

Age: 18-26 ☑ 27-35 ☐ **Education Level:** Grade 12

Employment Status: Employed ☑ Unemployed ☐

Gender: Male ☐ Female ☑ **Area:** Mataleng ☐ Makweteng ☐ De Beers ☑

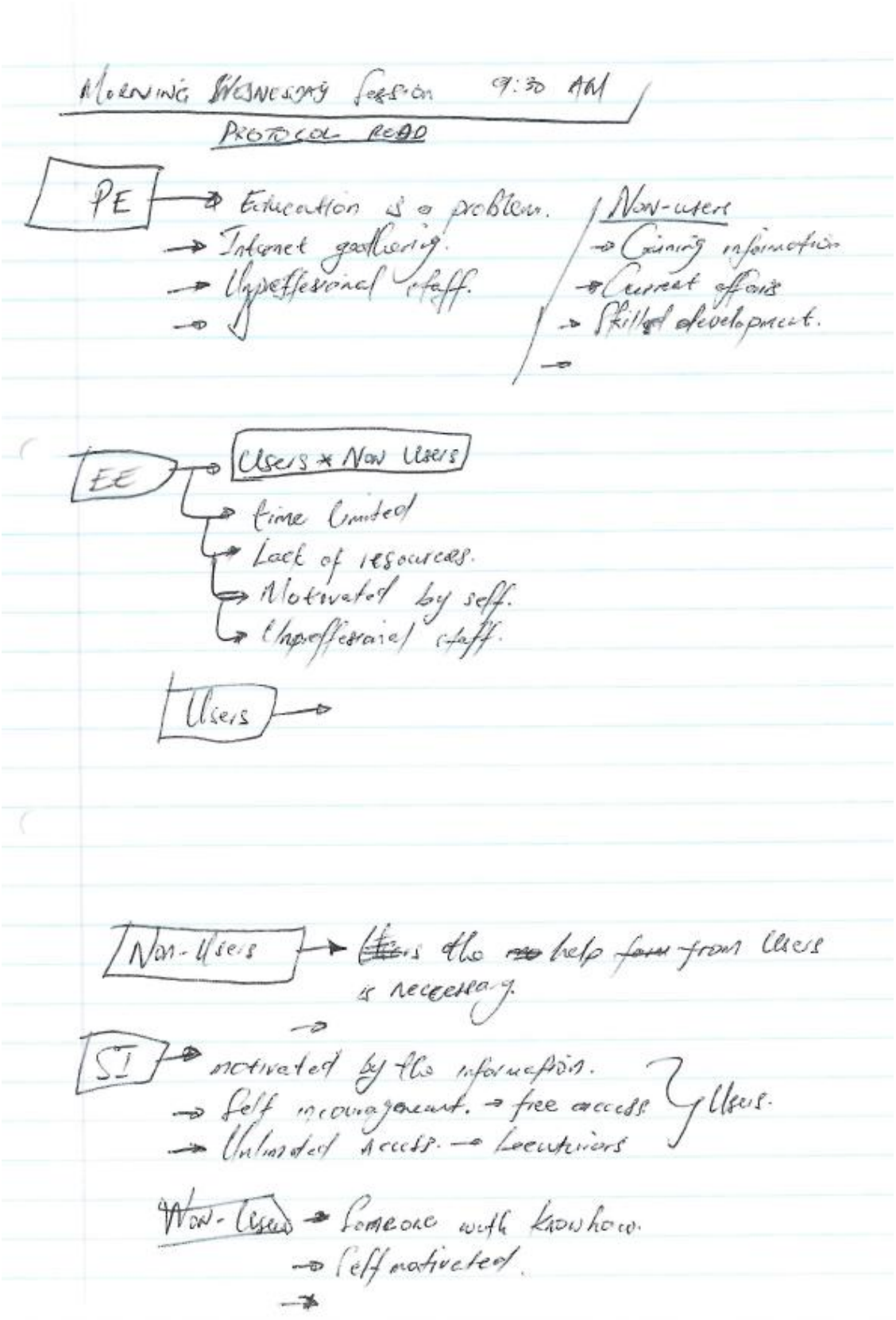
Section A	**Strongly Agree**	**Disagree**	**Agree**	**Strongly Disagree**	**Neutral**
I find using computers and the internet useful in my everyday life.	☑	☐	☐	☐	☐
The use of computers and the internet allows me to increase my productivity in my everyday life.	☑	☐	☐	☐	☐
If I use computers and the internet I will increase my chances of broadening my knowledge and undertake various tasks more efficiently.	☑	☐	☐	☐	☐
Having access to computers and the internet will contribute in my own development.	☑	☐	☐	☐	☐
Section B	**Strongly Agree**	**Disagree**	**Agree**	**Strongly Disagree**	**Neutral**
It is easy to use computers and the internet.	☐	☐	☐	☐	☑
When I use computers and the internet I seldom have any difficulties understanding what I need to do.	☐	☐	☑	☐	☐
It is easy for me to become skillful at using computers and the internet.	☑	☐	☐	☐	☐
It is easy to learn how to operate computers.	☑	☐	☐	☐	☐

