

**MOBILE INTERNET ACCESS AND AFFORDABILITY AMONG YOUTH IN SOUTH  
AFRICA: RETHINKING UNIVERSAL SERVICE AND ACCESS IN THE  
AGE OF 'DIGITAL MOBILITY'**

**BY**

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## **DECLARATION**

I, **Masimbe Chinoza**, hereby declare that this dissertation titled: **Mobile Internet access and affordability among youth in South Africa: Rethinking universal service and access in the age of 'digital mobility'**, submitted to the University of Limpopo, for the degree of Master of Arts in Communication Studies has not been previously submitted for any degree at this or any other university; that it is my work in design and in execution, and that all material contained herein has been duly acknowledged by means of complete references.

.....

**Masimbe**

.....

**Date**

## **DEDICATION**

This work is dedicated to my lovely family. The support they showed is unthinkable. I specifically extend my gratitude to my mother who showed exceptional love and unshakable support towards my studies. To Prof T. Oyedemi, the supervision you provided was critically important towards enhancing one's mindset to be a critical scholar.

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## **ABSTRACT**

The rates of Internet uses are still devastatingly low especially in developing countries and South Africa is no exception. However, South Africa has had a state policy commitment to attain Internet access for those who have been unconnected in the post-Apartheid era (Electronic Communication Act, No 36 of 2005). The problem is that the policy application has been one-sided, only focusing on providing public fixed Internet access through community libraries, Thusong service centres, hospitals and public schools. While this effort is credible, it does little to address the upsurge of mobile Internet access that is increasingly characterising the digital age. The age of digital mobility represents a shift from fixed public Internet access to individualised mobile Internet access through mobile phones. However, the high prices of mobile Internet data make Internet access exclusionary in South Africa, making the needy persons to remain outside of the digital revolution. This study explored issues regarding the high cost of Internet data in South Africa and suggests ways on how universal service and access policy can be formulated to focus on individualised mobile Internet connection. Using a mixed method approach, a convenience sampling technique was used to recruit 200 University of Limpopo students to participate in a survey, and a purposive sampling technique was used for selecting one official from the Independent Communication Authority of South Africa (ICASA) and another official from the Universal Service and Access Agency of South Africa (USAASA) to participate in the standardised semi-structured interview. The results indicate that unless the universal service and access policy focuses on addressing the individualised mobile Internet access for needy persons, tapping the benefits that the Internet provides will remain out of reach for many South African youths.

**Keywords:** *Mobile Internet access, digital mobility, needy persons, universal service, universal access, youth, University of Limpopo, USAASA, ICASA and South Africa.*

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# CHAPTER ONE

## INTRODUCTION AND BACKGROUND

### 1.1 Introduction

There is a problem of skewed and partial access to Internet in South Africa (Bagarukayo and Kalema, 2015). However, the International Telecommunication Union (ITU) (2016) statistics show that only 5.25% of Internet access penetration is on fixed broadband in South Africa, compared to an extensive mobile phones' penetration of 159% per 100 people in 2015 (World Bank, 2016). ITU (2015) statistics asserts that in South Africa, households with Internet access at home is at 50.6% and individuals using Internet access is at 51.9%. The data show that there was an overall 51.9% Internet access penetration per 100 people in South Africa in 2015 and 8% fixed telephone subscribers (ITU, 2016). Therefore, the mobile penetration at 159% per 100 people is indicative of mobile phones becoming dominant and imperative as a form of communication in South Africa. Similarly, Scott, Batchelor, Ridley and Jorgensen (2004) indicate that mobile phones are important as Internet access tools in developing countries and many parts of Africa.

The dominance of mobile cell phones as crucial and always-on mode of communication has transcended and gained momentum in the age of 'digital mobility'. This has resulted in various studies investigating the skills, uses and access to Internet, linked to the mobile smartphone applications such as WhatsApp, blogs, Facebook and Twitter. In this context, Internet access is framed to enhance education, economic, political and socio-cultural aspects of development (Hargittai and Hinnant, 2008; Pew Research Center, 2011; Bere and Rambe, 2013; Katz and Callorda, 2018d).

Meanwhile, various studies have indicated Internet access among youth to be skewed in terms of gender, race, geography, family income, skills and uses (Hargittai and Hinnant, 2008; Servaes, 2013). In South Africa a study by Oyedemi (2015) on stressing digital inequalities through participation, race and geography, shows that Internet use among youths indicates male students, at 59%, using Internet more than female students, at 49.3%. The study also indicates that 88.6% of White students reported to

have access to Internet at home compared to African students at 23.1%. In terms of geography, the study shows that 65.9% of students living in cities use Internet on daily bases compared to 41.7% of students living in rural and 29.4% of those living in semi-rural areas. Perhaps in South Africa, this inequality in terms of geography is further amplified when municipal key developmental projects differ according to geographical preference. For instance, the municipal governments of Tshwane and Cape Town launched free public Wi-Fi networks to increase Internet access in those cities, while other municipalities in other towns and cities might be prioritising other development projects.

Mobile broadband reach and use in South Africa is far wide spread than the fixed broadband. Statistics show that mobile broadband subscription per capita in 2015 was at 46.7% compared to fixed broadband subscription per capita at 3.2% in South Africa (ITU, 2016). The data shows that 37.7% constitutes the number of households with Internet access in South Africa, adding to 49% of individuals using Internet (ITU, 2018). Apparently, current scholarship in the past decades in the field of research to remedy the digital divide, focused extensively on the “haves” and the “have-nots”, skills, uses, urban-rural digital inequalities and family incomes – rich-poor patterns of access and less on mobile Internet access inequalities among youth.

The focus of this research is two folded, 1.) to explore issues regarding affordability and high data cost to access Internet among youths, and 2.) to suggest universal service and access policy formulation that focuses on personal Internet connection, that is; mobile Internet access, among youths in the age of digital mobility, rather than a focus on public mass access. Using the University of Limpopo students as a representative sample of youth in South Africa, an official from the Universal Service and Access Agency of South Africa (USAASA) and another official from the Independent Communication Authority of South Africa (ICASA) as representatives of policy makers in the telecommunication service, this study engages the two key areas of the research focus.

Previous studies have shown that young people constitute a significant group to examine in studying the benefits, trends and implications of Internet access (Hargittai



and Hinnant, 2008; Oyedemi, 2015). ITU (2016) observes that young people in Africa use Internet more than the mature and old people do. The study shows that young people constitute 20% Internet users compared to 6% of the mature and adults. Subsequently, various studies show that most youth access and use the Internet mostly through their mobile phones (Kreutzer, 2009; Bere and Rambe, 2013; Oyedemi, 2015).

However, affordability and cost appear to be pertinent challenges that impede the full-scale capability of the Internet for socio-cultural and economic-political developments among Internet users (West, 2015). According to West (2015), by the year 2015 about 3.1 billion people had access to the Internet in the world, leaving 4.2 billion people unconnected. Recently, the World Internet Statistics (2019) indicates that the African continent constitutes 17.1% of the world population, the penetration rate of Internet in the continent is at 39.8% and only 11.9% are constant Internet users. Both the rates of Internet penetration and that of Internet uses in Africa raises concerns when compared to, for instance, Latin America/ Caribbean which constitutes only 8.5% of the world population but its Internet penetration is at 68%, and the actual Internet use is at 10.1%. However, the South African Internet penetration is at 53.7%, per World Internet Statistics (2019), which is even lower than other African nations such as Kenya at 83%, and this is the highest mark reached in the continent.

To meet the challenges of high cost of Internet access for the needy persons (poor people), great attentions towards reducing the cost of mobile data bundles is a priority since mobile phones are becoming prominent as access points for Internet. The Research ICT Africa report (2015) indicates that Tanzania has the cheapest data rate and its rate per one Gigabyte is at 0.89 US dollars compared to South Africa's one Gigabyte at 5.26 US dollars. In comparison to other larger telecommunication markets in Africa, South Africa has a high one-Gigabyte package price. For example, Kenya's one Gigabyte is priced at 5.0 US dollars, Egypt at 2.8 US dollars, Nigeria at 5.26 US dollars and Malawi at 5.8 US dollars. Tanzania attained the low cost of mobile Internet data through the rollout of high-speed Internet network of the fourth generation (4G) LTE technology by the state-owned telecommunication company (Research ICT Africa, 2015).

This study had explored the challenges associated with mobile Internet access, specifically on costs and affordability using the University of Limpopo student participants as the sample population for youth to show the patterns of mobile Internet access. The study also engaged the universal service and access policy of South Africa with one official from USAASA, under the project management for providing public Internet access in Limpopo Province. Another official from ICASA under the mobile Internet data pricing regulatory framework was interviewed. This was done to gain perspectives on the current activities of these institutions towards enhancing Internet access for the needy persons in South Africa.

It is not surprising that when people access the Internet, they need to access varied content for affordable services, reliable infrastructure, comparatively uncensored information, and in addition to a local language translation to enhance understanding (West, 2015). The high Internet data costs and straining affordability in South Africa is exemplified by the #DataMustFall campaign of 2016, where there was a campaign against high cost of mobile Internet access. Since then, various campaigns have taken various forms in parliament, and protests through social media platforms such as Twitter and Websites such as *The South African* and *itweb.co.za*. All these are indicators of the high cost of Internet data in South Africa.

The current South African National Development Plan (NDP) summaries the government pledge to build a more inclusive society to eliminate poverty through decreasing Internet access inequality by the year 2030. The Internet plays a key role in enabling the objectives of the NDP to be carried out. Access to ICTs is reasoned to further the constitutional goal of the right to access information, and to improve the quality of life of all citizens, freeing the potential of individuals (Chapter 2, Section 16 Act 1, a – d). Equal access to opportunities in South Africa supports the rights and freedoms treasured in the Constitution of the nation (Cerf, 2012; Jennifer 2013; Wicker and Santoso 2013; Oyedemi 2015). This founding declaration further obliges the government to intervene and address forms of inequalities that exist in South Africa. Currently, the high cost of Internet data in South Africa is increasingly impeding the potential of Internet access's capability for development. In line with this constitutional

injunction, this study explores the potential of advancing individualised mobile Internet access to needy persons rather than only focusing on providing fixed public Internet access through the universal service and access policy approach. There are different categories and indicators of needy persons in South Africa such as receiving of social grants by the low-income families, old age and the disabled (Van der Berg, Siebrits and Lekezwa, 2010). These persons need individualised assistance and the number of needy persons in South Africa has been overwhelming, requiring systems to administer on delivering subsidies (Republic of South Africa General Notice 987 of 2008).

This study adds to the literature that focuses on attempts to address the skewed Internet access not only in South Africa but the world at large. The policy approach focusing on providing public access points – telecentres, community and public library – to the unconnected, as part of government intervention to bridge the gap, which left mobile Internet connection to the dictate of the market, who charge high prices is critical towards attaining the benefits associated with the Internet. Apparently, the ‘mobile age’ implies a shift from mass fixed broadband connection to personal Wi-Fi connection mostly through mobile phones. The ‘mobile age’ promotes ‘*Always-on-connection*’, hence the attempts to provide access in this regard implies connecting individuals and not providing Internet access only at fixed public points such as the community library.

## **1.2 Background on key focus areas of the study**

This research is largely based on key focus areas that relate to Internet access. Firstly, there is a focus on youth and the challenges in accessing the Internet among this population. Secondly, the study also focuses on the use of Internet access and development, communication in the age of digital mobility, universal service and access policy of South Africa and the digital inequalities that exist.

### **1.2.1 Youth and the challenge of Internet access**

It has been acknowledged that the pattern of Internet access among youth in South Africa is through their mobile phones (Kreutzer, 2009; Oyedemi, 2015). The challenge is that the high cost of Internet data, as Yeboah and Ewur (2014) have indicated, limits access to the benefits that are brought by the Internet. For the past decades,

scholarship on the challenges and inequalities to Internet access among youth tend to focus precisely on race, age, geography and family income (Oyedemi, 2015). Zillien and Hargittai (2009) observe that young people from low-income families do not engage on capital enhancing activities than those from high-income families. Hargittai and Micheli (2018) critique the notion that young people are tech-savvy, showing that this is not universally applied to all youth. Similarly, Micheli, Redmiles and Hargittai (2019) indicate that digital inequalities are manifested through different Internet skills and uses among youth.

The scope of scholarship on digital inequalities has obliged governments across the world to provide fixed mass access to address affordability and high data costs. For instance, the Philippines government embarked on extending a public Wi-Fi programme to the rest of archipelago, beyond Manila in public spaces such as schools, hospitals and airports, where citizens use a government-supplied digital ID to log into the Wi-Fi limited to 3 Gigabytes per month (Alliance for Affordable Internet, 2017). Similarly, the Tanzanian President, Samia Suluhu Hassan, has launched a project to install public Wi-Fi services in Recreational Halls in Dar es Salaam, with the goal of creating a 'smart city' (Tanzania Daily News, 2016).

In addition, the Indian government announced its intention to roll out free Wi-Fi to over 1000 villages across the country, as part of the Digital Village programme, to which each village will have a Wi-Fi hotspot installed where villagers could access Internet using their smart mobile phones (CNN, 2017). In South Africa, the Cities of Pretoria and Cape Town have been declared Wi-Fi cities and OR Tambo District connectivity was launched at Reuben Ntuli High School, Mhlontlo Municipality by the President, Cyril Ramaphosa. While these efforts are honoured, they do little to address the mobile digital culture of '*Always-on-communication*'. This approach limits access to those residing close to the installed Wi-Fi hotspots in the city, semi-rural or rural areas. Critically, this approach can be argued to have widened the gap between those who reside close to the Wi-Fi hotspots and have quick access and those from areas without the free Wi-Fi access and are not connected.

Apart from the challenges of skills, lack of knowledge on the benefits of Internet access by others and what one does on the Internet when they are connected, access itself is a major barrier that impedes individuals to be connected to the world. A world study by McKinsey Company (2013) indicates that 18% of non-Internet users are elderly people, 28% of the population is illiterate. Of this population, 52% are female who do not use the Internet whereas 50% have no access at all, with income levels far below the poverty line of their countries. Therefore, while the challenges on skills and knowledge on how to make the best possible output of Internet are acknowledged, basic access to Internet is still overwhelmingly a challenge. As a result, this study builds on previous studies on Internet access inequalities among youth by exploring the current patterns and challenges of access in terms of affordability and the high cost of Internet data bundles at a semi rural university. This study goes beyond the notion of improving digital skills and uses but explores the inequities in terms of high Internet data bundle costs and proposes a frame for universal service and access policy that is relevant to the age of digital mobility.

### **1.2.2 Internet access and development**

Although Internet access by itself is not a panacea for development, it still offers a plethora of economic and social benefits for many youths. For example, the growth of Internet applications, such as Linked-in, Career-24, Site Jobs, Career Junction, Dice.com, TechCareers.com and Internship.com, has created access to jobs for many youths and some sites have paved a way to entrepreneurship opportunities through online engagements that enhance and facilitate new services. Since most youth access the Internet on their mobile phones through purchasing data, affordability and high data costs become potential barriers that restrict the benefits of Internet access to many youths.

McKinsey and Company (2010) estimated a 10% increase in broadband household penetration to 1.4% of the Gross Domestic Production (GDP). On the other hand, the World Bank report (2016) asserts that every 10% increase of mobile broadband results to 1.21% of GDP for the developed nations and 1.38% GDP for the developing countries. This is indicative that mobile Internet penetration adds more to the GDP than

fixed household Internet penetration. The Information and Telecommunication Union (ITU) (2019) indicates that in most of the countries in Africa, an increase of 10 per cent in mobile broadband penetration in Africa would yield an increase in 2.5 per cent in GDP per capita. Therefore, it becomes imperative for this research to explore potential challenges that otherwise impede development potentials of mobile Internet access.

The Internet is increasingly being used for educational purposes, health care services, economic services and political participation. Internet access on education, for instance, stress that the use of Internet access fosters an interactive academic engagement between lecturers and students and amongst students compared to the use of electronic blackboard which mostly favours lecturers than student communication (Evoh, 2007; Bere and Rambe, 2013; Hulsmann, 2013; Simpson, 2013; Andronie and Andronie, 2014; Button and Harrian, 2014). Furthermore, for United Nations Educational, Scientific and Cultural Organisation (UNESCO) (2000) indicates that the use of Internet has a significant impact on aspects of gender equity in educational activities and consequently, participation in politics and social movement. This study explores the patterns of Internet access among youth in terms of affordability and shows the effectiveness of the government of South Africa in ensuring that people access the Internet meaningfully. The study proposes a frame of the universal service and access policy strategies that can address the problem of mobile Internet access. Unless the high cost of mobile Internet data is mitigated for needy persons, the importance and the benefits of Internet access will remain skewed in terms of affordability and the benefits partially attained.

### **1.2.3 Communication in the age of digital mobility**

Digital mobility defines the current state of Internet connectivity that is not fixed but allow for smart connection of Internet access through mobile devices. The adoption of Internet access combined with the miniaturisation of mobile phones has redesigned the communication landscape of today (Jenkins, 2006). Mobile phones allow for always-on-communication, breaking the barriers of time and space to real time communication. This culture of 'digital mobility' has impacted the communication experiences in many ways. For instance, the culture of '*now-access*' to information anywhere anytime exists

through the combination of mobile devices and Internet access. However, affordability and high cost of data is compromising robust Internet dividends in economic development, health care, improving education and strengthening cohesion among societies through online engagements in many developing countries around the world.

Also, mobile Internet has contributed to communication benefits: connecting businesses and consumers, governments and citizens and providing access to information to support economic and political activities. There has been a shift of services delivery by governments on approaches to citizens' outreach programmes, announcements and communication. For instance, entrepreneurship advertisement and application, health care, voting and land registration are now automated and delivered through broadband networks (Pew Research Centre, 2011). Since Internet access has become a mobile phenomenon, universal service and access policy formulation that focus on mobile Internet access as part of macro-economic stimulation becomes imperative. This is a focus of this study which explored how the universal service and access policy strategies can be expanded to focus on mobile Internet access rather than primarily focusing on provision of fixed Internet access through platforms such as Thusong Centres and community libraries in South Africa.

#### **1.2.4 Universal service and universal access**

The Pew Research Center (2011) observed that nearly one-quarter of the world exists at a subsistence level of less than \$1.25 (US dollars) per day. These are mostly people in Asia, India and sub-Saharan Africa which constitutes 29% of 1.6 billion people who fall below the extreme poverty threshold across the world. Hence, for the past decades, the concepts 'universal service' and 'universal access' have been imperative to guide socio-cultural and economic-political inequalities on the information society and mobile communication. The recognition that lower family income and low Internet penetration levels impede the growth of GDP per capita resulted in governments resorting to fixed mass Internet access to connect the unconnected so that they utilise free Internet access and benefit from this technological revolution.

Universal service and universal access refer to the notion that include preferential treatment of citizens to accessible and affordable ICT services, Internet access

included. They have been applied to frame Internet access as a human right (Goode, 2010; Jackson, 2011; Cerf, 2012; Jennifer, 2013; Wicker and Santoso, 2013; Oyedemi 2015). In South Africa, strategies and the policy approach to Internet access is undertaken under the universal service and access framework recognised in the Electronic Communications Act, No 36 of 2005. The theme '*South Africa connect*' is a product of the Act.

The Universal Service and Access Agency of South Africa (USAASA) is responsible for facilitating the extension of access to ICTs to all. The Universal Service Fund (USF) ensures the provision of funds for the construction of telecommunication infrastructure. For example, USF in South Africa has been providing funds for the provision of public Wi-Fi in community libraries, public service centres such as hospitals and clinics and to provide ICT infrastructure to academic institutions (Research ICT Africa, 2010). This supports the rationale to engage these institutions on approaches to Internet access, affordability and issues around high Internet data costs in South Africa.