1

Section C	Strongly Agree	Disagree	Agree	Strongly Disagree	Neutral
Using computers and the internet is a good idea.	☑	☐	☐	☐	☐
Computers, the internet or other technologies are interesting to use.	☑	☐	☐	☐	☐
Working with computers, the internet or other technologies is fun.	☑	☐	☐	☐	☐
I like using computers, the internet or other technologies.	☑	☐	☐	☐	☐
Section D	**Strongly Agree**	**Disagree**	**Agree**	**Strongly Disagree**	**Neutral**
People in my life who influence my behavior think I should use computers and the internet.	☑	☐	☐	☐	☐
People who are important to me think I should use computers and the internet.	☑	☐	☐	☐	☐
There is someone usually available to support me in the use of computers and the internet.	☐	☑	☐	☐	☐
Section E	**Strongly Agree**	**Disagree**	**Agree**	**Strongly Disagree**	**Neutral**
I have the resources necessary to use computers, the internet or other technologies.	☐	☑	☐	☐	☐
I have the knowledge necessary to use computers, the internet or other technologies.	☐	☐	☑	☐	☐
There are people available to help with difficulties I may have with computers and the internet.	☐	☐	☐	☑	☐
Section F	**Strongly Agree**	**Disagree**	**Agree**	**Strongly Disagree**	**Neutral**
I could finish everything I need to do using computers and the internet without asking for help.	☐	☑	☐	☐	☐
I could complete most things using computers and the internet if I have someone to help when I am stuck.	☑	☐	☐	☐	☐

Section G	Strongly Agree	Disagree	Agree	Strongly Disagree	Neutral
I feel nervous about using computers and the internet.	☐	☑	☐	☐	☐
It scares me to think I could lose all my data by just clicking the wrong button.	☐	☐	☑	☐	☐
I hesitate using computers and the internet for fear of making a mistake I cannot correct.	☐	☐	☑	☐	☐
I am frightened to use computers and the internet.	☐	☑	☐	☐	☐
Behavioral Intention	**15-30 Days**	**8-14 Days**	**4-7 Days**	**0-3 Days**	**Never**
I intend on using computers, the internet or other technologies in the next <n> days.	☐	☐	☐	☑	☐
I predict I will use computers, the internet or other technologies in the next <n>days.	☐	☐	☐	☑	☐
I plan on using computers, the internet or other technologies in the next <n>days.	☐	☐	☐	☑	☐

Appendix E: Moderators Notes



SECOND SESSION (FOCUS GROUP) AFTERNOON

PROTOCOL BEING READ

PE → USERS → INFORMATION GAIN
→ SOURCE OF KNOWLEDGE

→ NON USERS →
→ INFORMATION GAIN

EE → USERS & NON USERS → ANYTIME OF DAY ACCESS
— →

- DIFFICULT - CAUSE OF DISTANCE
- SHOULD BE OPENED 6 days a week.
- No space in the building.

SI → STAFF
→ INFORMATION GAIN -
→ SCHOOL WORK MOTIVATED
→ Motivated by a person that is experienced and can be free with.
→ family influence.

BI → FREE INTERNET & FASTER !!
→ TIME AND BE DISTANT FROM PAC

FC → DIVISION must be made.
→ NOISE /

TUESDAY FIRST GROUP

PE → KNOWLEDGE GAIN
→ NOT ADOPTION OF TECHNOLOGIES
→ EVIRONMENT PLAYED ROLE
→ EMPOWERING
→

EE → EASY TO TRAVEL → UNEMPLOYED.
→ DIFFICULT → FOR SCHOLAR
→ Social influence.
→ Location → Accessibility → Social expell
→ time limitation
→ SELF motivation
→ NO @ STAFF HELP
→ DEMOTIVATION
→ SKILLED STAFF

SI → SELF-MOTIVATION — ~~taking~~ ~~initiative~~ INI
→

FC → LIBRARY ~~COMMUNITY~~ programs that empowers community
→ LESS computer
→ small infrastructure.
→ communication to be shared by PAC to the community.

IBU → SUSTAINABLE PROGRAMS. (NON-USERS)
→ SATISFIED USERS
- RESEARCH

Appendix F: Transcript 1

Transcript 1 – 2016/09/19

Question1: If you haven't yet used the internet here: What do you think are reasons why you have not come to the PAC to use the internet and computers?

P1 – I haven't used computers and the internet because I never had a need to use it – I never wanted to send something – you also pay for it internet

P2 – they allocate time for you – sometimes you don't even get to finish what you went to search for because of time

P3 – every time you want to use the internet they tell you its not working you cant even print what you have found because you have to pay for those hard copies

P4 – whenever you want to use the internet and computers the library staff tells you that the facility is for school kids and you don't get access

1.1: If you are currently using the internet and computers at the public library…What motivated you to start going to the public library to use computers and the internet?

P5 – I only went there once to look for information and found that the computers are not working

Motivation – I wanted to apply for universities and it the closing date for applying for university was near so I thought it would be easy to go online

Question 2: If you are not using facilities…how do you think you will benefit from using computers and the internet at the public library?

P1 – you can get a lot of information from the internet and computers also you can get access to jobs advertised online

Probe

P2 – also when our kids need some information at school on the internet

P3 – I can benefit computers skills

P4 – I used it at school before so you can learn a lot from computers

P5 – I am not interested to use computers and the internet

P6 – you can benefit by gaining a lot of information like trying to fix you own phone and typing skills

P7 – a lot of skills

Question 3 : What makes it easy and what makes it difficult to get access to the public library?

P1 – Its far to get to the public library and sometimes we don't have money to pay for the internet even though you need information from the internet it makes it difficult

P2 – its easy if you are a student – you can also get things easy if you have the money to pay for services – also if you can use the computers and internet to search for things you need its much easier and you would finish quicker and because you know what to search for

Q4: Were there any influences that motivated you to use computers and the internet at the public library? Explain

P1 – I never used it at the pac but used it at school – our teacher at school that taught us motivated us even at college our lecturer would motivate us

P2 – my aunt influenced me to use computers she said you can get a job easy if you have computer skills that you can become a receptionist and so on and you will end up learning a lot – every time you need information you can do that yourself

P3 – I motivated myself I was looking for work and found that I had to know how to use a computer but told my then boss that I am prepared to learn – I would motivate others as well its not as difficult as people think its just like using your cellphone- its makes a lot of things easier and quicker

Q4.1: Who would you trust to give you advice about starting to use the computers and internet at the public library?