The problem is that these concepts tend to explain and define the problem of Internet access in terms of fixed Internet access in South Africa. Their applications tend to focus on the provision of fixed Internet access through community libraries, public hospitals and Thusong centres to name a few. The goal in this research is to call for a rethink of these policy approaches that tend to focus extensively on the provision of fixed public Internet access and neglecting mobile individualised Internet access. The age of digital mobility represents a shift from accessing fixed Internet access to wireless mobile Internet access through mobile devices. The consequence is that the needy persons are disadvantaged in tapping the benefits associated with mobile Internet access due to the high cost of mobile Internet data. This study proposes a frame of the universal service and access policy to expand the focus on the provision of mobile Internet access rather than focusing on providing fixed public Internet access.



### **1.3 Inequalities and digital technology access: Background to the theoretical framework**

Social inequalities follow a path of different theoretical perspectives. However, social inequalities are generally understood as the existence of uneven distribution of resources, skewed opportunities (Donni, Rodríguez and Dias, 2015), typically through rules of distribution, that stimulate certain patterns of socially defined categories of individuals that gain differently from the economic-political and status in society (Lin, 2000; Ridgeway, 2014). Historically, differentiation preference of access was brought about by class, economic levels of income, power, race, age, gender, ethnicity and religion (Kreutzer, 2009; Bere and Rambe, 2013; ITU, 2016). These social inequalities consequently skew the distribution and access of non-monetary rewards and benefits such as access to the Internet.

There are various forms of inequalities that exist through forms of economic, social and cultural capitals on every sector of human facet. Theoretical approaches on inequalities indicate that these numerous forms of inequality in terms of socio-economic, cultural, political and technological, are evident through gender, race, ethnicity, religion and in the social stratification that they create in societies (Anthias, 2013; Lewis, 2013; Dietz, 2017; Stephens, Markus and Phillips, 2014; Woodman and Wyn, 2014; Bradley, 2015; Oyedemi, 2015; Oyedemi, 2016).

The term digital inequalities came about as a realisation that the issue of “digital divide” is more than an access problem and cannot be overcome simply by providing Internet access to people. Therefore, digital inequalities refer to inequalities between persons, households, geographic locations, demographic categories, age, skills, gender, income inequalities and infrastructure to connect to the Internet such as mobile phones (DiMaggio and Hargittai 2001; Kim and Kim, 2001; Livingston, 2010). These are the several patterns of digital inequalities which characterise and shape the social sphere (Ragnedda and Muschert, 2013).

DiMaggio and Hargittai (2001) contend that digital inequalities refer to the differences in access and inequality among those with proper Internet access – pointing to equipment, social support, skills, autonomy of use and the purpose for which digital technologies

are used. The concept of 'digital inequality' was framed from 'digital divide' since the concept of "digital divide" was narrowly restricted to access inequalities (DiMaggio and Hargittai, 2001; Servaes, 2014). Within the digital technology discourse therefore, issues of poverty, class struggle, economic imbalances and other social ruptures continue to influence and shape the social analysis of individual participation, inclusion and exclusion in humanity (Mihelj, Leguina and Downey, 2018).

The theoretical approach to social inequalities and digital inequalities is a realisation that apart from media and communication innovations, digital technologies are increasingly spurring many developmental agendas of individual well-being and prospects of life at large (Hamelink, 2015). Consequently, the nature and existing patterns of social inequalities across the globe have implications on access to digital technologies (Oyedemi, 2016). Discourses on digital inequalities have shown that inequalities in access to technologies have negative implications on education, social status, class, conditions of well-being, economic, social and cultural experiences (Kreutzer, 2009; ITU, 2016; Haenssger, 2018). The "haves" are privileged to access the benefits of digital technologies, while the "have-nots" remain on the unconnected side of the digital divide (Haenssger, 2018). This supports arguments that, despite digital technological innovations and creative social networking platforms that have the potential to include those historically excluded, access to digital technologies is still skewed by race, social status, gender, geography digital skills and economic differences.

This research will employ the theoretical approaches of structuralism, culturalism and postmodernism as articulated by Oyedemi (2016) in the framing of social inequalities and digital inequalities. This will help in the understanding of the patterns of Internet access among youth in South Africa. A structuralist approach to digital inequalities tends to focus on class structures of society to explain the patterns of digital inequalities (Oyedemi, 2016). The core argument of the structuralist approach to digital inequalities is that access gaps to the Internet and technologies is interpreted in terms of separation between classes, those that are privileged to have access and those that are not. It focuses on class structures of society to explain the patterns of digital inequalities

(Oyedemi, 2016). The approach was developed from the class classification (Oyedemi, 2016).

A culturalist approach to digital inequalities describes conditions, such as usage and skills that determine inclusion or exclusion to digital technologies. This approach to digital inequalities describes conditions that determine inclusion or exclusion to digital technologies. Instead of classifying Internet access by categories such as the structuralist approach, the culturalist approach to digital inequalities defines digital gaps in terms of inequality in technical apparatus, autonomy of use, skills, availability of social support and uses (Oyedemi, 2016).

Postmodernism is the approach to self-expression of thought such as art, literature, philosophy and politics among others. This approach to digital inequalities focuses on the individual technological access. In the context of Internet access, the postmodernist approach focuses on personal connection to the Internet rather than mass connection (Oyedemi, 2016). The postmodernist approach seeks to address digital inequalities from a multidimensional approach of the social, structural, cultural and political perspectives. A combination of these theoretical approaches enhances understanding of the patterns of digital inequalities. The theoretical framework in this research is discussed in detail in chapter four, stressing separately the structuralist, culturalist and postmodernist approaches to digital inequalities.

#### **1.4 Definition of concepts**

**Universal service** –Universal service is a telecommunication policy concept that connotes universal provision of access to telecommunication services. In this context, the focus is on personal access to the Internet.

**Universal access** – Universal access as a policy implies that every person has a reasonable means of access to publicly available telecommunication services (Verhoest, 2000; Oyedemi 2004). Universal access focuses on the enhancement of access to public Internet access.

**Digital inequalities** – Digital inequality refers to the differences in access to Information and Communication Technologies (ICTs) (DiMaggio and Hargittai 2001).

**Broadband** – The Broadband Commission for Digital Development defined broadband as high-speed Internet access, which is always-on and capable of multiple service provision simultaneously. In South Africa broadband is viewed as an always available, multimedia capable connection with a download speed of at least 256 kbps (Electronic Communication Act 36 of 2005, Section 1.3).

**Data bundles** – Data bundle is a deal that is offered by telecommunications operators that gives megabytes (MB) of data for a set price. There is a fixed price for a certain quantity and quality of data. For instance, 500MB of Vodacom cost R99. Data bundles, measured in bytes, becomes a means to surf the Internet through portable technological devices such as smart phones.

**Needy persons** – In South Africa, "needy persons" are defined as persons, who qualify through the application of an agreed 'means test', who cannot afford to obtain electronic communications services or broadcasting services at commercial rates - for reasons of income, and other factors in relation to income, including geography, age, disability, or other similar factors (Republic of South Africa General Notice 987 of 2008).

**Digital mobility** – Digital mobility in terms of Internet access, refers to a state where individuals can connect and access the Internet regardless of geographical location using their mobile devices. The key enablers of digital mobility are mobile Internet access (Wi-Fi) and mobile devices such as smart phones.

**Youth** – Youth is used to define the category of individuals between the age of 15 to 35. The category of 'youth' used and referred to in this study are the first year entering University of Limpopo students aged 18 to 27 years of age.

## **1.5 Research problem**

There is a problem of crooked and partial Internet access in South Africa (Oyedemi 2012). Attempts to bridge the gap was through the telecommunications reform policy in South Africa which was accompanied by a State policy commitment to attaining universal service and access (Electronic Communication Act, No 36 of 2005). However, the problem is that the policy application has been one-sided, only focusing on addressing universal access to telecommunications which is fixed public Internet access. While this effort is credible, it has little impact on the upsurge of mobile Internet access that is increasingly characterising the digital technology culture. Indeed, the provision of public access worsens mobile broadband affordability for needy persons since it relegates mobile connection to Internet access through the dictates of the market (Servaes, 2013). The age of digital mobility represents a *shift from mass access to individual access*, particularly, through mobile phones. Purchasing data is expensive which in return restricts the benefits of Internet on socio-cultural and political-economic development among youths. This study explores issues regarding high cost of mobile Internet data and affordability in South Africa and suggests ways on how universal service and access policy can be formulated to focus on individualised Internet access in the age of digital mobility.

## **1.6 Motivation of the study**

A key motivation of the study is the need to rethink how public access is provided in an age where mobility is essentially part of the digital culture, and access to the internet is not bound to rigid spaces. Studies exploring the importance of digital technologies are liberal on the ideal of providing information and digital materials for economic development and political participation. This study addresses issues of affordability and high cost of Internet data among youth in South Africa and suggests ways on how universal service and access policy should be formulated to focus on mobile public Internet access. The study identifies and examines the affordability patterns, limitations and challenges on mobile Internet access among youth in South Africa.

Also, the way digital inequalities are identified and explained has implications on how inequalities to Internet access can be addressed in policy narratives (Oyedemi, 2016).

Thus, this approach requires a theoretical engagement of the structuralism, culturalism, and postmodernism frameworks to inequalities to identify and define how they influence policy narratives in the age of digital mobility, with reference to affordability and high costs of Internet data. These three theoretical frameworks have been discussed separately in previous studies, such as the study by Oyedemi (2016) in framing the social and digital inequalities. This study has identified the need to have these concepts discussed in relation to each other rather than in isolation. This is done to expand the understanding of the digital inequalities. The study reveals the digital inequalities that emerged with the culturalist and structuralist approaches such as inequalities in terms of skills and uses which are directly linked to affordability and the high cost of Internet access.

The category of the youth population has been framed as highly active, tech-savvy and early adopters of technologies. Hence, using this population category is important to understand the trends in the patterns of Internet uses and explaining the issues relating to the shift from accessing fixed public Internet access to mobile individualised Internet access. The University of Limpopo is a semi-rural university that provides a diverse student respondents demography necessary to shed light on the experiences of Internet access from the villages, semi-rural, Townships and possibly urban areas.

The postmodernist theoretical approach merits this research to explore the affordability and the high cost of Internet data constraints towards Internet access among youth. The universal service and universal access policy frameworks are engaged to identify gaps in addressing public Internet access. The universal service and access policy approach has been extensively focusing on providing fixed public Internet access and little has been done to expand universal service and access policy to focus on mobile individualised Internet access which is increasingly characterising the digital age. This study engages the universal service and access policy to expand the focus of Internet provision to mobile Internet access from fixed public Internet access.

The framing of social inequalities to understanding digital inequalities is important to study the patterns of inequality in Internet access (Servaes, 2013). How social inequalities are identified, defined and analysed is also imperative in providing a clear

picture of the nature of inequalities that are experienced by most of the developing countries, using South Africa as a case study. The identified forms of inequality are discussed independently in the study and their relevance to affordability and high Internet data costs explained.

### **1.7 Research objectives**

- To describe the pattern of mobile Internet access and affordability among youth in South Africa, with a specific focus on university students.
- To determine the effectiveness of government universal service and access policy in addressing the affordability of mobile Internet (data bundles) among citizens in South Africa.
- To propose a frame of the universal service and access policy strategies relevant to the age of digital mobility.
- To suggest ways of addressing affordability issues regarding youth access to mobile Internet access.

### **1.8 Research Questions**

- Drawing from a case study of students in a semi rural university, what does the internet access in this population reveal about the patterns of mobile Internet access and affordability among youth in South Africa?
- What is the effectiveness of government universal service and access policy in addressing the affordability of mobile Internet i.e. data bundles, among citizens in South Africa?
- What are the universal service and access policy strategies relevant to the age of digital mobility?
- What are the possible ways of addressing affordability issues regarding youth access to mobile Internet?

## **1.9 Significance of the research**

This study contends that to improve Internet access among people in the digital age, the focus should be on strategies that aim to reduce the costs of telecommunications services. Given the various benefits of Internet access, it becomes important to expand access to the Internet and bring digital technologies to a wider range of people. The mobile Internet access has characterised the ICT sector, while the universal service and access policy is still much focusing on fixed public Internet access. This study engages the universal service and access policy to expand the provision of fixed public Internet access to mobile public Internet access. Institutions such as ICASA and USAASA, directly linked to the provision of Internet access are engaged to elaborate on the knowledge about universal service and access policy strategies in South Africa.

Since digital inequality is not a case relegated to South Africa alone, this study also informs other developing countries on approaches to achieve mobile public Internet access under the universal service and access policies. For the youth, the study provides an informed analysis on suggested practical ways for attainment of mobile public Internet access. This has the potential to harness likely harmful and uninformed protests and vandalism both online and through street marches.

This study adds to the broad knowledge on digital inequalities indicating that affordability and high cost of Internet data are widening the digital inequalities and constraining the palpability of mobile Internet access for socio-economic and political transformation among the youth in South Africa.

The scope of this inquiry also examines the processes underpinning and ameliorating mobile Internet access inequalities. The same way skills and usage have been framed to understand Internet access inequalities, affordability and high cost of Internet data adds to this knowledge and help society together with policy makers to understand and anticipate the consequences of mobile technological innovation as it takes place.



## **1.10 Overview and structure of the dissertation – Description of Chapters**

### **Chapter One: Introduction and background to the study**

In chapter one of this research, the researcher discussed the background, the aim and focus of the study. As already mentioned, the study was set to investigate the influence of affordability and high cost of data on the uses of mobile Internet access among youth in the age of digital mobility using the University of Limpopo as a case study. Also, the universal service and access policy framework was outlined to be engaged from the perspectives of two officials, one from ICASA and the other from USAASA.

### **Chapter Two: Internet, digital mobility and digital dividends (Literature Review)**

Chapter two of this research engages the literature on the issues around the Internet, digital mobility and digital dividends. The chapter discusses the practices and the increasingly importance of mobile Internet in the digital age within the current socio-economic and political context.

### **Chapter Three: Digital inequalities and universal service and access policy (Literature Review)**

Chapter three of this research engages the literature on digital inequalities and universal service and access policy frameworks. The chapter discusses the background of achieving universal service and universal access under the telecommunication reforms with reference to different countries in Africa and beyond. The chapter also highlights on the factors impeding the attainment of universal service and the shortfalls of the policy in South Africa.

### **Chapter Four: Social inequalities and digital inequalities: A Theoretical framework**

Chapter four of this research provides the theoretical framework adopted in this research. The theoretical framework of this research focuses on the social inequalities and digital inequalities stressing the different dimensions of social and digital inequalities from the structuralist, culturalist and the postmodernist approaches.

## **Chapter Five: Research Methodology**

Chapter five of this research provides an in-depth discussion of the methodology procedures used in this study. This research adopted the mixed method research approach. The chapter also discusses the research paradigm, research design, sampling, data collection methods and data analysis. A mixed method approach was used in this research.

## **Chapter Six: Youth Internet access and affordability (Data presentation, discussion and analysis)**

Chapter six of this research focuses on the presentation, interpretation and discussion of data that were collected through the quantitative approach through a survey from the students of the University of Limpopo. The chapter discusses the findings of the research based on the collected data.

## **Chapter Seven: Universal service and access in the age of digital mobility (Data presentation, discussion and analysis)**

Chapter seven of this research presents and interprets the data that were collected through the standardised semi-structured interview from one official from ICASA and the other one from USAASA.

## **Chapter Eight: From public fixed access to public mobile individualised Internet access (summary, recommendations and conclusion)**

Chapter eight of the study provides the summary of the findings, conclusion and recommendations. The concluding arguments were solely based on the findings of this study.

### **1.11 Summary and conclusion**

The focus of this chapter was to provide the introduction and the background to the study. The problem of the study was clarified, the rationale and significance of the study were discussed. The aim and objectives of the study were explained. The research questions set for the study were given. The literature review - to be discussed in detail in chapter two and three - was introduced briefly. The chapter also described the

population of the study and the sampling method used to select the sample population. The following chapter addresses the literature on the benefits of Internet access.

## CHAPTER TWO

### INTERNET, DIGITAL MOBILITY AND DIGITAL DIVIDENDS

#### (Literature Review)

#### 2.1 Communication in the age of digital mobility

Digital mobility, in the context of communication, permits individuals to exchange information, and contribute to sources of information, knowledge, content creation and entertainment regardless of geographical milieus at any time using their mobile phones. The mobile age implies a shift from mass fixed broadband connection to individual Wi-Fi connection. Xia, Yang, Wang and Vinel (2012) argue that the digital age constitutes a new epoch of *Internet of things*. Internet of Things (IoT) refer to the infrastructure of the information society (ITU, 2013).

##### 2.1.1 Mobile phone penetration

The penetration of mobile phones has led to a dramatic upsurge since its accessibility all over the world. In Africa for instance, Asongu (2015) observes that in 1999 only 11% of the population in Africa had mobile phones, mostly in Kenya, Tunisia, Morocco, Algeria, Egypt, Libya and South Africa. Currently, in both developed and developing nations, mobile penetration has surpassed the 100% mark for most nations. This is exemplified by the International Telecommunication Union's (2015) country profile statistics which show that in the Americas: Argentina's mobile-cellular subscription is at 146.5% per 100 inhabitants, Brazil at 126.6%, Chile at 129.5% and the United States of America at 117.6%. The data show that in Asia and the Pacific, Japan's mobile-cellular subscriptions per 100 inhabitants is at 125%, India at 78.8%, China at 93.2%, and Australia at 132.8%. In Africa, Botswana's mobile-cellular subscription per 100 inhabitants is at 169%, Mozambique at 74.2%, Kenya at 80.7%, Ghana at 129.7%, Nigeria at 82.2%, Zimbabwe at 80.8% and South Africa at 159.3%. The data show that only a few countries still lag-behind on mobile penetration but still the rate remains positive.

Mobile penetration becomes imperative in the discussion of digital divides. Mobile penetration has been heralded as a solution to bridge the digital inequalities among populations. For instance, an Indian study by Narayan (2007) observes that the Internet has been used to better governance for many nations, and this has been escalated by the rise in mobile penetration. The mobile phone has been perceived as a tool to supplement e-governance and encourages the achievement of universal service and access for all. Therefore, it becomes imperative to provide Internet access to the unconnected. Mobile phones have brought new opportunities to rethink universal service and access policy.

The penetration of mobile phones has cut across edges in the communication landscape from fixed access to mobile access. For instance, a sub-Saharan African study by Aker and Mbiti (2010) asserts that mobile phones are ten times as many as landlines. As a result, various studies were conducted showing the impact of socio-economic and political imperative of mobile phones in society. For example, an American study by Lim, Hocking, Hellard, and Aitken (2008) notes the applications of Short Messages Services (SMSs) in health communication such as contraception reminders and sexual health promotion and education. Similarly, an African survey in Kigali and Rwanda by Donner (2006) shows that mobile phones and Internet are used as communication tools for microentrepreneurs to develop and create new business contacts. In a South African study by Tomlinson, Solomon, Singh, Doherty, Chopra, Ijumba, Tsai and Jackson (2009), the use and benefits of mobile technology as methods of research data collection rather than use of paper and pencil is indicated. In addition, recent mobile technological innovations such as cloud storage offer unimaginable benefits to researchers in terms of data storage. In case the mobile phone crashed, the data will still be retrievable.

An empirical study by Asongu (2015) highlights the impact of mobile phone penetration on mobile banking in 52 countries in Africa. The findings of the study were that the revolution of mobile phones has changed the lives of many people through phone-based money transfer, instant communication and information storage. For Asongu (2015), mobile phones provide affordable and cost-effective means of financial services

especially for the poor (p. 713). However, mobile banking through SMS involves charging tariffs, and at the same time online mobile banking is done through Internet connection. While the contribution of mobile phones on mobile banking simplify banking on reduced transport costs for travelling to the bank, and through instant communication, issues of affordability and Internet accessibility remain unknown.

A study by Oestmann (2003), in South Africa, examined the extent to which mobile telecommunication companies, such as MTN and Vodacom, help to provide telecommunications access to the urban poor and most rural areas. The study reveals that mobile services are cheaper than fixed payphone services. For Oestmann (2003), mobile service offering is flexible, easy to control expenditure through prepaid accounts, credit checking and contracts. For this reason, mobile service was found to penetrate the low-income classes more than fixed public payphone services. Oestmann's (2003) analysis of mobile services and fixed public services to communication is seminal to Internet access policy approach in the age of digital mobility. The argument is that universal service and access policy framework should focus on strategies to provide mobile access than providing fixed public access to the Internet. The pattern of Internet access among the youth illustrates a move away from mass connection to personal connection.