P4 – Somebody that is skilled when it comes to computers and the internet already

P5– a family member that is willing to help when I need help

P6 – somebody that understands computers and the internet so that they can help you when you need help

P7 – Also if there is a computer at home then I would be interested to want to learn computers and the internet knowing there is help available – I am also lazy that is why I am not interested – I belief you need to make an effort yourself to learn such things

Q6: What are you using the computers and internet for at the public library? What are some of the uses you expect from the computers and the internet at the public library that is not available to you?

P1 – research information, send emails and to apply for jobs

Q7 - Before you started using computers and the internet at the public library did you think it would be something easy to use? Explain

P1 - yes just by looking at it, it looks easy but there are too many rules for using computers and the internet- I can't imagine myself using both hands on the computer my one hand is not working properly

P2 –

Q7: What would be your ideal type of venue and ideal type of equipment for you to make use of the computers and internet at the public library?

P1 – if the staff is more professional and everyone is treated equally and you are helped when you need help- get more computers you end up waiting too long for others to finish and end up leaving

P2 – stop making school kids to pay for internet services

P3 – library staff does not know computers they are mostly elderly people and cannot help you when you get stuck

P4 – staff members tells users if they must have computer skills before they can use the facilities

P5 – faster computers they freeze too much

Appendix G: Transcript 2

Transcript 2 – 2016/09/19 – 2pm slot

P4 – there is lot of things that you don't understand by yourself and computers and the internet explains properly and giving you examples of the things you want to know

4.1. If you haven't yet used the internet here: What do you think are reasons why you have not come to the PAC to use the internet and computers

Non-user

P5 – I was interested the computers and the internet but the attitude I got from the library staff made me turn back and they were not willing to assist

5. What would be your ideal type of venue and ideal type of equipment for you to make use of the computers and internet at the public library?

Non-user and users

P1 – more time to use the computers and the internet we are given only 15minutes

P2 – if you are slow they switch of the internet at the front desk – this is a disadvantage for those slow people

P3 – the library should be more youth friendly – the staff are rude at the library – and there are specific computers that specific people use and those once are not allocated time – if we could be treated equally – it depends who you are and the treatment differs

P4 – more time should be given and more skilled people should be hired to assist some of us that doesn't know much about computers and the internet – the centre should close abit later than right now

P5 – more equipment in the centre there is about 5 computers in the library – the building is beautiful from outside

6. What are you using the computers and internet for at the public library?
What are some of the uses you expect from the computers and the internet at the public library that is not available to you?

Users

P1 – mostly for searching information

P2 – research

P3 – apply online

Expected uses

Print out application forms when there are jobs available on the internet

6.1. If you were to use the computers and internet at the public library – what sort of benefits would you expect?

Non users

Appendix H: Transcript 3

Transcript 3 – 2016/09/20

Question 1: If you are currently using computers and the internet at the public library… How has using computers and the internet played a role in your everyday life?

Users

P1 – I don't have a laptop so I use the computers and the internet at the public library – it improved my knowledge – and there is also some things I don't know and have learnt

P2 – it changed my life and has open my mind a lot

P3 – it played a huge role because sometimes we don't have data and we can get information from the computers and internet at the library – it also made my life much easier I always get everything I need

Nonuser – 1.1 - **If you are not using facilities…how do you think you will benefit from using computers and the internet at the public library**

P4 – I never thought of using computers and the internet im from the olden age – probe – im really not interested I would go there to go read

P5 – I have a laptop at home I don't know but i think because of our community or surroundings has affected us in such a way that we don't pay such things to mind its not because of ignorance- for a mere fact the major opened the library but no schools were invited primary-higher level – I remember when I was in high school we had a computer class but we didn't have any teacher to teach the subject. Our surroundings is making us none users- I would like to empower myself – mostly my laptop I have movies, music and lyrics and I type that what I do but in terms of something that would open our minds I don't think as a community we are all on that level yet maybe 20% is its possible the other 80% would want to listen music and movie mainly –

How do you think decision makers can get community members involved with regards to such initiatives? – its very simple they need to be grounded, visit schools engage with the community ask us what we need if they bring such facilities show us how to use it – currently the library is closed with the millions that was spend – we once had a book club were we could encourage reading but it didn't even last 3 months – **why do you think that is**? – lack of commitment but not from us but from people who are having the powers and resources like money the control is put into the wrong hands – for e.g. instead of buying new computers they buy second hands

P3 – to add on what nonuser P5 it depends who you are who your parents are – plus not all computers work and they don't have enough – such things create a lot of non users

3.1. Who would you trust to give you advice about starting to use the computers and internet at the public library?

Non –user

P4 – I think it starts with self commitment - someone who have knowledge of computers and the internet – someone who loves computers and the internet and have patience to teach other people someone with skills and is accredited

Earlier we spoke about child from china who grew up with these things and have knowledge would you trust someone who has the knowledge but does not have papers

P4 - Let me give you an example I know someone locally here in our town who is a master in computers who is really skilled and works for capitec and standard banks in the northern cape I would trust someone like that –- he has shown me a lot of things already like formatting a computer and to load windows but because I lack self commitment – but the problem is I do it for that moment if our library can hire someone who can teach basics on the computers and they should grow we need to have growth the problem is we are stuck in one place since years back things are still the same- maybe also we can have two rooms for those who can operate computers and one room for those who are not skilled

P5 – I would trust a stranger in the library to give me advise – like is said people in the library they cant speak with us – at the end of the day we not all perfect like the other lady said she motivated herself – some of us in the our 30s its late for us and we were not privileged to go study to I would also trust someone who knows

4. If you are currently using the internet and computers at the public library…What motivated you to start going to the public library to use computers and the internet?

Users

P1 - free internet motivated me

P2 – the library has a lot of things – what motivated me is that of the many things it has

P3 – free internet – communication also assist in being helped properly at the library – because also I know exactly what I need its easy to communicate that so its motivating

4.1. If you haven't yet used the internet here: What do you think are reasons why you have not come to the PAC to use the internet and computers

Non-user

P4 – people in charge of the library don't know anything and they cant teach me nothing all they can do is give passwords for access – plus they don't offer educational programs people go there to

Non-user and users

P1 –educational programs the venue is fine – and upgrade the computers and get more programs that can teach people

P2 – I don't have any problems with anything with the library equipment of venue -

P3 – the library is not spacious enough even on the books sections especially when school kids are there it gets packed – I also think they should get more computers –

P4- the ideal type venue and equipment – the venue is safe and in town the seats are nice the environment is good –our government spend a lot of money – nice computers enough time and computers – the place needs to create a nice vibe where they follow some sort of programs for instance one day can be used to teach Microsoft word and so on – right now everybody just does whatever there are no educational programs – adding on

P2 – the people working there have not created an environment that attracts young people to come – like there is no educational programs like I said

P5 – I think the venue and equipment is fine just the people working there attitude is not right

6. **What are you using the computers and internet for at the public library?**
   What are some of the uses you expect from the computers and the internet at the public library that is not available to you?
   Users
   P1 - I use it for research and things I need – this one of educational programs is not available and its very important
   P2 – I use it for the internet – for jobs and when I want to type – there is nothing I need there that is not available
   P3 – to type and the internet

6.1. **If you were to use the computers and internet at the public library – what sort of benefits would you expect?**
   Non users
   P4 – I would like to learn things that are beneficial that sticks in my mind like typing educational programs practical skills for when I get a job than I can use them – like learn shortcuts to the computers things that will make my life easy
   P5 - to understand what im doing so that I can remember so that I would like to go back

Appendix I: Transcript 4

Transcript 4 – 2016/09/20

2.1. Before you started using computers and the internet at the public library did you think it would be something easy to use? Explain

Users –

P1 – I didn't think it would be something easy to use so considering they allocate time too so it seems more difficult – I feel it make it more difficult

P3 – I didn't think it was something easy to use because I didn't have computer and internet background but now im fine

P4 – it was easy because we had a computer at home

2.2. What do you think are the reasons why you have not come to the public library to use the internet and computers?

P2 – because we have a laptop at home also managing my time I have access at home I also use my phone to search for things on the internet

P5 – I was scared that I might press things and not know how to fix it – I didn't want to break things

Didnt you not think you could be assisted?