### **2.1.2 Internet access and communication in the age of digital mobility**

Internet access is a necessity of contemporary aspects of life. In July 2015, Barack Obama, the former President of the United States of America, pledged to provide broadband access to households of poor families, indicating Internet access as a communication necessity for the 21st century (NBC, 2015). Similarly, Tanzanian President, Samia Suluhu Hassan, made an arrangement to install public Wi-Fi spots in recreational halls of Dar es Salaam, with the goal of creating a 'smart city' (Tanzania Daily News, 2016). Likewise, the Indian government announced its intention to roll out free Wi-Fi to over 1000 villages across the country, as part of the Digital Village programme, to which each village would have a Wi-Fi hotspot installed where villagers could access Internet using their smart mobile phones (Iyengar, 2017). These are efforts acknowledging the imperatives of Internet access in this digital age. For instance,

applying for a job, taking distance learning, paying bills, online shopping, ordering lunch and even dating, the list is endless, using a connected cell phone indicates through Internet access has become a necessity rather than a mere luxury. Internet access affects the prospects of many youth whose academic, employment, economic, social and political participation will suffer without affordability to go online.

Studies on digital mobility are a scholarly subject which exemplifies the indispensability of mobile phones and Internet access in contemporary communication. In the United States of America, for instance, Bennett (2008) observed the changing pattern of citizenship in the digital age among the youth. The study observes impressive civil online engagement and activities among the youth. Subsequently, there is a global consensus among scholars on youth as extensive users of the Internet for development communication (Evoh, 2007; Kreutzer, 2009; Bere and Rambe, 2013; Oyedemi, 2015). Hence, Internet access and its use present equal opportunities for all.

It can be argued that mobile phones, together with Internet access, have attributable merits to the communication framework. It has impacted the way people attain and impart information about work and/or social, economic and political participation. This has implications such as individuals now requiring an electronic address as much as they need a physical address (National Integrated ICT policy, South Africa, 2016). Communication has been made simpler. For instance, mobile phones have enabled the calling of a person instead of calling a place (Palen, Salzman and Youngs, 2000), a common practice with fixed telephones in the past. The mobile phone industry is drastically replacing wired fixed access to telecommunication. Even at working places, different organisations have introduced 'speed-dial' system, linked to the owner's mobile network sim-card, where a work colleague can be accessed out of office using their mobile phones. Likewise, the telephone technological trajectory from wired to wireless went along with a shift from fixed mass Internet to personal access through mobile phones.

The Internet and mobile technologies have made the convergence of communication technologies a reality. Smart cellular phones are used simultaneously to access a broad range of communication technologies (Naismith, Lonsdale, Vavoula and Sharples,

2004). Social networking applications such as WhatsApp, Instagram, Facebook, Twitter, WeChat, Vid-Mate and Hangouts, sending and receiving emails, audio and audio-visual Internet broadcasting, online newspaper broadcasting is now done using mobile phones. The digital mobility era has made communication to gain a new appeal.

In a summit on Information and Communication Technologies, the United Nations' Human Rights Council declared Internet access a human right and condemned any effort to suppress or hinder this right (United Nations, 2016). Engaging Internet access and communication in the age of digital mobility engenders political opinions on Internet access as a right (Oyedemi, 2014). The argument is that Internet access facilitates a purposeful democratic public sphere. The Internet furthers many human rights such as the "right to freedom of opinion and expression and the right to access and impart information" enshrined in the South African Constitution's Bill of Rights (Oyedemi, 2014; Kravets, 2011). The increasing value of Internet access as fundamental to contemporary communication is too important to be relegated to the dictates of telecommunication markets whose data costs prices are too expensive.

### **2.1.3 Communication challenges in the age of digital mobility**

The Internet has become a vital force in today's political participation, protest and online activism. Websites promoting civil and human rights movements are increasingly changing the shape and nature of protesting. Social media platforms for instance Twitter, Facebook and WhatsApp are used as updates, commenting and uniting protestors, regardless of geographical location, for the same cause.

Politicians have often criticised the Internet. On one spectrum, the qualities that makes the Internet to be so attractive and a force for unprecedented progress is its openness, its potential to make the voice of those previously suppressed to be heard with good reach and speed. On the other hand, this freedom calls for ground rules and has steered a lot of tension between governments and citizens. The challenge is on how and when to draw the line on what is deemed correct online communicate against speeches that can be regarded as inciting violence or hatred. This tension has resulted in numerous occasions where governments have had to shut down the Internet especially during election periods. For instance, the authorities of Iran shut down the



Internet during the presidential election protests in 2011 (World Report, 2012). Similarly, Egypt shut down the Internet in 2011 after a video of a protestor who was shot dead was trending online (Kanalley, 2011). In India, social media were shut down during protests about the parliamentary elections of 2017 (Pasricha, 2017). In South Africa, the Supreme Committee of the department of Justice revised the Charter on the Bill of Rights on attempts to tighten and limit freedom of expression online along with its various forms of activism. These occurrences and many of such kinds illustrate the communication challenges posed by the digital age and on the other the efforts by governments to stifle the use of Internet access for communication.

Strategies towards attaining Internet access for all is problematic. For instance, in South Africa, the post-apartheid reform on Internet access was criticised as a structuralist approach that only focused on providing physical access to solve the digital inequality problem. As O' Hara and Stevens (2006) assert that policies by government to bridge the gap narrowly focus on providing physical access since the problem was construed as being associated with access. The challenge is to foster an ideal policy framework recognising contemporary communication facets with obligatory aptitude paying deeper attention to the contours of technological shifts from mass connection to personal connection (Lewis, 2013).

On the individual level, communication in the age of digital mobility raises socio-cultural concerns. The culture of 'always-on' has implications on the concept of 'self'. Deresiewicz (2009) notes that communication technologies have diminished the individual act of being alone. The author expresses concern of the 'self' that it has become seamlessly submerged into the mass, leaving no room of self-autonomy. He argues that people live in relation with others tainted by social interactions using communication technologies. Similarly, the study by Spinello (2003) also put forward concerns about the dawn of the mobile communication technologies that it diminishes the notion of privacy, specifically, aspects on secrecy, anonymity and solitude.

The Internet's ability to manipulate the norms of conversation as well as identity to fit the electronic spaces has implications on the concept of "authenticity." Social media are based on profiles, a virtual identity of the individual someone, or group members (Guy,

Zwerdling, Ronen, Carmel and Uziel, 2010). At a basic level, choices such as profile photo and name selection allow individuals to select cues that are only beautiful about themselves (Boyd, 2007; Stald, 2008). Authenticity here refers to the capacity of online something (personal profile pictures, electronic status as a reflection of self and the general content of one's profile) to be accepted as true (Rannenbergh, Royer and Deuker, 2009). The Internet's capacity to allow for anonymity and/or manipulation of identity is problematic. For instance, some scholars argue that there is a connection between anonymity and online bullying practices (Spears, Slee, Owens and Johnson, 2009).

## **2.2 Digital dividends: Benefits of Internet access for development**

For the past decades, scholars in this field of social science have been reviewing the imperative of Internet access in humanity. Since then, it is increasingly becoming apparent that the Internet is the future engine of economic growth and is essential to the future communication and information infrastructure. The Internet is increasingly making a positive impact within the context of education, health, social change, and economic growth. Concepts such as "global village" come to surface and exist strongly because of global connectedness through the Internet.

### **2.2.1 Internet access for economic growth**

For decades, studies engaging the economic impact of broadband have been employing econometric models of time series to indicate the impact of broadband on selected populations. This has been done through cross sectional studies on the impact of Internet on a group of certain countries and through panel studies to observe changes over time across countries (ITU, 2016). The Internet has emerged as a new factor driving the economic growth among nations far more than the increased use of labour and capital (Sassi and Goaided, 2013; Anwar, Carmody, Surborg and Corcoran, 2014; Ishida, 2015; Jin and Cho, 2015; Uwamariya, Cremer, and Loebbecke, 2015; Salahuddin and Gow, 2016; Katz and Callorda, 2018d; ITU, 2019). Similarly, the World Bank report (2016) shows that when the fixed broadband penetration is increased by 10% for any population, it adds to 1.21% Gross Domestic Production (GDP) for the developed economies and 1.38% in the developing countries.

Also, Uwamariya, Cremer and Loebbecke (2015) emphasise on the application of Internet to turnover and expand the tourism sector of Rwanda's small and medium-sized enterprises (SMEs). Equally important, Sassi and Goaid (2013) posit Internet access as a key enabler of economic development in the developing countries. Therefore, they recommend the reinforcement of Internet access policies that support Internet uptake and usage for development. Subsequently, Ishida (2015) notes that the economic use of the Internet contributes to long-run reduction in energy use using the annual time-series data for the period 1980 to 2010 of the Japanese economy. Maryska, Doucek and Kunstova (2005) observe that all developed countries invest and depend on ICTs with Internet access. The authors also note that the developing countries need to embrace Internet access as a new trend in Gross Domestic Production (GDP) growth whereas the current situation in tertiary ICT education should support this aim.

The Internet has an impact on the Growth Development Production (GDP) and contributes to the growth rate of the GDP. In South Africa, Salahuddin and Gow (2016) employed an annual time-series data over the period 1991 – 2013 to estimate the effect Internet access has on economic growth. The authors identified a long-run relationship between Internet infrastructure and economic development. Equally important, Anwar, Carmody, Surborg and Corcoran (2014) see the Internet as significant to the growth of tourism in the Western Cape, South Africa, especially in marketing, reservations and booking arrangements. Similarly, a World Bank study (2016) which show a significant correlation between Internet access and GDP growth, showing that any increase of 10% of Internet access for any population adds to 1.38% increase in GDP. This is indicative of Internet access as vital towards development. However, for Goldstuck (2012) mobile Internet access has a larger share to the contribution of Internet economy in South Africa.

Apart from celebrating the benefits of Internet access, a study by Mwesige (2004) examined the problems associated with Internet access and uses in Uganda, focusing on the profile of Internet users in Internet cafés in Uganda. The findings of the study show that while cyber cafes have brought the Internet closer to the people in the

developing countries, aspects such as poverty and high costs of Internet still impede access and the use of Internet for many. Hence, the risks of exclusion to larger parts of the population is also growing despite efforts to establish access points.

A South African study by Bosch (2010) noted the use of Internet for digital journalism in South Africa, through social media platforms. This emerging trend focusing on the public sphere created by blogs, World Wide Web websites and social media platforms such as Instagram and Facebook are increasingly promoting online activism for ordinary citizens. Equally important, journalists use the Internet and these social media to practise and sharpen their skills, reach new audiences, and promote citizen journalism, changing the notion of who practises journalism in South Africa (Olusola, Ibrahim and Priscilla, 2017).

### **2.2.2 Internet access for political participation**

Discourses on Internet access brought to prominence the expansion of political action and participation; however, it also entails concerns on the degree of equality of participation opportunities. Marien, Hooghe and Quintelier (2010) observe that non-institutionalised forms of political framework have led to new inclusive forms of political communities where citizens use social networking platforms to get their voices heard. Effing, Van Hillegersberg and Huibers (2011) noted the influence of social media on political participation during the election period in the year 2010 and 2011 in the Netherlands. Quintelier and Vissers (2008) indicate that online activities, for instance, chatting to individuals or groups, blogging, following the news online and forwarding and receiving political messages, positively affect the youth's political participation in a way.

A study by Howard (2005) examined the role of the Internet in contemporary politics through a series study from four election seasons between 1996 and 2002 in America. The survey results show that Americans are increasingly using digital tools such as mobile phones to research and engage in politics with others, family, friends and political leaders. However, the study, cautions that some political campaigns can fragment the public through using communicative social media platforms that are not of reach to others. Thus, it is not obvious that everyone has access to regularly published political information through the digital means. For Howard (2005), community

engagements demonstrate a healthy political public sphere that enables individual participation and contribution to the political discourse.

In addition, a study by Stolle and Hooghe (2011) observed Internet uses and social media platforms on political participation. Using the European Social Survey and the Political Action Survey from the period 1974 to 2002, the study indicates that in some cases women tend to be more active in these platforms than men. Mobile phones are increasingly becoming new podiums for political exercise. They provide access to information and create platforms to disseminate news from the perspective of ordinary citizens.

Therefore, the Internet and social media platforms are used for political campaigns and this encourages the public to engage in political discourses. For instance, the South African study by Steenkamp and Hyde-Clarke (2014) observed the comments sent on two South African political party's Facebook sites: the African National Congress' (ANC); and the Democratic Alliance's (DA) and identified how the parties used these sites to their political advantage. The findings indicated that Facebook is used to engage in political discussions and to share updates of a political nature, even though the parties were found not to be completely utilising the potential of the Internet and social media for political engagements.

### **2.2.3 Internet access for health welfare**

Internet access is crucial to ensure the quality of health services in the health sector. The Internet ensures many obligations are met in the healthcare system such as delivering care, further research, health education for both patients and professions and to extend medical information (Oyedemi, 2004). Mobile phones also strengthen medical practitioner and patient communication for better maternal management. For instance, in Nigeria, "WE CARE Solar" provides midwives and healthcare workers such as nurses with mobile phones for communication and reliable lighting using solar electricity to help facilitate safer deliveries (UNESCO, 2000).

A study by Alpay, Toussaint, Ezendam, Rövekamp, Graafmans and Westendorp (2004) discovered the use of Internet access by elderly people using an Internet-based health

information resource, to identify the pattern of Internet use by elderly people. The study shows that provision of adequate training and awareness campaigns for elderly people about Internet access are critical success factors to ensure that elderly people use the Internet for health.

Moreover, an American study by Kalichman, Weinhardt, Benotsch, DiFonzo, Luke and Austin (2002) indicated that the Internet has the potential to improve the conditions of people with dread diseases such as Human Immune Virus (HIV), but the problem is that access to the Internet is not available to all. The study shows that people with home Internet access reported to use the Internet more frequently for both surfing and sharing health information on HIV than those using community-based Internet access such as community libraries. Similar to the study by Mwesige (2004) on the problems associated with public Internet access connection, the study by Kalichman, Weinhardt, Benotsch, DiFonzo, Luke and Austin (2002) revealed that the challenges associated with using community technology centres include time-limits of 15 – 30 minutes of access a day and the high costs. As such, the study revealed that people with HIV reported to fear unwanted HIV status disclosure should they be found searching HIV related information in public settings.

In addition, an American study by Bowen, Meischke, Bush, Wooldridge, Robbins, Ludwig and Escamilla (2003) noted factors that encourage women to use the Internet for health services. Using a random population-based sample of 431 women aged 18–74 in Washington, America, the study identified that perceptions of mental and physical healthiness, age, and monthly income have an impact on women's Internet use for health purposes. The study indicated that the lack of Internet use by women is due to perceived lack of usefulness of the Internet as a reliable information source, lack of skills and high Internet costs.

Another study by Skinner, Biscope and Poland (2003) explored the motive behind the use of the Internet for health by adolescents. Using an inductive qualitative research with 27 focus groups in Ontario, Canada, and quantitatively, through 210 youth participants, varying in age, gender, geographical location and cultural identity, the study indicates that 89% of the participants used the Internet to share school work, 85%

used it to communicate with friends, 67% used it for medical conditions and 56% used it to surf sexual health information. However, the study suggested that health practitioners need to create online communicative platforms to interact with adolescents and assist them with quick access to relevant information and promote skills training initiatives aimed at improving assessment of quality health information among the youth.

Furthermore, there is an increasing global health care competition on medical tourism. Medical tourism constitutes a share in the global economy (Horowitz, 2007). Connell (2006) observed that Internet marketing has been central in promoting health care destinations for medical tourists. The advent of medical tourism heightened the imperative of health care services and the sudden growth on Internet dependent health services, prices and information about the potential tourism destination. There are several online sites that emerged in response to medical tourism. For instance, in South Africa there is “Medical Tourism South Africa”, “South Africa Medical Tourism-myMEDholiday” and “Medical Tourism- South Africa- Medical Travel Company.”

Internet access has been perceived as a solution to fill the information gap between urban and rural healthcare facilities. For instance, a South African study by Ruxwana, Herselman and Conradie (2010) observed that the increased use of Internet promotes instant access to health service delivery and information sharing. However, the study indicates that despite the potential benefits provided by Internet access, attention to Internet basic infrastructure: hardware and software, skills training and knowledge development are equally important for successful Internet use on health. With the ever-developing technology innovation in all sectors of life, the Internet promotes development incentives and quality health services through knowledge sharing. For instance, there is a growing trend on telepresence surgery, robotics, tele-health education, and tele-mentoring, using computer-supported systems such as robotics and image-guided surgical procedures to assist health procedures regardless of geographical locations (Satava, 1999; Jithoo, Govender, Corr and Nathoo, 2003; Lucas, 2008).

#### **2.2.4 Internet access for education**

Conventional teaching and learning methods are being replaced by new methods that are more appealing, where the Internet now plays a key role. The Internet is reshaping traditional learning practices worldwide (Damoense, 2003; Hulsmann, 2013; Simpson, 2013; Button and Harrian, 2014; Andronie and Andronie, 2014). Data showed that the Internet allows for academic interaction between lecturers and students and amongst students themselves using social media (Evoh, 2007; Bere and Rambe, 2013; Bouhnik and Deshen, 2014). This has implications on equal or limited access to Internet thereof and participation among youth (Mihelj, Leguina and Downey, 2018). However, the growing importance of Internet for academic purposes was accompanied by government intervention to help provide access to Internet (Servon, 2002; Oyelaran-Oyeyinka and Adeya, 2004). This approach has been promoted for the past decades in low income countries where affordability is a challenge to attain universal service for all (Falch, 2004). However, most youth today connect to the Internet using their mobile phones (Oyedemi, 2015). Thus, it becomes imperative to engage the universal service and access policy today as a shift from fixed public Internet access to mobile individualised Internet access through mobile phones.

A study by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) (2000) reviewed the contribution of Internet for improved access to fundamental aspects of quality, equity, and a plethora of self-transforming information relevant to education. Internet access has the capacity to transform and simplify the teaching and learning experience permanently meaningful. For instance, Malaysia had implemented Frog Virtual Learning Environments (VLE) as a teaching and learning tool in primary and secondary institutes. VLE is part of the Malaysian Education Design of 2013-2025, which promotes the use of Internet to enhance learning by the Malaysian students (UNESCO, 2000).

A study by Lenhart, Simon and Graziano (2001), a Pew Internet and American Life Project in Washington in the United States, described Internet as essential both outside and inside class. Using a survey of 754 youth aged 12-17 years, the study found out that 94% of youth used the Internet for research, 78% reported that the Internet aided



them with varied school work projects, 41% used the Internet for e-mails and Instant Messaging Service (IMS) to communicate with peers and their instructors. Importantly, the study observed that only 34% of students reported to have downloaded online study aid and 17% created a Web page. The pattern of Internet use from this study indicates that most students use the Internet for general communication purposes and research, but a few download academic materials or create Web pages. What remained unexplained were the factors that influence preference of online activities among the youth. Thus, this research focuses on the aspect of affordability and the high cost of Internet data in South Africa among youth using the University of Limpopo students to represent the youth.

Garrison and Kanuka (2004) noted the transformative potential of the Internet for academic use in higher education. The study suggests the need by academic institutions, administration and leaders to transform their institutions to meet Internet connectivity demands of contemporary learning environments for students. The study assessed the challenges of embracing Internet for learning against the learning outcomes and achievements. It was concluded that the application of online learning is imperative and has the capacity to advance, effectively, the efficiency of learning.

A study by Arbaugh (2000) identified factors that pose a challenge towards Internet-based courses to assist instructors and administrators to better distance learning programmes. Despite the immense potential contribution of the Internet for academic purposes, the study also negatively showed that online course creation and management is time and labour intensive. Also, the lack of face to face interaction – a quality relative to traditional classroom practice– reduces creativity that otherwise could have enhanced understanding. However, despite these potential negative outcomes, online learning courses and distance education are increasingly gaining popularity.