All I was thinking is that I will break things so that is the reason I have not gone there

3. **Were there any influences that motivated you to use computers and the internet at the public library? Explain**

Users

P1 – my school work influenced me – I also want to know what is happening around me so that pushed me

P2 – the college pushed me so my school work you get more information on the internet

P3 – my sister influenced me because she used to do a lot of things for me since she was no longer there I was forced to go to the library because I needed information and things from the library

3.1. Who would you trust to give you advice about starting to use the computers and internet at the public library?

Non –user

P5 – I would trust someone who works at the library because they would know how to operate the computers and the internet

P4 – I would trust someone who I feel free around and can ask them anything

4. If you are currently using the internet and computers at the public library…What motivated you to start going to the public library to use computers and the internet?

Users

P1 – free wifi

4.1. If you haven't yet used the internet here: What do you think are reasons why you have not come to the PAC to use the internet and computers

Non-user

P4 – I used the internet and computers from my primary school because my uncle is the principal there – I have access already I don't need to go there

P5 - time and like I mentioned earlier I stay too far

5. What would be your ideal type of venue and ideal type of equipment for you to make use of the computers and internet at the public library?

Non-user and users

P1 – if they would increase time frame for using the computers and the internet

P2 - for me the library is fine from outside

P3 - for me the library is fine from outside – but the library is not organised properly maybe they need to put small kids in the different section

P4 – I think inside they need to partition things small kids aside because they too noisy

P5 – also the resources are not enough – we also end up waiting for kids to finish and they are slow

Adding… we also think secondary school kids should be allocated more time because they have more school work -

6. What are you using the computers and internet for at the public library?

What are some of the uses you expect from the computers and the internet at the public library that is not available to you?

Users

P1 – find new ideas – follow up on careers – research on universities

P2 – i use the library to do research

P3 – I use the public library for research and my projects that I get from college – I expect more time on the computers and the internet

6.1. If you were to use the computers and internet at the public library – what sort of benefits would you expect?

Non users

P4 – I expect to gain skills about computers and the internet

P5 – the information I went to search for – I expect to be given enough time to do what I need

Appendix J: Transcript 5

3. **Were there any influences that motivated you to use computers and the internet at the public library? Explain**

   Users

   P1 – whenever I get what I search for It motivates me to go in further and search more

   P2 - for someone like me who is not working I am taking advantage of the opportunity to use free internet

   P3 – my lecturers at the college encouraged me because I was not interested at first

3.1. **Who would you trust to give you advice about starting to use the computers and internet at the public library?**

   Non –user

Transcript 5 – 2016/09/21

P4 - I would trust someone that is a frequent library goer to give me advise –

P5 - I wont trust anyone to give me advise because when you walk around in the streets they will claim that they taught you so I would trust myself rather than someone else

P6 – I would trust myself better because I don't want anyone claiming that they got me anywhere in life

4. If you are currently using the internet and computers at the public library…What motivated you to start going to the public library to use computers and the internet?

   Users

   P1 – because the internet is free

   P2 – it made my everyday much easier cause I can do research

   P3 - I motivated myself to go use the facilities at the public library

P4 - I would trust someone that is a frequent library goer to give me advise –

P5 - I wont trust anyone to give me advise because when you walk around in the streets they will claim that they taught you so I would trust myself rather than someone else

P6 – I would trust myself better because I don't want anyone claiming that they got me anywhere in life

4. If you are currently using the internet and computers at the public library…What motivated you to start going to the public library to use computers and the internet?
   Users
   P1 – because the internet is free
   P2 – it made my everyday much easier cause I can do research
   P3 - I motivated myself to go use the facilities at the public library

4.1. If you haven't yet used the internet here: What do you think are reasons why you have not come to the PAC to use the internet and computers
Non-user
P4 – the library if for the community and is owned by the local running ANC government so when you get in they look at you funny
P5 – I have no interest to go to the library I would rather use a friends computers – those computers there are for specific people and they wont give me the attention I need like my friends would
P6 – the reason I have not gone is because the library staff look at you funny – everything is ANC owned and if you are not affiliated with the party they wont treat you right

5. **What would be your ideal type of venue and ideal type of equipment for you to make use of the computers and internet at the public library?**
   Non-user and users
   P1 – you see in town nothing will ever change –it will not change because it is ANC that is in charge – if they could hire people that have the skills to work there mayb – **the problem is with people working in the library but in terms of venue its fine**
   P2 - the venue is ok for me – I think we should get another library in the locations coloureds and white people are treated much better than us from local schools
   P3 - the venue is fine – the resources needs to be upgraded – a better service- library staff needs to be trained too – school kids are assisted by securities – even the books are old and in Afrikaans
   P4 - the venue is fine but the books are not in our languages – they need to hire more skilled staff it will create interest in some of us that doesn't know much of computers and the internet – I think the library is also not located at a very safe area
   P5 - the library staff needs to change as well as the time needs to change – also the library staff needs to change their attitudes
   P6 - the library staff are not very welcoming and they rush you to finish

Appendix K: Transcript 6

Transcript 6 – 2016/09/21

3. **Were there any influences that motivated you to use computers and the internet at the public library? Explain**

Users

3.1. Who would you trust to give you advice about starting to use the computers and internet at the public library?

Non –user

P1 – I would trust my cousin she knows a lot about computers and she studied IT at the college – which will help me to become computer wise – it will make it easy for me to ask when im stuck

P2 – my cousin she knows the internet and computers she is always aware of jobs and bursaries available – and if I don't listen to her she wont help me when I need further help

P3 – my brother I will trust him even though he doesn't teach me how to do things on the computer and would rather do it for me

P4 – my sister she once motivated me that computers are important – she is my role model and whatever advise she gives is also positive

P5 – I would trust my uncle he is a Politian and can get things done

P6 – my boyfriend he studied IT I would trust him

P7 – my brother – we would sit and talk about how computers are important

P1-P7 – we would also trust this young man Tebogo Kopeledi he studied IT and he is knowlegable about computers and he always encourages when he meet you in the street

4. If you are currently using the internet and computers at the public library…What motivated you to start going to the public library to use computers and the internet?

Users

4.1. If you haven't yet used the internet here: What do you think are reasons why you have not come to the PAC to use the internet and computers

Non-user

P1 – I haven't used them because I never got a chance and I would knock off late and by the time I get there is closed

P2 – I have never seen the computers on that is why I haven't gone there to use them

P3 – I don't think will ever use them because I have kids that need to use them maybe they will teach me

P4 – the reason I have not gone there is because I stay too far

P5 – its far and im still upset for being turned away from using computers and the internet when I went there because my child is growing I will need to help her also in the future

P6 – I don't think I will ever go there – sometimes I want to use some programs and not all of them are available – programs are limited

5. **What would be your ideal type of venue and ideal type of equipment for you to make use of the computers and internet at the public library?**

   Non-user and users

   P1 –

   P2 – More space and sections for smaller kids and a computer section for us that wants to learn and have someone to assist us

   P3 – the people working there must practise Ubuntu and the people will feel welcomed – we must mix races working in there so that we can build each other

   P4 – our library is very nice from outside – I wish they can have it at a more convenient place – I don't think the location is good

   P5 – they must have someone to assist when you need help

   P6 – mayb they can expose pictures of computer programs available and wifi even the best authors just so you know what is available

   P7 – the library from outside looks very appealing but I just wish they can do something about how the computers are placed

6. **What are you using the computers and internet for at the public library?**

   What are some of the uses you expect from the computers and the internet at the public library that is not available to you?