In South Africa, a study by Kreutzer (2009) observed the use of Internet through mobile phones among low-income school children in Cape Town. Through a survey of Grade 11 students in selected low-income high schools in Cape Town, the study found out that 77% of student respondents reported to have own a smart cell phone, while 68% of them used a mobile phone always for educational purposes through the Internet.

Another South African study by Bosch (2009) observed the use of Internet for teaching and learning through platforms such as Facebook, wikis, YouTube, and podcasts. Using Facebook as a case study site, the study examined students' use of Facebook at the University of Cape Town as well as lecturer-student social media engagement through the Internet. The findings showed that while the Internet promises vast potential benefits to enhance teaching and learning, challenges such as lack of skills to unveil these benefits, and limited access remain relevant.

Moreover, a South African study by Jaffer, Ng'ambi and Czerniewicz (2007) explored the role of Internet as an additional option on approaches that can be employed to address educational challenges faced by students in higher education institutions. The study shows how Internet intervention can be used to address challenges such as lack of academic preparedness, fostering peer to peer information sharing possibly in students' preferred language than the classroom preferred medium of instruction, and addressing the large class sizes problems. However, the study cautioned that the application of online instruction intervention, should be understood within the wider scope of learning and teaching practices that are acceptable to both the educators and learners.

Damoense (2003), using the engagement theory, examined the use of Internet to support and enhance effective learning and teaching. The study showed that the Internet and technology based in education through effective learning environments such as Blackboard, are imperative to support and enrich learning outcomes. The author suggests that it is important to integrate the Internet as part of the curriculum in South Africa. The otherwise positive implications of long-life learning skills using the Internet for learners in the 21st century, also referred to as "the digital age", are massive to comprehend.

### **2.2.5 Internet access for socio-cultural welfare**

As Internet use grew exponentially among youth for the past decades, several corresponding expectations went along with it (Gross, 2004). These include discourses about gender prediction on Internet usage. For instance, ample studies indicate boys as spending more time online, playing violent games and surfing the web, while girls chat

and shop online (Gross, 2004; Subrahmanyam, Greenfield, Kraut and Gross, 2001; Lin and Tsai, 2002; Norris, 2004; Bayraktar and Gün, 2006; Blais, Craig, Pepler and Connolly, 2008; Francke and Weideman, 2008; Lin and Yu, 2008). The other scholarly perspective indicated that Internet use causes social isolation and depression among youth (Shaw and Gant, 2002; Gross 2004; Mythily, Qiu and Winslow, 2008; Kim, LaRose and Peng, 2009). Youth also use the Internet for anonymous identity experimentation (Valkenburg, Schouten and Peter, 2005; Thorne, Black and Sykes, 2009; Leung, 2011).

The relationship between technology and society can be traced back to the era of the industrial revolution, 1750s to 1850s, as a typical example of the implications of technologies to societies. The industrial revolution had a profound effect on where and how people lived, worked and interacted (Senge, Smith, Kruschwitz, Laur and Schley, 2008; Beniger, 2009). The long-term changes that ushered this period still resonate today. Today, societies are constantly changing. Though Internet access is not a panacea for all changes in society today, it is one major factor contributing to social change (Bargh and McKenna, 2004; Sheldon, 2004).

However, apart from the notion that the Internet has impacted the way society functions, Ogburn (1922) as cited in Mackenzie and Wajcman (1999) observed that social settings create the atmosphere in which technology, especially the Internet, become a necessary by-product of social processes. This approach supports that given the correct set of social conditions, the general march of progress in technological innovation will follow (Mackenzie and Wajcman, 1999). This shows that society has power on how technology, specifically the Internet, shape the culture, politics and economic spheres of societies (Baym, 2015). Hence, the outcomes of the impact of the internet are predetermined.

The Internet is increasingly used for public relations efforts by different organisations. For instance, South African study by Naude, Froneman and Atwood (2004) using the two-way symmetrical model of public relations to the web sites of 10 South African non-profit organisations (NGOs), noted use of the Internet for public relations efforts. The findings indicate that organisations that are successful in managing public relations on

their Websites, have good communication skills rather than possessing web technical skills and knowledge.

Chigona, Beukes, Vally and Tanner (2009) examined the potential of mobile phones to improve social inclusion in South Africa. Using semi-structured interviews and thematic analysis, the study shows that mobile Internet access amongst the socially excluded is low because of lack of smart cell phones and awareness about the Internet and its benefits. The study showed that mobile Internet has an impact on social participation as well as on economic and political development. However, its impact is limited due to lack of smart phones and knowledge about what the Internet can achieve.

Furthermore, Chiumbu (2012) studied the emerging culture of communication through mobile phones and the Internet. The study indicated that initiatives, by telecommunication companies, such as 'pay-as-you go' and 'please call me' have helped to make mobile phones a companion to many who are otherwise disconnected. Therefore, social media platforms and cell phones have invited previously deprived and marginalised individuals to participate in social justice movements in coordinating actions, mobilising and create networks. For instance, the national #FeesMustFall and #DataMustFall campaigns in South Africa reshaped the contributions of mobile phones from mere communication tools to amplify traditional methods of mass mobilisation and collectivism.

### **2.3 Conclusion**

This chapter has discussed the practices and the increasingly imperative aspects of Internet access in this new age, within the economic, social, cultural, political and educational framework. Despite the potential benefits of Internet access put forward in this chapter, the problem is that access to Internet is skewed in terms of affordability and the high cost of Internet data. What seems to be missing in this literature is the discussion of digital inequality in terms of affordability and high Internet data costs. Although this literature hinges on socio-economic constraints that impede Internet access, the trend in the discussion tends to link digital inequality to digital skills and uses, lack of training, unbalanced family income and autonomy of use. This study examines the issues around affordability and high Internet data costs among youths as

digital natives in South Africa and suggests ways on how universal service and access policy should focus on individualised mobile Internet connection rather than focusing on fixed public Internet access only. The following chapter focuses on the literature about digital inequalities and the concepts of universal service and universal access.

## CHAPTER THREE

### DIGITAL INEQUALITIES AND UNIVERSAL SERVICE AND UNIVERSAL ACCESS

#### (Literature Review)

#### 3.1 Understanding digital inequalities

Digital inequalities are a global phenomenon. In the classical critique of digital inequalities, Gillwald (2005); Hargittai (2010); Cerf (2012) and Oyedemi (2012) indicated that digital inequalities relate to socio-economic inequalities in societies. Therefore, alongside the imbalances reflected in the social, economic, political and cultural dynamics, digital inequalities are increasingly shaping the world influencing inclusion and exclusion to access technologies and the global economy. Therefore, digital inequality patterns replicate the patterns of social inequalities prevailing in South Africa (Oyedemi, 2012: 302), and the world at large.

For the past decades, the term ‘digital divide’ has been used to frame the skewed access to the Internet. However, there has been a conceptual shift in research from the term “digital divide” to what appears to be more transcending terms such as “digital inequalities” (Wei, 2012). This has also implicated a shift of inquiry from the “haves” and the “have-nots” to focus on skills, uses, urban-rural digital inequalities and family incomes. Therefore, the original concept of the term divide: focusing on the “haves” and “have-nots” (DiMaggio and Hargittai, 2001) is shrinking while new forms of digital inequalities such as uses, skills, patterns of access and geography: urban or rural inequalities are emerging. Scholars in this field of inquiry prompted that the term “divide” needs a reconstruction to focus on more apt constructs such as “inequalities” or “gradations” (Hargittai and Hinnant, 2008; Livingstone and Helsper, 2007). As a result, contemporary studies in this field of inquiry use the construct “inequalities” rather than the binary term “divide”.

A study by DiMaggio and Hargittai (2001) described five forms of digital inequality in terms of autonomy of use, equipment, skills, purpose of uses and social support. The study is a move away from the focus on the connected and the unconnected to focus on

digital inequalities amongst the connected. Current approaches on Internet inequalities in terms of skills and uses, provide evidence of this proposition based on those that are connected. However, the initial stages of inquiry in this field: the digital divide paradigm, which focused on the “haves” and the “have-nots”, can be attributed to have shaped research and determined policy makers on strategies to attempt to bridge the gap. This makes the basic Internet connection and how it is achieved imperative. Subsequently, it helps explain whether different Internet use and skills are haphazardly spread among the population under observation or are directly linked to socio-economic issues such as affordability and high data costs among youths in South Africa.

Oyedemi (2012: 81) indicated that issues of access to technologies are more complex especially when challenges of poverty, inequalities to economic opportunities, social, political development and participation are engaged. Similarly, Selwyn (2004: 357) argued that the forms of ICTs uptake and use is intertwined with the complex patterns of socio-economic inequalities and this is detriment to individuals participating in the global economy. Also, Castells (2010: 152) highlighted that the information age is posing the challenge of heightening inequalities, accelerating social, economic and political exclusion rather than inclusion.

The current study seeks to expand the focus of research on the digital divide stressing on the challenges impeding access and the use of Internet among South African youths. The initial State policy approach in South Africa on attempts to bridge digital inequalities focused on providing fixed access to the Internet (Oyedemi, 2015). This study examined issues around affordability and high data costs and suggests ways on how the universal service and access policy should focus on mobile access rather than fixed access. The scope of this inquiry will also examine the processes that engender and ameliorate Internet access inequalities, uses, skills, geography: urban or rural areas and help society together with policy makers to comprehend the significances of technological invention as it takes place.

### **3.1.1 Internet skills and use inequality**

The confluence of skills and use patterns have gained momentum in describing the differences and skewed access to Information and Communication Technologies (ICTs)

(Oyelaran-Oyeyinka and Lal, 2005). The use and skills patterns to measure digital inequalities are critically important on approaches to digital inequalities since they comprehend forms of Internet access as not only the challenges exacerbating digital inequalities but through many socio-cultural capitals (Oyedemi, 2012: 304), and utilities needed to effectively utilise the available access. Despite the skewed access problem of the digital divide, the use and skills challenges further digital gaps when individuals are unable to tap the benefits presented to them by these technologies in both the developed and developing countries.

In the developed countries, the use of Internet is relatively high when compared to the developing nations (ITU, 2017). However, the use and skills problem remain stubbornly pervasive. For instance, to remedy the binary classification of Internet use focusing on the connected and the unconnected, a study by Hargittai (2001) observed the differences in the use of Internet and skills to find information. The findings of the study suggest that people search for content in many ways and that people vary in how long they take to find information online in terms of user's demographics, social support networks, experience and autonomy of use.

A study by Hargittai (2010) explored the use of Internet and skills among young adults in America and if online experiences influence how people diverge in their online activities. The findings of her study suggested that Internet know-how is not spread arbitrarily among the population, rather, parental instruction, gender and race also have an influence on Web-use and skills. The author identified that skills are positively associated with the type of Internet uses, and that socio-economic status predict how people incorporate the Internet into their everyday lives. It was found that youths from advantaged families use the Internet in more informed ways that enhance their lives than those of less privileged families.

An American study by Junco (2013) examined the Internet access inequalities in terms of how students use Facebook and identify whether the use is related to students' backgrounds. Using a computer monitoring software, the study compared the reported time students spent on Facebook against the actual usage of Facebook among 42 college students. The findings revealed that most female students mostly use Facebook



for communication, and African Americans, especially those from low socio-economic backgrounds reported not to be using Facebook for communication and sharing. On average, the study observed that students spend 26 minutes on Facebook per day. Although the study highlights on the socioeconomic challenges conditioning the use of Facebook, this research widens the scope in describing the patterns of mobile Internet access.

Furthermore, a study by Robinson, Cotten, Ono, Quan-Haase, Mesch, Chen, Schulz, Hale and Stern (2015) furthered the literature on digital inequalities assessing patterns to access, uses, skills and self-perception by individuals regarding the potential benefits of Internet access. The authors noted that digital inequalities are unescapable. On individual-level, access to Internet is unbalanced on patterns of uses, and on macro-level domains such as gender, race, class, health care online services, political engagements and online economic activities. On self-perception, the authors observed that individuals can exclude or include themselves to engage online activities depending on their level of worthiness they perceive the Internet can offer.

Furthermore, a study by Hargittai and Walejko (2008) explored the prevalence of creativity: video, music, writing and artistic photography and sharing of this content online to assess barriers that impede the dissemination of online content among young American adults. Findings revealed that relatively few people are taking advantage of the new technological developments such as sharing and manipulating content on social networking platforms and the Web. Subsequently, the study revealed that socio-economic status has an influence on creativity and sharing of content online although it varies depending on gender.

Another American study by Robinson (2009) observed that sections of the youth population across the globe lack access to Internet and autonomy of use. Through assessing the use of social networking platforms among youths, the study assesses the impact of Internet access inequality on socio-economically disadvantaged American youth. The study found out that the demographic location and cost of Internet access have an influence on usage and skills among respondents. Also, the study revealed that those with constrained access to Internet, use the Internet purposefully and avoid what

can be perceived as wasteful activities. In contrary, a study by Zillien and Hargittai (2009) exploring the relationship between peoples' online activities and socio-economic status found out that users of a high status engage in online capital-enhancing activities than those of low socio-economic status.

Arendit (2008) conducted a study on small and micro enterprises (SMEs) from selected regions of Spain, Portugal and Poland to observe potential factors that impede SMEs from using the Internet to their business advantage. Using standardised structured interviews with SMEs' owners, employers and managers, the study found out that although the SMEs workers had access to the Internet, challenges such as lack of information and skills to utilise the Internet to their advantage were stumbling blocks.

Moreover, a household study of 1001 grown-ups and 100 comprehensive complementing interviews by Selwyn, Gorard and Furlong (2005) explored people's access patterns to the Internet to identify those using the Internet and those that were not using the Internet in their everyday lives. The study also observed the purposes people use the Internet for, how they develop their own life networks through the Internet and assess how the use of Internet is shaped by socio-economic factors and circumstances. The findings revealed that adults' non-use of internet is linked to interest, perceived relevance, and intervention of significant others and the role of family forces at work.

In the developing countries, and most of Africa, where there is limited Internet access amongst the population, the uses and skills problem of the Internet call for government intervention to the rescue (Mutula and Mostert, 2010). Oyedemi (2004: 100) cautions that a rudimentary level of literacy is required to tap and utilise the benefits that ICTs provide. However, in Africa, statistics show that the rate of illiteracy is high (UNESCO, 2016). Perhaps this explains why in Africa the proportion of individuals using the Internet is only 21.8% and is the least compared to the rest of the world (ITU, 2017).

Hennesy, Harrison and Wamakote (2010) observed the use of ICTs by teachers in sub-Saharan Africa. The study explored the factors that influence the use and/or lack of skills and use of ICTs by teachers in classrooms such as beliefs about ICTs, technology literacy, confidence levels and educational expertise in classrooms using ICTs. The

study observed that training opportunities are imperative, yet they are limited in availability. This, alongside the lack of infrastructure and other external issues, is detrimental to the use of ICTs for academic purposes by teachers.

In South Africa, the lack of digital skills and use of ICTs is problematic (Department of Communications, 2008; Mutula and Mostert, 2010; Oyedemi, 2012; Chisango and Marongwe, 2018). For Mutula and Mostert (2010), the lack of use and skills in digital technologies has contributed to e-government failures in South Africa (Mutula and Mostert, 2010: 45). Therefore, an incorporation of basic education and training is needed to enhance the essentials and technical management skills and uses of Internet access. However, Oyedemi (2015) observed that types of Internet access, conditions of access, cost of access, family income, race and geography influence patterns of Internet use among South Africans youths.

Another South African study by Benner (2003) observed that maximising the potential dividends of Internet requires a practical promotion of their use and relevant strategies on addressing the gap that it creates. The study examined the South African national policy efforts in addressing the problem of Internet access by focusing on two particularly high-profile programmes by the South African government. It was identified that the national policy fails to address skill requirements to successfully use the Internet and ICTs. Thus, the study by Benner (2003) suggested that South African policy on ICTs should employ strategies to address skills, autonomy of use and the general knowhow towards the Internet, otherwise it will, in disguise, widen the digital divide.

Despite the vast arguments on digital inequalities indicating the skewed Internet access from structural, cultural to postmodern approaches, differences to basic forms of access in contemporary society still matters especially when poverty, socio-economic, cultural and political issues are engaged. It appears that, new forms of digital inequalities emerged with the advancement of digital technologies. The concept of the 'digital divide' undoubtedly provides a robust method to unveiling access gaps within societies (Oyedemi, 2016), from the uses, skills to identify what and how people use the digital technologies for. The current research explores the patterns of digital inequalities in terms of affordability within the precept of a postmodernist framing of inequalities.

### 3.1.2 Internet access inequalities

Access inequalities have been diversely engaged by scholars to inform the imbalances presented through skewed access to digital technologies. Despite the rapid growth of ICTs world-wide, access remains problematic to many people (Chaudron, Beutel, Donoso Navarrete, Dreier, Fletcher-Watson, Heikkilä, Kontríková, Korkeamäki, Livingstone, Marsh and Mascheroni, 2015). Much research has been done focusing on the factors – socio-cultural, economic and political factors – underpinning the skewed access of Internet access (Cohen, 2003; Oyedemi, 2004; Selwyn, 2004; Livingstone and Helsper, 2007; Hargittai and Walejko, 2008; Oyedemi, 2012; Lewis, 2013; Gonzales, 2016).

The problem of imbalanced access to the Internet is a complex phenomenon that is linked to demographics, gender, race, socio-economic and political aspects. For instance, a study by Wilson, Wallin and Reiser (2003) assessed whether social-economic constraints to Internet access and uses is linked to geography, gender and racial divisions among African Americans. The findings of the study asserted that the rural minority, especially female African Americans participants were not having home computers, and some were not connected to the Internet at all. When socio-economic factors were controlled, geographical issues of rural residence and gender solved, the African Americans were least to have home computers or Internet access. When the relationship between public access points to Internet was inspected in conjunction with socio-economic factors, most African Americans were top to know of mass Internet access facilities in their community. The findings of this study are imperative to understand the effect of socio-economic status and in extension, family income effects towards widening the digital divide through skewed access to the Internet.

Young people have been referred to as '*early adopters of technology*' and proficient in using these technologies (Hargittai, 2010; Oyedemi, 2012). The ITU (2017) indicated that youth are at the forefront of Internet adoption and represent one-fourth of the total number of individuals using the Internet worldwide. However, in developed countries, 94% of youth aged 15-24 was recorded to be using the Internet compared to 67% of the same age group using the Internet in the developed countries (ITU, 2017). To clarify the

nature of skewed Internet access in developing countries in Africa, ITU, ICT Facts and Figures (2017) indicated that nine out of ten young persons who are not using the Internet reside in Africa, Asia and the Pacific.

In the Southern African Development Community (SADC) region, the Internet penetration levels are still low (Research ICT Africa, 2017) with Seychelles reaching the highest rate at 56.51%, South Africa at 54%, Botswana at 39.4%, Namibia at 31%, Swaziland at 28.6% Lesotho at 27.4%, Zambia at 25.2%, Zimbabwe at 23.1% Mozambique at 17.5%, Angola and Tanzania at 13%, Malawi at 9.6%, DRC at 6.2% and Madagascar at 4.7%. Oyedemi (2012: 303) indicated that the problem of Internet penetration is complex and tends to reside within entrenched societal inequalities, economic and inappropriate policy framework. This study focuses on the challenges of mobile Internet access among the youth in South Africa in the age of digital mobility and engages the universal service and access policy to expand the focus to provide mobile individualised Internet access rather than focusing on fixed public Internet access only.

In South Africa, a study by Gudmundsdottir (2010) analysed the factors influencing the digital divide using four schools – three schools of disadvantaged learners and the fourth which is historically advantaged, in Cape Town. Through a survey of 290 Grade seven learners as well as their class teachers, the study observed the factors that affected learners' Internet competence, and consequently, the digital divide. Using a cross-sectional interviews, observations and questionnaires in these schools, the results of the study show that regardless of the efforts by educational systems to upsurge Internet access for students and educators in Cape Town's public schools, digital inequalities were found to persist due to differences in socioeconomic backgrounds. The study concluded that, in as much as efforts to provide Internet access at schools is relevant, equally important is the focus on attempts to address personal access to Internet.