   Users

6.1. **If you were to use the computers and internet at the public library – what sort of benefits would you expect?**

   Non users

   P1 – typing skill, data capturing being able to research for things like career guidance and jobs

   P2 – being able to do typing, printing on my own everything basically

   P3 – I would like to know how to use a computer and the mouse and being able to type not looking at my hands and on the screen

   P4 – typing skills

   P5 – typing skills

   P6 – typing skills

   P7 – I want be able to type on my own

P4 – its difficult because its close to the main road you cant really concentrate because its noisy and the kids passing up and down in the library

P5 – its easy as people we are not the same and you are welcomed sometimes when you get there the staff would tell you that its time to close around 3 – and the

P6 – its difficult because its far and its not easy to cross the busy road

P7 – the access to the library is controlled by people working in there because we are not treated equally where kids from the school in town are helped when they ask for help – the staff also restricts us and you don't have enough time to do what you need – plus the computers are not enough

2.1. Before you started using computers and the internet at the public library did you think it would be something easy to use? Explain

Users –

2.2. What do you think are the reasons why you have not come to the public library to use the internet and computers?

P1 – everytime I go there they tell me something is not working – either the internet is offline or something is broken

P2 – I saw with my own eyes that those computers there are for certain people – I was turned away because I did not come during the time assigned for searching the internet – also the staff attitude was not good so from that day I never went back because im still upset – also I think the library should close late where school kids can be there after school and people like us go there later in the evening

P3 – the computers are always occupied and sometimes those computers are booked for certain events – they only have four computers – some people are always there and using the computers

P4 – I find it useless because of the time allocation you could never finish with the time allocated- you cant limit us on the computers and the internet

P5 – we are not treated equally at the library white people are always helped first – that is why I don't go there

P6 – I don't think these people cant help us I think they are lazy even when you get there and no-one is using the computers they still turn us back- the people working there are not patient with us that is why I don't go there

Appendix L: Transcript 8

Transcript 8 – 2016/09/22

2.2. What do you think are the reasons why you have not come to the public library to use the internet and computers?
P3 – they services provided is not consistent – and the staff never can give you reasons as to why the library is closed

3. Were there any influences that motivated you to use computers and the internet at the public library? Explain
Users
P1 – my friends and surroundings motivated me to use computers and the internet they had access there- because they explained to me that I could have access to knowledge around the world and I was interested
P2 – I was part of a reading club at primary school so that motivated – my cousins my surroundings we ended up using the computers and the internet and we also ended up finding computers interesting and we learned to fix them and it became a passion because we enjoyed fixing computers as well

3.1. Who would you trust to give you advice about starting to use the computers and internet at the public library?

Non –user

P3 – the librarians/staff because I would think they already using the computers and internet at the library

4. If you are currently using the internet and computers at the public library…What motivated you to start going to the public library to use computers and the internet?
Users
P1 – I was motivated by school projects and we ended up using computers and we found that it would be quicker to use the computers
P2 – free internet and books that are there and my personal achievement to become a best seller and getting inspired by books at the library

4.1. If you haven't yet used the internet here: What do you think are reasons why you have not come to the PAC to use the internet and computers
Non-user
P3 – the library is not consistent and they don't act in a professional and they lack communication to the community in terms of when resources are not working or that the library is closed you only find out these things when you already there

P2 – the relevant books to school kids the books to serve any purpose to them – flexible working hours

P3 – is support what P1 said we need to have sections for services offered – maybe they need to hire someone that can be available to assist the school kids so that they can finish on time – perhaps a mobile library could also help the library is too far also

6. **What are you using the computers and internet for at the public library?**
   What are some of the uses you expect from the computers and the internet at the public library that is not available to you?
   Users
   P1 – I research, downloading what I would like to be available is some music software that I can use freely – they also don't have MS Office their typing software limits you
   P2 – emails, research – I don't expect much its not personal but I think early childhood development programs should be available…chess programs, reading clubs

6.1. **If you were to use the computers and internet at the public library – what sort of benefits would you expect?**
   Non users
   P3 – I can benefit from people that are using it they will be able to assist me when I struggle – free internet