Another South African study by Oyedemi (2012) studied how the Internet access is distributed amongst the population groups in South Africa. Through a review conducted in ten South African universities, the study examined the patterns of Internet access among university students in South Africa. The study observed that beyond publicly

accessible Internet access at universities, with its related restrictions, home and personal Internet access is a challenge to most South African Black students, especially those from poor family backgrounds. This reflects patterns of social imbalances beyond a focus on Internet access in societies. Similarly, a study by Chisango and Marongwe (2018) revealed that limited ICT infrastructure impedes the integration of technology and e-learning and that inadequate ICT infrastructure in institutions widens the digital divide.

### **3.1.3 Geographical inequalities**

Geographical location matters when distribution of resources is skewed based on location. For decades, data have shown that skewed Internet access persists along dimensions of rural versus urban divides, high and low family income, race, gender and skills (DiMaggio and Bonikowski, 2008; Hargittai, 2010; Oyedemi, 2012). This classification of access by categories, helps define skewed Internet access as a problem of access (Oyedemi, 2016). Thus, the governments and Internet access policy makers are geared to enhance access with a focus on physical fixed mass access. However, access to Internet remains skewed for most parts of the population worldwide. This might also be as a result of contemporary shifts from fixed mass Internet connection to individual 3G or 4G mobile connection.

A study by Gonzales (2016), through the Interview method with 72 low-income US residents from various urban areas, revealed that there is a struggle to maintain physical access to the Internet. The study argued that although most people in the US low-income families use the Internet, their frequent form of access: fixed access such as public library access, is unstable and characterised by regular phases of interruptions and even disconnections. For Gonzales (2016), physical access is often experiencing cycles of instability, temporary Internet disconnection and broken hardware resulting to restricted access to health information, education, un-accessed online job vacancies and subsequent biased attitudes towards technology. The findings of this study are important in emphasising a shift from issues of ownership and availability of fixed Internet access to problems of maintenance and sustainability. Similarly, in most developing countries where the governments responded with providing physical access to the unconnected, some communities vandalised and stole the cables and computer

hardware to sell them (Tsokota, Chipfumbu, Mativenga and Mawango, 2013). Therefore, it becomes imperative to focus attention on strategies to provide mobile individualised Internet access rather than fixed public Internet access to circumvent the problems of maintenance.

Research has shown that the role of family income inequality across nations has an influence on Internet access. For example, the study by Fuchs (2009) analysed 11 variables per each country of the 126 countries using multivariate regression to identify if income inequality influences the use of the Internet, and to what degree in comparison to other socio-cultural and economic political factors. The findings of the study indicated that income inequality across different nations, using the Gini coefficient, is a significant influencing factor to Internet access and its uses, although other socio-cultural, economic, political and technological factors still contribute to the patterns in access and use of Internet.

Since the importance of the Internet has motivated governments across the world to provide free Internet access to people. It is important to note that while these efforts are commendable, they do little to solve the problem of Internet access inequalities. This approach limits free Internet access to only those residing close to the installed Wi-Fi hotspots, be it a city, semi-rural or rural area that has been connected. This approach to bridge digital gaps through providing physical access to certain parts of a country, especially in the cities, and excluding others to the dictates of the markets, is problematic and has the potential to expand the rural-urban divide. For instance, the Reaserch ICT Africa (2017) shows that in Tanzania 55.4% of Internet users reside in the urban areas compared to only 13.6% of those living in the rural areas. This might be explained by efforts such as that by the Tanzanian President, Samia Suluhu Hassan, who launched a project to install public Wi-Fi services in recreational halls in Dar es Salaam City, with the goal of creating a 'smart city' (Tanzania Daily News, 2016).

In South Africa, a study by Oyedemi (2015: 18) showed that the use of Internet is skewed by geography. The study indicated that 29% of students residing in cities/ urban areas claimed to have bought something online and 68.1% have applied or searched for jobs online compared to 6.9% of those living in semi-rural areas who claimed to have

bought something online and 55.3% who reported to have searched or applied for jobs online. For those residing in rural/village, 6.9% have reported to have bought something online, while 58.7% reported to have applied or searched for jobs online. These observations portend larger implications for policy approaches to Internet access. It reveals that Internet access is still skewed by geography despite government interventions to provide access points in remote areas. The use patterns are directly linked to access patterns. People in the cities have more access than those in the villages. For instance, in South Africa cities such as Pretoria and Cape Town have been declared Wi-Fi cities, while no significant progress is made on rural and remote areas to ensure the poor people can access the Internet.

### **3.1.4 Race and gender inequalities**

Race and gender also tend to influence the patterns of access, skills and use of digital technologies globally. Internet access is skewed along the lines of gender and race. For ITU (2017), the percentage of men using the Internet is higher than that of women in two-thirds of the countries the world over. World-wide, the proportion of women using the Internet is 12% lower than that of men (ITU, 2017). While the gender gap has narrowed in most parts of the world from 2013, the statistics does not indicate the same with Africa. The percentage of women using the Internet is 25% lower than that of men (ITU, 2017). Of the total population using the Internet in Africa, 24.9% are men, while 18.6% are female (ITU, 2017).

Faulkner and Lie (2007) noted that efforts to close the gender divide to ICTs are not supposed to focus on access strategies towards inclusion only, but also to engage measures such as recruiting more women in ICT as professionals and attempting to curb marginalisation on professional levels. The author critiques the ideological approach of simply providing access to the unconnected women with the hope that the gender divide problem will be solved. This notion of simply providing access to solve the digital problems by comparing access by categories without reference to the socio-cultural and economic-political factors has been criticised by many scholars. For example, Servon (2002); O'Hara and Stevens (2006) and Oyedemi (2016) analysed



that this approach benefits a neo-liberal agenda. This approach moves the technology gap problem from a multifaceted phenomenon and frame it as access issue.

In Africa, the distribution of Internet is skewed along gender differences. For example, the Reaserch ICT Africa (2017) found out that in countries such as Lesotho, 36% of males use the Internet more than females at 31%, Tanzania 31% of males use the Internet more than females at 27.8%, Zimbabwe at 18.3% of males using the Internet more than females at 14.6% and South Africa at 51% of males using the Internet more than females at 49% (ITU, 2017). The impact of this imbalance of access to technologies based on gender is imperative to inform the unequal experiences of citizenship within the socio-economic and political spheres despite the new political dispensation of a post-colonial discourse in many parts of Africa and the developing world. However, this still indicates that the rates of both female and male usage the the Internet are at low levels in Africa.

In South Africa, a study by Oyedemi (2015: 18) indicates an imbalance of Internet access distribution by race. The study revealed that 48% of White students have bought something online, 67.7% have searched or applied for jobs online compared to Africans at 9.3% and 67.4%, coloureds at 37.8% and 56.2% and Indian/ Asian at 34.2% and 75% respectively. The findings signify that most of the Black South African youth are unable to use the Internet and tap into the socio-economic benefits that the Internet can provide due to limited access and lack of digital skills.

In a nutshell, the problem of digital inequalities has been presented both in practical terms – use, skills and autonomy of use – as well as an application concern on attempts to bridge the gaps (Cohen, 2003; Oyedemi, 2004; Selwyn, 2004; Livingstone and Helsper, 2007; Hargittai and Walejko, 2008; Oyedemi, 2012; Lewis, 2013; Oyedemi, 2015; Gonzales, 2016; Chetty, Aneja, Mishra, Gcora and Josie, 2017). However, a review of the literature on digital inequalities showed that there are a variety of forms of digital inequalities (Van Dijk and Hacker 2003). In fact, while other digital gaps are closing, others are widening up since technology is a dynamic phenomenon.

The study by Chetty, Aneja, Mishra, Gcora and Josie (2017) observed that the digital divide manifests itself in poverty, socio-cultural norms and skewed digital skills

programmes that deprive women equal access to digital benefits. While this literature tends to identify gaps in terms of skills, uses, demographic, race and gender, little attention has been paid on how mobile Internet access has impacted on digital inequalities. Thus, this research focuses on the patterns of mobile Internet access to explain digital inequalities among the youth in South Africa. Subsequently, this research engages approaches to universal service and access policy of South Africa to identify the trends on attempts to make Internet access accessible for all.

### **3.2 Universal service and access policy**

Engaging universal service and universal access have been central towards the initiatives to attain Internet access in developing countries through Universal Service Funds. Universal service and access policy framework have materialised as a philosophic framework that has been applied to enhance access of the Internet, information technologies and the right to communicate among people.

#### **3.2.1 Defining universal service and access**

The concept of “universal service” originates with the Bell Telephone Company AT and T marketing strategy in 1885 (Verhoest, 2000). The concept was employed as a market system integration policy, simply meant for national-wide interconnection (Mueller, 1997; Verhoest, 2000). Thus, initially, universal service meant everywhere rather than everyone (Dordick, 1990). However, current studies extend the concept’s notion to preferential treatment of citizens and includes free service and access to Information and Communication Technologies (ICTs). The concept is now framed per criteria that largely coincides with contemporary telecommunication priorities (Verhoest, 2000), and it bears a social, economic and political connotation, which confirms a healthy democracy. The concept ‘universal service’ is defined differently from context to context. What is common among the definitions is their attention on availability, accessibility and affordability of services, as shown below:

- According to the ITU (2016), the European Commission defines universal service as “a set of services of specified quality, which is available to all users independently of

their geographic locations and considering the specific conditions at an affordable price”.

- For Ghana, the term connotes the availability of telecommunication services considering the needs of the public at an affordable price. Ghana’s definition of universal service connotes to high quality public telephone service (Electronic communication Act No, 23 of 2008, Ghana).
- The SADC policy approach to universal service asserts that the universal service entails “assuring access to all existing users, the provision of access to the national telephone network to all potential users, the provision of service on standard terms and conditions and the provision of service on affordable terms.”
- The electronic communication Act No 1 of 2014, South Africa defines the universal service as “the universal provision of electronic communication services and broadcasting services as determined from time to time in terms of Chapter 14 of the constitution.”

The concept “universal access” implies that everyone has access to publicly available ICT services (Oyedemi, 2004). In other words, it means that people should have access across broad national geographic coverage, community-based broadband services and ICT facilities that enhance information and communication access. These forms of access, in this context, are not limited to Internet access alone but extend to community radio, postal services and other government services, at a high quality and at affordable prices. However, this study focused on mobile Internet access.

While both concepts: universal service and universal access, have been applied to ensure a widespread public access to facilities and digital apparatus (universal access) such as payphones (Lewis, 2013), and interventions in relation to the development of broadband policy to ensure personal connection to Internet (universal service), the concepts are however defined differently. Universal service is a telecommunications policy concept that connotes personal access to telecommunication services. In this context, the focus is on personal access to the Internet. On the other hand, universal access policy implies that every person has a reasonable means of access to publicly

available telecommunication services (Verhoest, 2000; Oyedemi, 2004). Universal access focuses on the enhancement of access to public Internet access. Recently, the concepts, universal service and universal access, have been applied to frame Internet access as a human right (Goode, 2010; Jackson, 2011; Cerf, 2012; Jennifer, 2013; Wicker and Santoso, 2013; Oyedemi, 2015).

The study by Milne (1998) observed different ways universal service and access policy is understood in different nations at different times. The author suggests that the policy understanding, and implementation has been modified for the past decades to meet relevant demands and can be summarised in stages from: “*the network establishment stage, wide geographic reach, mass market take-up, network completion and finally attention shift to focus on providing service to individuals*”. Each stage defines the universal service and access obligation. For example, in response to the urgency of the earlier stages, the South African government has responded through addressing access problems by providing fixed mass connection to the Internet (Oyedemi, 2004). However, what remains missing are strategies of addressing mobile Internet access.

A study by Godlee, Pakenham-Walsh, Ncayiyana, Cohen and Packer (2004) observed universal access to information for health professionals as a prerequisite for meeting the Millennium Development Goals (MDG) and promoting health services. The authors assert that lack of information access remains a key barrier to health care based-knowledge in most developing countries. Significantly, the study shows that the achievement of true access to information rests upon universal service and access policy makers. The study suggests that strategies for attaining universal service and access include funding research on issues regarding access and the uses of Internet access.

Engaging universal service and universal access to Internet access has been essential in theorising citizenship, as Miller-Idriss (2006) indicates that citizenship is not only a political concept, but also essentially an economic concept. Universal service and access have materialised as a philosophic framework that has been applied to study citizens' rights. For example, an American study by Winter (2013) views Internet access as important for the protection of human rights and the underpinning of ideologies of

true democracy, specifically the right to communicate, and to strengthen the United Nations' (UN) assertion that declares Internet access as a human right. Similarly, a South African study by Oyedemi (2015) examined practical universal and access policy interpretation from theoretical sermons to more practical applications. To do this the study engaged universal service and access policy-makers on approaches to Internet access as a fundamental citizens' need in contemporary society were most fundamental aspects of life are technologically driven, such as searching for jobs, entrepreneurships, health information, development and even the basic right to communicate. The findings of the study reveal that the socio-economic challenges in South Africa and Africa at large requires an imperative democratic objective of rights enshrined in their constitutions and subsequently that of Internet access.

In South Africa, the universal service and access policy guidelines on telecommunications reforms, under the theme 'Reconstruction and Development Programme (RDP) emphasises the racial distortions to access under the apartheid regime (Lewis, 2013). Hence, the concepts become essential to understand the notion that include preferential treatment of citizens to accessible and affordable ICT services especially on Internet access. In South Africa, strategies and the policy approach to Internet access are undertaken under the universal service and access framework recognised in the Electronic Communications Act, No 36 of 2005 of South Africa.

The Universal Service and Access Agency of South Africa (USAASA) is responsible for simplifying the provision of ICTs access to citizens. On the other hand, the Universal Service Fund (USF) ensures the provision of funds to the construction of telecommunications infrastructure. For example, the USF in South Africa has been providing funds for the provision of public Wi-Fi in community libraries, public service centres such as hospitals and clinics and ICT infrastructure for academic institutions (Research ICT Africa, 2010). This supports the rationale to engage these institutions on the approach to Internet access, affordability and issues around high data costs in South Africa.

### **3.2.2 Implementing universal service and universal access**

The rationale for achieving universal service and access has not been separate from the attention focusing on promoting efficiency, skills and uses of Internet access. For example, a study by Lievrouw (2000) examined the importance of universal service and access policy within the framework of Internet access as a tool to support the social, economic and political participation. To identify true access, a prototypical of the information environment is defined and used, that accounts for the role of information access. The study found that Internet access availability alone does not constitute true access, but it will require individual capacity to be achieved. Hence, the author suggests that universal service and access policy framework should advance training and education components to cultivate individual capacity to use the Internet.

China has approached universal service and access policy differently from the rest of the world. For example, a study by Xia (2016) indicated that the Chinese approach to universal service and access policy and implementation has been integrated into a single national programme of 'access' and 'application'. The study by Xia (2016) indicated that in China, the universal service policy intends to improve rural access to ICT infrastructures, Internet access involved, and provide the people with comprehensive information services, termed *CIS*, that are directly linked to market production and daily socio-political and economic routine in rural China. The study indicated that universal service policy engages concepts such as efficiency, development and equality from multiple perspectives of politics, sociology, management and public policies. Through the Chinese rural informatisation programme, the study by Xia (2016) provided insights on the effectiveness of the universal access and universal service policy in connecting the communities to the Internet.

Furthermore, a study by Nucciarelli, Sadowski and Ruhle (2014), in the Netherlands, critiqued the European Commission (EC) approach on its Universal Service Obligation (USO) which excludes broadband on its "set of communication services". The study proposed that the future of USO is the commitment to broadband investment to meet the needs of the Next Generation Access (NGA) networks. Consequently, there is a need to change the basic concept and principles of universal service and access policy

framework to focus on mobile Internet access rather than focusing on fixed Internet access.

The growth of Internet access has become imperative to measure the progress of the telecommunication policies especially under the universal service and access framework. For example, a study by Fan (2005) offered a review comparing policy approaches to regulating the Internet between China and Australia. The study examined policy initiatives to ensure competitive markets and liberalisation in both countries contributing towards a positive effect to Internet accessibility and affordability in both countries. Therefore, the implication of Fan's (2005) study is that government policies permitting competition and liberalising the market have a positive impact on affordability and availability of Internet access for citizens. What remains is to explore the positive impact of ensuring competitive markets and liberalisation of the telecommunications industry towards attaining accessible and affordable mobile Internet.

In South Africa, a study by Gillwald (2005) studied the post-apartheid telecommunications reform on the universal service and access policy objectives in attaining affordable access to information and communications services and how this accelerates the national necessity of building an information economy. The study critiques the employment of the market liberalisation as an international reform model which in practice tends to emphasise privatisation at the expense of other reform instruments such as regulatory measures. The author argued that this has impacted undesirably on affordable access and has stifled market modernisation. For Gillwald (2005), the Independent Communication Authority of South Africa (ICASA) has hardly been with the legal powers to demarcate the operations of the dominant service providers to provide a conducive platform for prospective new competitors. Consequently, without active and sound regulation the perceived benefits of liberalisation such as enhancing affordable access remain out of the reach for many people.

Another study by Cohen (2003) observed that the telecommunications sector's liberalisation strategy and opening of markets to competition has been fundamental to the developmental objective in South Africa. This has promoted the attainment of

universal service, the development and advancement of small and medium enterprises (SMMEs) and the economic empowerment of historically disadvantaged entities (Cohen, 2003). However, the liberalisation of telecommunication markets did little towards the attainment of affordable Internet access (Oyedemi, 2016). The opening of markets by the regulator, for entry to potential operators, is not directly linked to access. Therefore, it could be erroneous to conclude that the liberalisation strategy led to the enhancement of access to those otherwise unconnected. The neo-liberal approach has been criticised on interpreting public interest in market terms (Stevenson, 2009; Oyedemi, 2016).

Also, in South Africa, approaches to provide universal service and access to the Internet was the provision of public Internet access points by the government (Oyedemi, 2016: 8). The government focused on providing public access points in bridging the digital divide. Access points for the unconnected became Community Technology Centres (CTCs), telecentres, public libraries, Thusong Centres (Oyedemi, 2016).

On the other hand, there is the Universal Service and Access Agency in South Africa (USAASA) as a State-owned entity of government established through the Electronic Communications Act, Number 36 of 2005, to ensure that every citizen in South Africa can be connected, speak, explore and study using Information and Communications Technologies (ICTs). USAASA is constitutionally bound to implement programmes that intend to enhance accessible and affordable telecommunication services, Internet access included. However, USAASA has been implementing the universal service and access mandate mostly focusing on providing universal service (telecom centres, community libraries and Thusong centres), and neglecting individual connection to the dictates of the market (Oyedemi, 2016).

This approach to universal service has been criticised for its emphasis on public access, relegating individual access to the dictates of the market (Oyedemi, 2016). Also, declaring cities as Wi-Fi access points focuses policy on a market narrative, which will lead corporations to target services in cities and neglecting rural areas on aspects of development.



### **3.2.3 Funding universal service and access**

Internet access is regarded as an indispensable backbone for the development of socioeconomic and political sectors. For Lewis (2013) governments across the globe are committed to provide universal service and access at affordable prices within a sustainable system. This is achieved through the provision of Universal Service Funds (USFs) by the governments towards the cause. The Universal Service Fund (USF) is a system of telecommunications fees and subsidies that are managed by USAASA to fund and promote universal service and access to telecommunications services accessible to citizens. The USF is largely supported by charging the telecommunications companies a standard fee which normally is set quarterly. The USF is a dedicated fund to finance interventions to increase access to telecommunications services aimed to bridge the digital divide (Lewis, 2013). The funds are usually sourced through levying tax on the operators, together with users requiring them to contribute a defined percentage of revenue towards USFs (ITU, 2011).

In America, the Federal Communications Commission (FCC) is responsible for managing the funds in compliance with the United States telecommunications Act of 1996, and a total of \$7.82 billion expenditure was reported in 2014 with the rate of 17.9% of a telecom company and international end-user revenue. In South Africa, the Universal Service and Access Agency of South Africa (USAASA) is responsible for monitoring the funds in compliance with the Electronic Communications Act, Number 36 of 2005 to ensure that every citizen has a passable access to telecommunications services.

Universal Service Funds (USFs) are distributed differently from nation to nation depending on the telecommunication projects prioritised. Recently, many countries have started the provision of broadband internet services as their priorities, now that the telecommunication market is increasingly characterised by mobile network and Internet access expansion (Norris, 2001; Van Gorp and Middleton, 2010; Arakpogun, Wanjiru and Whalley, 2017). However, in most parts of the developing world and Africa, the provision of community phones – payphones – is not forgotten, especially in deep rural

communities where basic telephony services are still missing (Rey-Moreno, Reigadas and Tucker, 2015).

Funds for the development of Internet access for the unconnected exists differently from one country to another. For example, The Connect America Fund also known as the Alternative-Connect America Cost Model (A-CAM) ensures availability of high speed Internet access to consumers in the rural areas of America and ensures that access to voice and broadband services are at rates that are practically similar to urban charges (Sallet, 2019), the Connect to Innovate in Canada (Canada), the African Development Fund (ADF) (Africa) and the Rural Communications Development Fund in Kenya (Kenya). In South Africa, it is the Handover project that aims to ensure that existing access centres – telecentres and schools are sustainable for long periods and promotes the USAASA to allocate budgets effectively to deploy more access centres across the country. The Rapid Deployment Project (RDP) monitors subsidies deployment to aid public access to Internet mostly among historically disadvantaged populations and the Broadcasting Digital Migration (BDM) is more focused on assisting poor TV-owning households by subsidizing the cost to acquire Digital Terrestrial Television (DTT) and Direct to Home (DTH) Set-Top Boxes and antennas, as well as providing installation services through the USAFs.

Lewis (2013) examined that post-apartheid South Africa placed universal service and access at the front of its communications regulatory and policy interventions. Like other nations globally, the South African government imposed universal service obligations on Telecommunications licensees and established a Universal Service Fund (USF) alongside universal service and a regulatory body: ICASA. For Lewis (2013) these initial policy interventions were imperative and achieved the establishment of fixed mass access by the government. However, the dawn of mobile broadband marked a shift from fixed mass access to mobile Internet access and this has made Internet access a mobile trend.

A study by Prasad (2013) indicated that the Universal Service Obligation (USO) agenda has led to the acceleration in the provision of mobile broadband services in the rural areas of South Africa. This has led to the inclusion of rural broadband development

within the universal service obligation agenda in South Africa. Thus, the study expands the notion on the inclusion of broadband in the USO framework. The author proposes that Universal Service Funds (USFs) should focus on building broadband infrastructure to facilitate development. For Prasad (2013) this helps to immediately stem the digital divide. However, this then raises many critical questions regarding the extent to which broadband development should be included in the universal service obligation scheme, and how affordability can be attained in the light of network availability.

Contrary to Prasad's (2013) view that the provision of infrastructure and fixed forms of access to Internet has led to the acceleration of broadband facilities in rural areas, a South African study by Oyedemi (2004) argued against this idea by taking cognisance of the socio-cultural framework noting that the approach to universal service and access policy implementation should work in tandem with the extension of other social efficacies. To do this, the study proposes a conceptualisation of the universal access wheel which utilises various elements to attain an ideal universal service and access.

Universal Service Funds (USFs) are imperative to the development of Internet access to the unconnected. In South Africa, a report by Lewis (2015) confirmed the importance of Universal Service Funds (USF) to support projects intended to enhance universal service and access to information and communication services. Tax on operators has been a means to finance USF, usually requiring them to pay a certain percentage of their revenues. For the past decades, these funds have been used to support mass fixed Internet access interventions in the form of telecentres, community and public library, subsidised network extension by operators, support for Information and Communication Technologies (ICTs) at schools and other public institutions such as hospitals (Oyedemi, 2013). Lewis (2015) focused on the experiences and distribution of South Africa's USFs in relation to the global widespread USFs. A focused investigation on the application of USFs to address mobile Internet access is imperative.

However, there is a problem in South Africa in the way the funds are distributed and accessed to be utilised by USAASA. The Universal Service and Access Funds report (2010) indicated that the telecommunications operators in South Africa pay their universal service levies to the regulator (ICASA) instead of USAASA. USAASA is

responsible for managing the funds, however, they must then apply for money from the fund set aside in the treasury deposited by ICASA for universal access (Universal Service and Access Funds report, 2010). When USAASA publishes detailed performance evaluations and budgets each year, the balance of this fund for universal service and universal access does not exist on USAASA's accounts (Universal Service and Access Funds report, 2010).

### **3.3 Conclusion**

This chapter has discussed the literature under digital inequalities and indicates the rationale for achieving universal service and universal access under the telecommunications reform in various nations. The current research focuses on issues around affordability and high data cost as potential factors that impede personal access to the Internet. Although empirical evidence supporting that most parts of the population across the globe have overlapped over to the connected side of Internet access is evident, the on-going debate on Internet citizenry, intensifying access to Internet as a right (Hargittai, 2010; Oyedemi, 2015), provokes new perspectives on the contemporary forms of Internet access alongside inequalities. In the next chapter, I discuss the theoretical framework of this research.

## CHAPTER FOUR

### SOCIAL INEQUALITIES AND DIGITAL INEQUALITIES: A THEORETICAL FRAMEWORK

#### 4.1 Background

There are numerous debates on the contributions of digital technologies to societies. Some arguments point to the empowering effects of online platforms that allow political, social and economic engagements amplifying the public sphere of an electronic kind (Coleman and Gotze, 2001; Dahlberg, 2001; Langman, 2005; Loader, 2007; Castells, 2008; Papacharissi, 2014; Cummings and O’Neil, 2015). Some scholars are of the view that the Internet and the digital technologies are widening the gap between the “have nots” and the “haves” (Lee, Park and Hwang, 2015; Tsetsi and Rains, 2017), since access to these technologies is understood within different social and economic class differences.

Therefore, an understanding on the benefits of digital technologies should be framed alongside digital inequalities. It becomes imperative for a comprehensive and critical approach to theoretical narratives especially that these narratives and debates on the benefits of digital technologies tend to shape policy frameworks in addressing digital inequalities (Oyedemi, 2016). Research has indicated that the nature and pattern of inequality in societies are shaped by historical contexts – social structures, economic and cultural configurations (Lewis, 2013; Dietz, 2017; Stephens, Markus and Phillips, 2014; Woodman and Wyn, 2014; Bradley, 2015). Class inequalities have been framed as a basic element of human societies (Marx and Engels, 1967).

There are various forms of unequal distribution of economic, social and cultural capitals on every sector of the human aspect. Research has shown that these various forms of inequality – economic, political, cultural, technological and social – manifest themselves in race, gender, ethnicity, religion, and in the social stratification that they create in society (Anthias, 2013; Oyedemi, 2015; Oyedemi, 2016). Within the digital technology discourse therefore, issues of poverty, gender inequality, class struggle, racial

discrimination, economic imbalances, and other social fractures continue to shape the social analysis of individual participation, inclusion and exclusion in society (Oyedemi, 2015). Importantly, the trend of analysis on inequalities in society revealing the imbalances along class, gender, religion, geographical location, economic, racial and ethnic fracture (Hargittai and Hinnant, 2008; Servaes, 2013) highlighted several conceptualisations of digital inequalities, how they are impeded and their contributions to the digital divide.

Arguments on social inequalities change debates on free market capitalism, human and citizens' rights, democratic participation, unemployment, poverty, social inclusion and exclusion. The social uprisings and protests movements in most parts of Africa, Europe, Asia, the Americas and the Arab world is imperative to exemplify the level of dissatisfaction for equitable representation and participation to better their well-being and prospects in life (Oyedemi, 2013).

Despite the trend in the analysis of social inequalities in societies that tends to reveal social differences based on class, race, gender, religion, geographical, economic and ethnical fractures, the realisation that social inclusion is a fundamental aspect of human existence is a debate among scholars (Leurs, 2016). Central to these debates are arguments on the implications and consequences of the digital technologies on individual and communities at large (Haenssger, 2018).

The theoretical approach to social inequalities and digital inequalities is a realisation that apart from media and communication innovations, digital technologies are increasingly spurring many developmental aspects of individuals' well-being and prospects of life at large (Hamelink, 2015). However, the historical nature and existing patterns of social inequalities across the globe have implications on access to digital technologies (Oyedemi, 2016). Discourses on digital inequalities have shown that inequalities in access to technologies has both positive and negative implications on education, social status, class, conditions of well-being, economic, social and cultural experiences (Evoh, 2007; Hargittai and Hinnant, 2008; Kreutzer, 2009; Bere and Rambe, 2013; ITU, 2016). The "haves" are privileged to access the benefits of digital technologies, while the "have-nots" remain on the unconnected side of the digital divide

(Hargittai and Hinnant, 2008). This supports arguments that, despite digital technological innovations and creative social networking platforms that have the potential to include those historically excluded, access to digital technologies is still skewed by race, social status, gender, geography digital skills and economic differences.

In addition, research has shown that since the turn of the century, the growth of technology in mobile phones and Internet has changed the way of economic, social, cultural and political participation among societies in Africa and the world at large. However, with seemingly visible high rates in the cost of Internet, central to new debates should be on how social media have been effective towards activism, community empowerment and policing, political deliberation, youth empowerment, economic growth and digital citizenship. Meanwhile, in Africa and most parts of the developing world what remains critical is the extent to which citizens' active participation in these economic, social and political movements through digital means has been disrupted by affordability to subsume what can be perceived as active participatory and productive citizenship.

This research employed the theoretical approach of structuralism, culturalism and postmodernism to the understanding of the patterns of Internet access among the youth in South Africa. A structuralist approach to digital inequalities tends to focus on class structures of society to explain the patterns of digital inequalities (Oyedemi, 2016). A culturalist approach to digital inequalities describes conditions, such as usage and skills, that determines inclusion or exclusion to digital technologies, while a postmodernist approach focuses on issues regarding individual connection. A combination of these theoretical approaches enhances the understanding of the patterns of digital inequalities.

#### **4.2 Understanding social inequalities**

The review on social inequalities follows a path of different theoretical and historical viewpoints. However, a general understanding of social inequality could be the existence of uneven distribution of resources, skewed opportunities (Donni, Rodríguez and Dias, 2015), typically through rules of distribution, that stimulate certain patterns of

socially defined categories of individuals and gain differently from the economic-political and status privileges in society (Lin, 2000; Ridgeway, 2014). Historically, differentiated preference of access brought about by class, economic levels of income, power, race, age, gender and ethnicity (Hargittai and Hinnant, 2008; Kreutzer, 2009; Bere and Rambe, 2013; ITU, 2016). These social inequalities consequently skew the distribution and access of non-monetary rewards and benefits like access to Internet.

Marx and Engels (1967) ascertain that the history of all hitherto contemporary society, is the history of class struggle. Social inequality exists because of resources being distributed unevenly, specifically through '*norms*' – informed understandings that govern the behaviour of members of a given society (Fehr and Fischbacher, 2004; Hogg, 2016) – of allocation that engender specific patterns along lines of socially defined categories of individuals in a given society (Anderson, 2007).

For the past decades, Karl Marx's analysis of social inequalities in society based on class structure: the class theory, has been the thrust of approaches on understanding class classification to measure and define inequalities in society (Oyedemi, 2016). For Marx and Engels (1848) the understanding of folks in society depends on material conditions determining their productivity. To Marx (1857) society is based on two major class struggles: the "haves" and the "have nots." This alludes that social power has been framed as an economic phenomenon, which is attained through the possession of material objects. However, Weber (1958) extended Marxian class theory, and his extension casts the nets of inclusion based on class, status and party (political) attachment. Giddens and Giddens (1973) also extend the class theory by offering to it a structuration of class relationship. His analysis evolves three basic elements: ownership of property, educational qualification and the possession of manual labour.

There are three vital points that are elusive and historically contingent to understanding the kinds of inequalities in societies – economic, political and social. Economic inequalities refer to inequalities which in most cases are defined in terms of income, wealth (Manza and Sauder, 2009), and consumption gaps. Economic inequalities are differences found in different measures of economic well-being among individuals in a group, groups in each population, and across nations. The reason why race matters in



contemporary South Africa is because wealthy is still skewed on race with White minorities owning large proportions of the wealth (MacDonald, 2006).

The definition of political inequalities is somehow inclined to the concept “political resources.” Power resources describe the resources used in the exercise of power (Dubrow, 2007). Therefore, political resources are resources used in political decision making, or for all areas of social life that make claims towards a legislative or decision-making board in all political platforms from individual groups to national levels. Political inequality therefore refers to structured differences in the distribution and acquisition of political resources (Dubrow, 2007). The element of “power” here is an attribute of people.

Social inequalities remain a universal feature pervasive of all human societies. Social inequalities are based on race, gender, ethnicity, religion prestige, power, class and sexual orientation. However, Manza and Sauder (2009: 7) indicated that the differences relating to inequalities in a society depend, to a greater extent, on public policies regulating economic and political frameworks. Similarly, research has shown that social inequalities, at both individual and community levels, are understood within the economic and political development of nations (Hargittai and Hinnant, 2008; Morris and Morris, 2013; Tzanakis, 2013; Liao, Chang, Wang and Sun, 2016; Oyedemi, 2016; Katz, Gonzalez and Clark, 2017).

Consequently, in contemporary societies, governments are introducing measures and affirmative action programmes which intend to help spur and neutralise the otherwise forms of stratification that exist in a society. For example, in South Africa the adoption of the constitutional’s Bill of Rights, found in Chapter 2 of the Constitution, intends to enhance individual opportunities and entry to vastly desired opportunities in economic, political and social spheres.

The line of critique here is that social, economic and political inequalities have a profound effect on the developmental agendas of individuals, community and nations. This is to say that most of the countries with high inequality levels are experiencing difficulties to curb these inequalities. The consequence is that, these nations remains as

developing nations or being underdeveloped which maintains the status quo or widens the gap between the “haves” and the “have-nots.”

With the overwhelming degrees of inequalities across the globe, it is not surprising that the Nations Development Programme’s Inequality-adjusted Human Development Index Report (IHDI) (2016) indicated that most of the African countries are on low ranking levels on inequality adjustments. For example, Mozambique is ranked position 142 out of 151 world nations at 0.280 inequality-adjusted, Lesotho is ranked position 133 at 0.320, Malawi is ranked position 130 at 0.328, Zimbabwe is ranked position 120 at 0.369, Swaziland is ranked position 121 at 0.361, Zambia is ranked position 119 at 0.373 and South Africa is ranked position 102 at 0.435 inequality adjustment. However, most of the developed countries are far better on their inequality-adjustment levels, with Norway leading at 0.898 inequality-adjustment. This becomes relevant considering that the degree of inequality in each society influences the rate at which individuals can do desirable things to better their lives.

The human development approach through the inequality-adjustment index is significant to picture the nature of the patterns of inequality which is framed in terms of whether people can do desirable things to better their lives or not. Precisely, key features include being well fed and not subjected to hunger because they cannot afford to buy food, shelter, health, work, acquire education, being able to vote, participate in political and economic programmes.

Since the interpretation of social inequalities in society is complex (Ossowski, 2003), it becomes imperative to engage these different approaches to inequalities: the structuralism, culturalism and postmodernism approaches to inequalities. It appears that there is a constraining socio-economic and political ramp which escalates with effects from socio-cultural differences skewed on gender, race, affordability, knowledge, skills, usage, age, and class. An integrated approach to these inequalities is imperative and it confronts the limitations of each single approach which only envisage the attainment of resources to solve inequalities relative to that approach.

### **4.3 Understanding digital inequalities**

In the United States of America, the United States Department of Commerce and National Telecommunications and Information Administration (NTIA) (1995) defined digital divide as an economic and social inequality regarding access to, use of, or impact of information and communication technologies (ICTs). The social inequalities present in the social structures are reproduced and reinforced in the digital sphere (online platforms) (DiMaggio, Hargittai, Neuman and Robinson, 2001; Ragnedda and Muschert, 2013). Therefore, digital inequalities are embedded in social structures (Halford and Savage, 2010; Helsper, 2012; Robinson, Cotten, Ono, Quan-Haase, Mesch, Chen, Schulz, Hale and Stern, 2015).

The term digital inequalities come about as a realisation that the “digital divide” is more than an access issue and cannot be overcome simply by providing access to people. Therefore, digital inequalities refer to inequalities between individuals, households, geographic locations, demographic categories, age, skills, gender, income inequalities and infrastructure to connect to the Internet such as mobile phones (DiMaggio and Hargittai 2001; Kim and Kim, 2001; Livingston, 2010). These are the several patterns which characterise and shape the social sphere (Ragnedda and Muschert, 2013).

DiMaggio and Hargittai (2001) contend that digital inequalities refer to the differences in access and inequality among those with formal access to the Internet – pointing to equipment, autonomy of use, skills, social support, and the purpose for which technology is employed. The concept of ‘digital inequality’ was framed from the ‘digital divide’ since the concept of “digital divide” was narrowly confined to access inequalities (DiMaggio and Hargittai, 2001; Servaes, 2014).

The field of digital inequality continues to expand in many directions. Imperatively, the analyses of inequalities to Internet access have invited various forms of inequalities both as social problems and as policy concerns (Goode, 2010; Jackson, 2011; Cerf, 2012; Jennifer, 2013; Wicker and Santoso, 2013; Oyedemi, 2015). The concept “digital divide” has been an intense description of individual access gaps to Information and Communication Technologies (ICTs) (Oyedemi, 2016). The digital divide exemplifies two categories of people, the other on the privileged side of the digital divide while the

other falls on the wrong side of the divide where there is no access to ICTs (Hargittai and Hinnant, 2008).

Explaining how social inequalities are replicated in the digital sphere, Ragnedda and Muschert (2013) draw upon two theories: “the Matthew effect” and the “theory of the knowledge gap” that when applied to the digital age, argue that digital technologies are widening the gap between the “haves” and the “have-nots”. The “Matthew effect theory” argues that “the rich are getting rich and the poor are getting poorer.” The argument here is that the rich have access to necessary and enabling resources that privilege them to tap the benefits that digital technology can offer. When applied to digital inequalities, (Helsper, 2012), it become apparent that the same social inequalities that pre-exist in different societies are reinforced in the digital sphere. The rich in terms of income, prestige, skills, infrastructure and geography are poised to benefit more from the Internet than the needy persons (DiMaggio and Hargittai, 2001; Oyedemi, 2012).

The “theory of the knowledge gap”, first theorised by Tichenor, Donohue and Olien (1970) argued that information and knowledge is not distributed evenly in societies. According to Ragnedda and Muschert (2013), the main assumption of the theory is that as digital technologies continue to penetrate many parts of society, including those historically not privileged, segments of the population with higher socioeconomic and political status tend to acquire this information at a faster rate than those with low socioeconomic status. This explains how the information and knowledge gap between the rich and the poor increases (Bonfadelli, 2002; Wei, 2009).

The reflection of the ongoing inequalities in the social realm through digital inequalities, is important to understand that inequalities are continuously evolving with other inequalities emerging and identified while others are being reduced. Since social inequalities and digital inequalities are intertwined, Van Dijk and Hacker (2003) argued that it would be an error to assume that the digital inequalities are a static occurrence, not parallel to the social inequalities that are continually moving. Thus, with the evolving of technology itself, other inequalities are minimised whereas others are reinforced online.

Therefore, engaging digital inequalities along policy intervention becomes imperative to inform on approaches intending to bridge the digital inequalities. The study by Oyedemi (2016) observed that the way social inequalities are identified, defined, analysed and framed has implications on how inequalities to access, use and skills in the digital sphere is drawn and addressed in policy approaches. Delving yet deeper in this vein, DiMaggio and Hargittai (2001) argued that public policy intended to enhance access should strive to create a society in which the benefits of the new information technologies are distributed equally, more as a source of opportunity rather than as a reinforcement of citizen's privileges (Oyedemi, 2016).

The theoretical approaches to digital inequalities indicate not just the differences in access, but also the inequalities among individuals including those with formal access to the internet (DiMaggio and Hargittai, 2001). The nature of access to Internet is defined in both structural and cultural terms (DiMaggio and Hargittai, 2001). An analysis that define access in social terms tends to focus on what form of access individuals have. For example, Internet connection at work, library or a community centre (Oyedemi, 2016). In the same vein, the cultural aspect explores the digital skills and usage and seeks to understand what connected individuals do online.

Also, digital inequalities presented in the social structures are also framed along the technological aspect of access to Internet (Oyedemi, 2016). The "Internet" itself is a service of profit-seeking corporations, government and nongovernmental agencies (McChesney, 1996). There is a concentration and commercialisation of Internet that makes it difficult on the needy persons to tap the benefits associated with the Internet. Thus, the technological aspect on inequalities reflect the economic and socio-political factors at play directly linked to the digital inequalities and policy narratives.

#### **4.3.1 Structuralist approach to digital inequalities**

The core argument of the structuralist approach to digital inequalities is that access gaps to Internet and technologies is interpreted in terms of separation between classes, those that are privileged to have access and those that are not. It focuses on class structures of society to explain the patterns of digital inequalities (Oyedemi, 2016). The approach was developed from the class classification (Oyedemi, 2016). According to

Oyedemi (2016), the concept “digital divide” typifies the structuralist slant to Information and Communication Technology (ICT) gaps. Access gaps to Internet is explained in terms of the information “haves” and the information “have-nots” along socio-economic, race, educational and geographic levels (DiMaggio and Hargittai, 2001; Bertot, 2003; Selwyn, 2004; Hawkins and Oblinger, 2006; Livingstone and Helsper, 2007; Hersberger, 2013). Factually, the concept of “digital divide” demonstrates two categories of people living in opposite ends: the one living in the connected side and the other living in the unconnected side of the divide (Hargittai and Hinnant, 2008).

Apart from classification of access by class categories, the structuralist approach to the digital divide also defines technology gaps as a problem of access. The argument is that, to bridge this divide is to provide access to the people (Oyedemi, 2016). Consequently, since the problem was outlined and interpreted as a problem of lack of access, from the structuralist approach, universal service and access policy approach and agendas also focused on ensuring the availability of fixed mass access points to citizens (Oyedemi, 2016). Studies following the access analysis to the digital divide problem tend to assess the rural-urban divide, developed-developing nations divide, race divide and income levels (Chen and Liu, 2013; Li and Ranieri, 2013; Prieger, 2013; Mamba and Isabirye, 2015; Liao, Chang, Wang and Sun, 2016).

Livingstone and Helsper’s (2007) study revealed inequalities by age, gender, socio-economic status and geography in relation to Internet access and uses. Van Dijk (2006) studied the digital divide research achievements and shortcomings in the Western nations and identified that even though the gap on physical access to digital technologies appear to be closing, substantial inequalities to access Internet remains. A South African study by Oyedemi (2011) studied the patterns of Internet penetration among the youth and revealed that digital inequalities replicate the patterns of social inequalities along race and gender among other social and economic inequalities.

The structuralist approach to digital inequalities and its extensive focus on access divides between categories (age, gender) and groups (individuals with high income and those from low income levels) of the population, initiates the market approach to policy narratives. Oyedemi (2016) observed that the theoretical framework of digital

inequalities as a problem of physical access did more to benefit the neoliberal agenda, that in turn moves the technological gap issue from the concept of universal service and foster state intervention and encourage physical public Internet access, leaving individual access to the dictates of the markets.

Subsequently, policy agendas focusing on providing public access are there for the taking. For instance, Community Technology Centres (CTCs) were established, telecentres, community and public libraries have become mass connection points and Community Technology Centres (CTCs) (Oyedemi, 2016). However, this approach is criticised as a technology determinist or economic reductionist approach, since it relegates personal access to the dictates of the telecommunication operators in favour of public access (Walmark and Beaton, 2011; Lewis, 2013; Oyedemi, 2016). This theoretical framework remains imperative and relevant to this study on its interpretation of the digital divide as a problem of access. It forms the basis of unveiling access gaps in otherwise unconnected population groups, such as the rural population groups and groups from low-income levels (Oyedemi, 2016).

#### **4.3.2 Culturalist approach to digital inequalities**

A culturalist approach to digital inequalities describes conditions that determine inclusion or exclusion to digital technologies. Instead of classifying Internet access by categories such as the structuralist approach, the culturalist approach to digital inequalities defines digital gaps in terms of inequality in technical apparatus, autonomy of use, skills, availability of social support and uses (Oyedemi, 2016). Following the culturalist approach, Bourdieu's cultural theories have been applied as a theoretical background to analyse digital inequalities by many scholars. For instance, a United Kingdom study by Livingstone and Helsper (2007), using a survey of 9 – 19-year-old, analysed social inequalities by gender, age and socio-economic status in relation to the quality of access and the uses of Internet. Also, a Korean study by Lee, Park and Hwang (2015) studied inequalities based on demography in terms of Internet usage, skills. The findings revealed that access, use and skills gaps are higher barriers that impede active online engagements. Apart from that, a Cameroon household survey data by Pénard, Poussing, Mukoko and Piaptie (2015) observed that Internet usage

patterns are mainly influenced by gender, age, education and skills. Similarly, a South African study by Oyedemi (2015) on participation, citizenship and Internet use among youths indicates inequalities in terms of the type of usage, skills, race and income.

The culturalist approach is a move away from the structuralist approach which narrowly defines the digital divide in terms of access and that to bridge this divide is to provide access to the people (Oyedemi, 2016). Its rationale expands the class theory that tends to define inequalities in terms of structural conditions. However, even though the focus of the culturalist perspective focuses on various patterns of digital inequalities, access gaps in terms of class structures (the haves and the have-nots) and categories (race, geographic and educational levels) still influence the inequalities that exist from the cultural lens perspective.

The culturalist approach to digital inequalities is imperative to understand the socio-cultural aspects such as skills and usages of Internet towards understanding the patterns of Internet access. The theory is a critical approach on resources and practices that promote equality among citizens. These practices ensure equality through systems of education and training and social networks to which this research suggests the addition of mobile Internet access as a system, and a resource that has the capacity to enhance equality in communication systems. The culturalist approach to digital inequalities does not replace the structuralist approach but it expands on the patterns of access problems in terms of skills; usage; availability of social support; technical apparatus and autonomy of use.

The focus of the culturalist approach to digital inequalities is on skills, access and use inequalities. Here, the measuring of access moved from the mere “haves” and “have-nots”, class structure of the rich and the poor to a more comprehensive understanding of the use patterns. Studies following the culturalist approach assert that the digital inequality issue is not solely based on class defined by some economic capabilities (Oyedemi, 2016), but a complex interplay of social and cultural issues.



### **4.3.3 Postmodernist approach to digital inequalities**

Postmodernism is the approach to self-expression of thought such as art, literature, philosophy and politics among others. According to Lung (2016), postmodernism can be described as a set of critical, strategic and rhetorical practices that appreciate and take into cognisance individual difference, repetition, the trace, the simulation and hyperreality rather than an intense focus on presence, identity that is universal for all peoples, classes, historical progresses, cultures, races, groups and epistemic certainty.

This approach to digital inequalities focuses on the individual technological access. In the context of Internet access, the postmodernist approach focuses on personal connection to the Internet rather than mass connection (Oyedemi, 2016). The theoretical approach to digital inequalities under postmodernist paradigm is one step removed from the concepts that explain “digital divide” from a universal perspective that is valid for all people (Oyedemi, 2016), to concepts that, according to DiMaggio and Hargittai (2001), reflect a multidimensional approach to digital inequalities. For example, concepts such as “gradations in digital inclusion” (Livingstone and Helsper, 2007), “digital inequalities” (DiMaggio and Hargittai, 2001) and “citizenship in the digital age” (Oyedemi, 2016) are becoming more appropriate to discourses of digital inequalities. Imperatively, these concepts link Internet access to a wider and multifaceted ideology of social inclusion (Oyedemi, 2016).

To intensify the focus on individual connection rather than focusing on mass connection under the postmodernist approach, a study by Tilly (2005) identified four contemporary inequalities comprising financial, information, science and media for storage and transmission. His classification of inequalities stresses on the individual more than a group. For example, the financial aspect emphasises individuality, and relative truth to each person.

Consequently, the ICT policy reform questions stressing on information and communication rights and entitlements for citizens to enhance individual capability to function in a society through ICTs resembles the postmodernist paradigm, however much in theory though than in practice (Garnham, 1999; Mansell, 2002; Mossberger,

Tolbert and McNeal 2008; Oyedemi, 2015). It can therefore also be referred to as a rights-based approach to universal service and access policy.

The postmodernist approach's focus on the individual has an appeal that is effective in analysing digital gaps to mobile Internet access. This approach resembles a typical perspective to this research since it recognises access inequality from a multidimensional perspective – as a social, political, physical, cultural and economic problem. This way Internet access can be confronted from a broad perspective that takes into cognisance all the socio-economic and political, cultural and physical aspects (Oyedemi, 2016).

A rationale for policy intervention on aspects of affordability and high data costs on individuals' bear resemblance of the postmodernist approach and have direct implications on individual connection to Internet. Since the postmodernist approach offers a perspective that digital inequalities are multidimensional, meaning that digital inequalities can be social, structural, cultural and political, this research confronted the digital inequalities on mobile Internet access encapsulating the multidimensional nature of digital inequalities. Drawing on the postmodernist philosophy, Oyedemi (2016) stated that "this approach has an appeal that is effective in a theoretical explanation of the digital gaps, and a rationale for policy intervention about digital inequalities."

#### **4.4 Conclusion**

There are multiple dimensions of social inequalities. Contemporary writings describe social inequalities as the disadvantages that people experience in a social context. Main inequalities in societies are skewed by gender, class, race, income, wealth and skills. Digital inequalities are defined as the disparities in knowledge and ability of using digital and information technology among individuals with different demographics, socioeconomic backgrounds, and digital and information technology experience and competencies. Structuralist framing of digital inequalities was developed from class theory and it focuses on class classification to measure and define inequalities in societies. The culturalist approach to digital inequalities defined them as socially constructed disparities in which distinctive culture emerges. The culturalist approach to digital inequalities focusses on inequalities in terms of uses, skills and access.

Postmodernist approach of digital inequalities focuses on self-expression of thought such as art, literature, philosophy and politics among others. It is a set of rhetoric, critical and strategic practices that appreciate individual differences. The postmodernist approach seeks to address digital inequalities from a multidimensional approach of the social, structural, cultural and political perspectives. In the next chapter, I discuss the methodology used in this research.

## CHAPTER FIVE

### RESEARCH METHODOLOGY

#### 5.1 Introduction

Procedures for data collection are an imperative aspect of any research study (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014). This research has employed both quantitative and qualitative research methods. The research used the descriptive research approaches. Descriptive research aims to describe a situation, problem or phenomenon scientifically, and provide information about these phenomena (Kumar, 2019). These descriptions were further grouped according to classification systems of comparing responses using Statistical Package for the Social Sciences (SPSS) software and thematic analysis. Document analysis on universal service and access policy print media in South Africa was also employed.

#### 5.2 Research Methodology

This research has employed both quantitative and qualitative research methods. Quantitatively, the questionnaire was employed to gather data on the patterns of Internet data affordability, patterns of mobile Internet access and uses and perspectives on high cost of Internet data among the youth in South Africa using the University of Limpopo students as a sample population. The University of Limpopo students were chosen for this study to form the sample population representative of youth in South Africa. The category of youth was purposefully and intentionally selected for this study since the population of youth has been defined as active on Internet and social media multimedia platforms and are categorised as early adopters of technology (Livingstone and Bober, 2004; Hargittai, 2007; Mustaffa, Ibrahim, Mahmud, Ahmad, Kee and Mahbob, 2011; Oyedemi, 2012; Lauricella, Cingel, Blackwell, Wartella and Conway, 2014). Hence, opinions from this category on the patterns of Internet access and uses was relevant for the research questions set.

Qualitatively, using the standardised structured interviews, data on perspectives of one official from Universal Service and Access Agency of South Africa (USAASA), and one

official from the Independent Communication Authority of South Africa (ICASA) were collected. These two institutions are important to gain opinions on the formulation of universal service and access policy to focus on mobile rather than fixed mass connection since they are directly linked to universal service and access policy-making. ICASA is a telecommunications regulatory authority while USAASA is constitutionally bound to implement programmes that enhance accessible and affordable telecommunication services, Internet access included. Their opinions towards the expansion and attainment of mobile public Internet access for the poor in South Africa was important.

The document analysis on universal service and access policy print media in South Africa was also employed was done to extend the scope of relevant data to questions and goals set for this study. To be specific, the Broadband Policy of South Africa (2013) was used as the basis for document analysis towards attaining universal service and access in South Africa. The data were reviewed through coding to identify common themes and describe the patterns as results. The interpretation was strictly based on the combination of the researcher's perspective of the objectives set for this research and the data collected.

### **5.3 Research paradigm**

There are three dominant research paradigms in research, namely, positivism, interpretivism and the critical realism paradigms (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014). The methodological position of the positivism paradigm is quantitative, while that of the interpretivism tends to be qualitative. However, the critical realism methodological position is the combination of both quantitative and qualitative research methods (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014).

This research falls under the critical realism paradigm. This is because critical realism holds that real structures exist independent of human consciousness, a view that is similar to that of the positivism tradition, and it also acknowledges that our knowledge of reality is as a result of social conditioning, similar to that of the interpretivism. Under the critical realism tradition, research aims to explain and understand rather than predict and

generalise the results without concrete explanations (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014).

Under the critical realism paradigm, researchers have the responsibility to critique the social structures and change any unjust practices in society to transform and empower people to build a better world for themselves by themselves within an enabling process. Knowledge, under the critical realism, should be geared towards action and should have a practical value. Critical realists tend to focus research on social issues that stand in the way of imperative social change in humanity and development. This research examines affordability and the high cost of Internet data to access the Internet. This is engaged within the universal service and access policy frameworks in South Africa.

Matthew and Carole (2011) asserted that quantitative research emphasises quantification in the collection and analysis of data. A cross-sectional survey was used in this research to create an overall picture of the patterns of Internet access and affordability among youth in South Africa using the University of Limpopo students as a sample population.

According to Du Plooy-Cilliers, Davis and Bezuidenhout (2014), the major advantage of using a survey questionnaire to collect data is that one can collect a lot of data from an individual respondent at a single encounter. The authors also indicated that a self-administered questionnaire has some additional advantages including that of being relatively inexpensive and consumes less time than other data collection methods. The questionnaire can be filled in anonymously, which tends to encourage candid responses to sensitive issues and a large amount of data can be collected and be standardised. In addition to that, survey questionnaires are also flexible and can be conducted in almost any setting (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014:160). Hence, data collection using the questionnaire in this research was self-administered to minimise costs and time. The questionnaires were distributed to students in a classroom setting to be completed and collected by the researcher immediately after they were completed by the student respondents.

Furthermore, since quantitative research is deductive, it is based upon formulating the research hypotheses and verifying them empirically on a specific set of data (Creswell

and Poth, 2017). Within the quantitative research approach, scientific hypotheses are value-free, the researcher's own values, biases and subjective preferences become overawed in a way through the quantitative approach (Creswell and Poth, 2017). Hence, this approach has been viewed as having the communication process that is concrete and tangible and the data collected can be analysed without contacting the actual people involved in the process of data collection (Punch, 2013).

Furthermore, stating the research problem is definite when using the quantitative research method (Brannen, 2017). This was achieved in this research through clearly specifying both independent and dependent variables under investigation during data collection. Quantitative research approach allows the intense following of the original set of research goals and objectives and arrives at precise conclusions, testing hypothesis and determining the issues of causality. High levels of reliability were established due to the survey of 200 student participants. This minimised the potential subjectivity of judgement by the researcher in this study.

However, Matthew and Carole (2011) cautioned that the researcher needs to have an extensive understanding of the nature of the errors which may occur during the process of collecting and interpreting surveys to conduct a successful study. Du Plooy-Cilliers, Davis and Bezuidenhout (2014:160) observed that another disadvantage of surveys is that they tend to be superficial and potentially artificial. Thus, the researcher in this research has employed a pilot-test on the questionnaire prior collecting data, to minimise errors that may alter the research objectives and aim of the study. Complex questions, ambiguous language and lengthy questions were identified through the pilot-test and corrections and simplifications were made to refine the data collected to intensely focus on informing the objectives set for the study.

Apart from the above views, the other potential challenge to the use of the quantitative research method is that the researcher should be equipped with the information about the context within which the study is carried (Matthew and Carole, 2011). The researcher in this study was fully aware of the context in which the study was carried and the respondents to the study were carefully selected to inform the aim and objectives of study.

Furthermore, research has shown that the questionnaire tends to limit the outcomes to only those outlined in the original research proposal due to closed-ended type of questions that are mostly asked as well as its solid and structured format (Brannen, 2017). However, to minimise this potential problem, this research employed a mixture of both close-ended questions and open-ended questions to broaden the perspective of the research findings whilst remaining relevant to the objectives set for the study. A cross-sectional design study that was used in this research encouraged a continuous investigation on these issues outlined in this research.

#### **5.4 Research design**

A research design is a strategy of selecting participants and data collection methods to be used and the data analysis to be followed (Morgan, 2014). A research design describes and explains how the study was conducted (Mathew and Carole, 2011). Kumar (2019) asserted that a research design is a procedure or plan that the researcher adopts to answer the questions validly, objectively, accurately and economically. A research design is a full and complete plan for the entire research project (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014). It is an outline of how the researcher conducted the entire research, starting from formulating the questions, gathering, interpreting and analysing the data (Plooy-Cilliers, Davis and Bezuidenhout, 2014). Initially, a research design should be in place before conducting the research. This was the case in this research, the researcher had the plan of how the research was to be conducted.

This research falls under the descriptive research design, where both quantitative and qualitative research methods are employed. Descriptive research aims to describe the characteristics of the phenomena or a problem that exists, showing the relations between variables of the phenomena under investigation (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014). The descriptive research supports both quantitative and/or qualitative research methods. This study employed a mixed method of qualitative and quantitative research. A cross-sectional survey design using questionnaires for the University of Limpopo students and the standardised semi-structured interviews for one official from ICASA and another one official from USASA was employed in this study.



The quantitative research strategy was used since it emphasises quantification in the collection and analysis of data. The quantitative method used in this research was to further precision, recording facts in terms of quantities, and numbers that were processed using statistical techniques. The questions were systematically designed to inform the research objectives set for this study on the patterns of Internet access, uses and affordability among youth in South Africa using the University of Limpopo as a sample population. This research gave a detailed and accurate description on the patterns of mobile Internet access among the University of Limpopo students.

The qualitative research approach was also used where standardised structured interviews were conducted with the two officials: one from Universal Service and Access Authority of South Africa (USAASA) and another one official from Independent Communication Authority of South Africa (ICASA). The interviews were carefully designed to deepen understanding on the perspectives about ideas and opinions on the current programmes and strategies by these institutions and the South African government towards attaining affordable mobile Internet access. This was important to show how the universal services and access policy can be formulated to address mobile public Internet access rather than focusing on fixed public Internet access only.

In addition to qualitative data collection, document analysis on universal service and access policy print media in South Africa was employed. This was done to extend the scope of relevant data to questions and goals set for this study. For example, the print media on policy documents, such as the Broadband Policy for South Africa (2013), was important to review current trends on policy programmes and intervention strategies. The data were systematically reviewed and through coding schemes, common themes were identified, presented and interpreted within a contemporary scope of Internet access and uses among youth in South Africa. The interpretation of document analysis was strictly based on the data from these policy documents' current trends of Internet access, affordability and the targets set to be achieved towards attaining universal service and access to the public Internet.

## **5.5 Sampling**

Babbie (2010) defines a sample as a finite part of a statistical population whose properties are studied to gain information about the whole. Sampling refers to the process of selecting a portion of the population from the population of the study (Gentles, Charles, Ploeg and McKibbon, 2015). Sampling involves the probability and non-probability sampling techniques. The non-probability sampling is used when the potential participants are not known by the researcher (Gaur and Kumar, 2018). The probability sampling is used when the potential participants of the study are known to the researcher (Müller, Junglas, Brocke and Debortoli, 2016). The probability sampling method was employed in this research where participants constituting a sample were drawn from the sample population. A convenience sampling method was used for collecting data from the University of Limpopo first year entering students. The first year entering students were selected to participate in the cross-sectional survey data. A purposive sampling method was also used for collecting data using the semi-structured interviews from one official from ICASA and another one official from USAASA. The rationale for selecting these two institutions for the purpose of this research has been explained in paragraph three of this chapter.

### **5.5.1 Convenience sampling for survey data**

A *convenience sampling* method was employed in this research to pre-test questionnaires and in recruiting respondents. This method was used because the research's sample consisted purely of elements that the researcher knew, had access to and was able to reach quickly. University of Limpopo students formed part of the sample population for the questionnaire. Lecturers who were known by the researcher were approached to get permission and access to the students in their classrooms to hand out the questionnaire to be completed. To be specific, first and second year students in the Department of Communication Studies were conveniently chosen to form part of the study. The questionnaires were collected by the researcher immediately after students completed them.

The university students were conveniently selected because of their appropriate characteristics that make them relevant to inform the objectives of this study. Previous

studies have shown that young people or the youth, constitute a significant group to examine in studying the benefits, trends and implications of Internet access (Hargittai and Hinnant, 2008). ITU (2016) observed that young people in Africa use the Internet more than mature and old people do. The study showed that young people constitute 20% Internet users compared to 6% of the mature and adults. Subsequently, various studies show that most youth use and access Internet through their mobile phones and are early adopters of technological innovations (Evoh, 2007; Kreutzer, 2009; Bere and Rambe, 2013; Oyedemi, 2015). This makes the population group of young people the most appropriate sample group to form part of this study.

### **5.5.2 Purposive sampling for the semi-structured interview**

*Purposive sampling* is a sampling strategy where a specific group of the sample population is selected based on their knowledge of the questions set for the study (Mathew and Carole, 2011). The *purposive sampling* method was employed for selecting one official from the Independent Communication Authority of South Africa (ICASA) and one official from Universal Service and Access Agency of South Africa (USAASA) to form part of the semi-structured interview for this study. This was done to gain an understanding on the current initiatives in providing universal service and access to mobile Internet for all.

These two institutions: ICASA and USAASA, are directly linked to universal service and access policy-making in South Africa. Hence, they were significant to gain opinions from, regarding the formulation of universal service and access policy focusing on mobile rather than fixed mass connection. ICASA is a telecommunications regulatory board while USAASA is involved in implementing programmes necessary to enhance accessible and affordable telecommunications services, Internet access included. The Chairperson for USAASA was approached to recommend relevant officials to be selected and interviewed for the study. The same applied to the selection of one official from ICASA, where the ICASA Branch in Polokwane provided reference and gave recommendations on the relevant officials to be interviewed, one of whom formed part of the study.

## **5.6 Data collection**

This research employed a mixed method data collection instrument. The study employed the cross-sectional survey design using questionnaires that were distributed to students at the University of Limpopo. In this research, the University of Limpopo students were the representative sample of the youth in South Africa. Also, the semi-structured interviews were conducted with two officials: one from ICASA and another one from USASA.

### **5.6.1 Survey**

The research employed the cross-sectional survey design. The cross-sectional design survey was used to create the overall picture of the phenomena at one point in time (Maree, 2007 in Du Plooy-Cilliers, Davis and Bezuidenhout, 2014). The data were only collected from the respondents once and no repeats were done (Maree, 2007). This study employed the cross-sectional survey design to create an overall picture of the patterns of Internet access, affordability and high cost of Internet data among the University of Limpopo students. This was done through the handing out of questionnaires in class to be completed by students and were collected after the respondents had completed them. The collection of data through questionnaires was self-administered.

Questionnaires were distributed to the students. University of Limpopo students constituted the sample population for the questionnaires because they were easy to access, and this was cost effective. Questionnaires consisting of both close and open-ended questions were used to measure the patterns of mobile Internet access and affordability among the University of Limpopo students. The cross-sectional survey data collection from the students using the questionnaire was employed first before the qualitative data collection because the students were easy to be accessed by the researcher who was also a student at the University of Limpopo. No travelling costs were required to collect data from the students.

A survey research tool was used in this research to provide a quantitative, numeric description of the trends, attitudes and opinions of the sample population of the

University of Limpopo students in order to generalise the findings to the youth population from which the sample respondents were drawn. The survey questionnaire in this research provided a quantitative description of the trends on Internet access and the forms of access among university students. Therefore, the study explored the challenges of government and policy intervention under universal service and access policy framework on intentions to provide mobile public Internet access to expand the current provision of fixed public Internet access.

### **5.6.2 Standardised semi-structured Interviews**

Qualitative research aims to explore human experiences, the personal or subjective peculiarities that are characteristic of individual experiences and meanings associated with a phenomenon (Keyton, 2011; Du Plooy-Cilliers, Davis and Bezuidenhout, 2014). This research employed the use of standardised semi-structured interviews to gather data and to gain perspectives from ICASA and USAASA officials regarding the affordability and the high cost of mobile Internet data in South Africa. Issues regarding Internet access for needy persons remain complex and invite multi-faceted aspects of social, economic and cultural issues (Oyedemi, 2015). By approaching these two institutions the research captured, from a political and policy perspective, all the elements and detailed descriptions of the social settings, conveying an intimate knowledge of the social setting and perceived pertinent socio-cultural, economic and political impediments in South Africa towards the attainment of universal service and access in the digital age.

### **5.7 Data analysis**

Data analysis for this research entailed the data from the questionnaires and that of the standardised semi-structured interviews. The data from the questionnaires were the first to be analysed through loading the data into the Statistical Package for Social Science (SPSS) software to be analysed. Thematic analysis was employed for the standardised semi-structured interviews. The data were transcribed, and themes that were emerging were recorded as facts to be presented as results. The presentation of the research findings was also done following the same order of data collection starting with presenting the data from the cross-sectional survey data using the questionnaire from

the university students in chapter six, then the presentation of the data from the standardised structured interviews from ICASA and USASA in chapter seven of this study.

### **5.7.1 Analysis of data from questionnaires**

Quantitative data analysis is applied for statistical analysis to a set of data to remove the guesswork from the interpretation of data (Baraldi and Enders, 2010). Thereafter, objective and reliable conclusions can be drawn from the findings of the analysis (Hammarberg, Kirkman and De Lacey, 2016). The results from the data analysis should reflect a statistically significant difference between the status quo and the newly found data (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014).

Quantitatively, the data that were collected through the questionnaires were loaded on to the SPSS software to be analysed. The data were analysed using descriptive statistics and the results were recorded. Selected variables were cross tabulated to find varying patterns on the perspectives of University of Limpopo students on mobile Internet access and affordability. For instance, some selected variables were cross tabulated to find geographical influence on the access and uses of the Internet.

Statistics is an activity that uses information drawn from a sample to arrive at conclusions relating to a particular phenomenon (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014). Only the data that was collected from the sample population was analysed. The data that was collected in this research was analysed and presented using frequency tables to find basic characteristics of the data sets, revealing patterns of Internet access within the data among youth in South Africa and identifying relationships between the patterns of the data collected from the sample and external parameters. Apart from the use of frequency tables, comprehensive presentation and interpretation of findings were done through bar diagrams, charts and descriptive themes to show variations and conclusions.

### **5.7.2 Standardised structured Interview data analysis**

Text from the interviews was transcribed, and using thematic analysis, the data were studied for emerging themes. The researcher used the deductive approach in analysing

data. The researcher used the data collected to develop themes guided by preconceived theoretical framework. In analysing the transcribed data for emerging themes, codes, which are words, phrases and sentences pointing to similar meanings were categorised based on their relevance to the research objectives and the interview questions. These categories of the transcribed data led to themes that arises. The themes that emerged were further categorised into smaller themes to be more specific. These themes were further linked to the literature and the theoretical framework and through analysis and interpretation of the findings, the theories were tested for applicability and in some instances the existing literature being expanded.

## **5.8 Quality criteria**

Quality criteria refers to how good the research proceedings can be defined (Flick, 2018). These might include techniques that are applied throughout the research process for the research to be assessed in terms of the quality of the research findings (Bryman, 2016). Different criterion for measuring quality are used to evaluate the research findings of quantitative and qualitative research approaches. For this study, the qualitative research quality criteria were measured through trustworthiness, credibility, transferability, dependability and conformability. The quality criteria for quantitative aspects entailed reliability, validity, objectivity, internal and external validity as expanded below.

### **5.8.1 Quantitative quality criteria:**

Quantitative quality criteria were employed in this study to ensure the attainment of quality results (Morse, Barrett, Mayan, Olson and Spiers, 2002). The quantitative quality criteria in this study were measured in terms of internal validity, external validity, reliability and objectivity as explained below.

#### **5.8.1.1 Internal validity**

Internal validity refers to the extent to which the instrument used reflects the reality of the constructs measured (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014). The findings of the research reflect the realities on the issues related to mobile internet access and affordability rather than fixed mass access. The use of a mixed method

allowed the research to choose among alternative explanations of the way the youth in South Africa experience mobile Internet access with confidence. The sample population used suits well to inform the objectives set for this study. The category of the population used has been clarified as highly active on Internet use and adoption to new technologies (Evoh, 2007; Kreutzer, 2009; Bere and Rambe, 2013; Oyedemi, 2015).

#### **5.8.1.2 External validity**

External validity focuses on the ability to generalise findings from a specific sample to a large population (Du Plooy-Cilliers *et al.*, 2014). Issues relating to digital inequalities on affordability and the high cost of mobile Internet data to access the Internet are topical and have generated various global discussions. Thus, various studies, using the same sample population of youth, have been conducted explaining digital inequalities from the cultural, social, structural and political spheres. Findings from these studies point out to multiple patterns of digital inequalities: skills, geography, social status, connection devices, income inequality and gender. Similarly, the inquiry of the issues relating to the high cost of Internet data and affordability is of high significance to add new perspectives about digital inequalities in this age of digital mobility. Hence, the findings of this study are not a new phenomenon but provide new perspectives on the nature of inequalities and what this implies for South Africa at large. Thus, the researcher is confident that if the same research can be replicated, using the same population group, method and design, the findings should reflect some similarity.

#### **5.8.1.3 Reliability**

Reliability refers to the extent to which the results are consistent if the study would be replicated. Reliability of the research is linked to the findings of research (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014). The data collection tools used in this research are reliable and the researcher is confident that stable and constant results can be attained given that the research can be replicated. Objective and honest presentation of data was valued and pursued in this research. The presentation of data was free from the researcher's prejudices.



#### **5.8.1.4 Objectivity**

Objectivity implies the quality of being true and the extent to which reality is defined and understood outside the researcher's biases, interpretations or prejudices. It refers to the extent to which personal biases are removed from the data that is gathered. In this research, only data that were gathered were analysed and presented using reliable the data analysis methods such as the SPSS software. Data coding bias was avoided as anonymity was maintained. This was done to ensure objective presentation of data.

#### **5.8.2 Qualitative quality criteria:**

Qualitative quality criteria were employed in this study to ensure that the results of this research are credible (Mays and Pope, 2000). This is attained through assessing and heightened credibility, transferability, dependability and conformability through-out the study as explained below.

##### **5.8.2.1 Credibility**

Credibility refers to the extent to which the study's findings are trustworthy and believable to others. This study employed a mixed data collection method to increase the credibility of the results (Collis and Hussey, 2013). The standardised semi-structured interviews which were conducted with the officials from USAASA and ICASA and the data provided by the participants were accurately interpreted to minimise errors. Feedback from participants on the data or interpretation of the data – member checking – was also employed to authenticate the data that were presented. This also enhanced credibility. Even though the officials interviewed were limited to two participants, one official from ICASA and the other from USAASA, the richness of the information gathered was adequate to achieve the objectives set for the study.

##### **5.8.2.2 Transferability**

Transferability refers to the extent to which the findings can be transferred or applied in different settings. (Babbie and Mounton, 2001; Du-Plooy *et al*, 2014). The findings of this research were described meaningfully in context and in detail. Digital mobility is not an isolated phenomenon typical to South Africa but is an issue that is prevalent across the globe mostly among the underdeveloped and developing countries. The findings'

resonance was discussed within the framework of existing literature from other contexts to identify similarities and differences. This strengthened the authenticity of the results of this research. The researcher provided a detailed description of the research problem, methods and the research findings so that the readers understands how the research process unfolded.

#### ***5.8.2.3 Dependability***

Dependability refers to the extent to which the findings are consistent and could be repeated in relation to the context in which they were gathered. This was measured through the way in which this research was carried out, the way the data were presented and analysed. Each process was defined and reported in detail. This was done to enable other researchers who might want to repeat this inquiry, following the same procedure, to attain the same results. Flexibility and openness were considered to continuously allow re-examination of data using insights that emerged during data analysis, that is; iterative analysis. The clarity and persistence in explaining the research process followed in this study enables other researchers to understand the methods, why they were employed and their effectiveness.

#### ***5.8.2.4 Conformability***

Conformability refers to the extent to which the findings are based on the study's participants and settings instead of researchers' biases (Collis and Hussey, 2013). Only the data that were collected were analysed. The researcher was open to discuss the research findings with the participants upon request to verify confirmability. This was done to ensure that the results presented in this study identify with the context and the participants. All the steps in this research were documented as proof of the processes that were followed in this research. No unique perspective was brought to the study that was not supported by the data that collected. The researcher in this study was open to invite an external researcher to judge whether the findings reported in the study reflect the original inquiry. A detailed presentation of the study demonstrated how each decision was made.

## **5.9 Bias**

This researcher ensured that the study is bias and prejudice free. Information provided during data collection was not in any way distorted. Only the data that were observed and identified were analysed. This was done to enhance the research credibility and transferability. Potential deception was minimised by informing and asking the research participants about the specific enquiry prior to them participating in the research.

## **5.10 Ethical considerations**

Ethics in research entails moral and professional codes of conduct that set a standard for the researcher's attitudes and behaviour (Du-Plooy *et al*, 2014). Abiding by the ethical standards is imperative in research and without it, the complex intertwine of research falls apart in objectionable ways (Du-Plooy *et al*, 2014). For research to speak of a solid ethical foundation, a researcher has the responsibility to ensure honesty and integrity throughout the research process (Du-Plooy *et al.*, 2014).

The research abided by the research moral standards that require, among other things, respondents to be informed on the reasons for the research and their consent asked for, prior to collecting data from them. The study respected individuals who refused to take part in the research and were not forced or bribed to participate in this study. This research used the data provided specifically for academic purposes and nothing else. The data that were collected were not exaggerated or altered nor falsified for personal reasons.

### **5.10.1 Informed consent**

Participants in this study were formally informed that they are taking part in this research study and gave their consent to participate. This was done to ensure that all the participants clearly understood what was required of them during their participation in this research. The informed consent indicated to the participants how their identities were protected and that the results were strictly used for academic purposes. The informed consent form was written in English since the participants of this research were University of Limpopo students and policy-makers from ICASA and USAASA.

### **5.10.2 Avoiding harm**

Researchers should not harm their participants in any way (Du-Plooy *et al*, 2014). The researcher in this study clearly informed the participants about the purpose of the research. Regarding the questionnaire for students, the questions were answered individually in writing. This helped to avoid creating situations where participants' contributions could be biased through comparing their views with other participants' responses. With the standardised semi-structured interviews with USAASA and ICASA officials, the interviews were carried with one participant at a time, in a private setting.

### **5.10.3 Confidentiality and anonymity**

This research achieved the protection of participants' identities. No contact details of the participants were required in the process of collecting data. This research assured confidentiality through only matching the participants' responses to gender, age and race, and no names or identifying information or credentials were used. Afterwards, the data from the questionnaires were loaded into the SPSS software to be analysed, with no way of knowing which respondent gave a certain answer. To ensure confidentiality and anonymity on the semi-structured interviews, the researcher did not match the responses with the identities of the respondents. The identities of the respondents were kept secret and were not revealed to anyone.

### **5.10.4 Deception**

Deception was avoided by telling the respondents the actual fact and truth that the research was strictly for academic purposes and nothing else. Deception was avoided in the generation of results. The research assured the participants of the value of their participation in the study without manipulating them to participate in the study unwillingly. Participants were debriefed on the purposes of the research and given the opportunity to opt-out if they were not comfortable to participate in the study prior data collection.

### **5.10.5 Falsifying information and distorting results**

The data collected in this research were not deliberately fabricated or changed in any way that is considered unethical. They not falsified to try and manipulate the information

gathered. Strictly, the data collected were the only information that was analysed. Only the data gathered were presented correctly without distortion. The research also ensured that no certain aspects were emphasised over other aspects of equal significance.

### **5.11 Limitations of the study**

Limitations of the study refer to the potential weaknesses and constraints that redefine the process of this research (Du-Plooy *et al*, 2014). In this research, what was observed to be the limitations could be the use of a small sample population of the study only limited to the sample population of the questionnaires which constitutes 200 student respondents and the use of two officials: one official from USAASA and another one from ICASA. This is presented against the outcomes of this research which are expected to inform policy formulation and project a clear picture of mobile Internet access and affordability among the youth in South Africa. It was also observed that there is a potential that some participants might have withheld some information for privacy reasons. For instance, some might not have been opened to discuss if they did not access the Internet, and this has the potential to affect the scope of this research since the findings were reliably contextualised to the sample population. However, the sample population chosen for this study was carefully selected to effectively achieve the objectives of the study.

### **5.12 Conclusion**

This chapter discussed the research methodology and explained the rationale for utilising a mixed method approach in this research. The sampling method, data collection and data analysis were discussed and elaborated in this chapter. The choice of the methodology employed by this study was informed by the objectives and nature of the study. The target population, validity and reliability of data were also presented and clarified. The ethical considerations, bias and limitations to the study were discussed and expanded in this chapter. The next chapter presents and discusses the data that were collected through the questionnaires from the students of the University of Limpopo.

## **CHAPTER SIX**

### **YOUTH INTERNET ACCESS AND AFFORDABILITY**

#### **(DATA PRESENTATION AND ANALYSIS)**

##### **6.1 Introduction**

The previous chapter discussed the research methodology which gave an overview of the questionnaires that were filled by 200 University of Limpopo students and the interviews from the two institutions of ICASA and USAASA. The data collection methods explained in Chapter Five yielded the discussions presented in Chapter Six; Seven as well as the outcomes presented in Chapter Eight. This chapter presents, discusses and analyses the data that were collected using the questionnaire from students. The findings presented below are largely from the analysis of the responses to the questionnaire.

##### **6.2 Patterns of youth Internet access and affordability**

It is important to indicate that at the point when the survey responses were recorded at the University of Limpopo, the questions were specifically tailored to explore the conditions and types of internet access that were available to the students. This included the frequency of use, the aspects of Internet applications mostly in relation to geographical location and the preferred mode of Internet access: mobile Internet access or public Internet access. All these factors were further linked to the high cost of Internet access and affordability among the youth in South Africa. The questions were also thought-out to observe:

- If the students frequently use mobile phones to access Internet rather than public Internet access (such as university computer laboratories, community libraries access, Thusong centres and community electronic centres).
- If the affordability patterns among students influence the nature of Internet use (such as searching for academic solutions online, downloading academic materials, or communicating academic information with peers online).

- If the students have used the mobile Internet access for educational purposes such as downloading academic materials (articles).
- If students have Internet skills to tap the benefits associated with the use of Internet, such as creating a personal blog or website, or uploading a video online.
- If they have ever watched and downloaded multimedia content using their mobile data, such as watching online videos.
- If students can suggest ways of addressing high costs of mobile Internet access.
- And how all these are influenced by the cost and affordability patterns of Internet access.

The responses to these questions and all relevant data were presented together with questions on the demographic characteristics of the students' respondents, gender and geography as shown in Table 6.1 below. The demographic descriptions of students' respondents by race were not of much significance since the respondents in this study comprised purely black African students only. The other races were not intentionally segregated from the study, but they were numerically low, and since the data collection was held during class sessions, there was no other race category present except black African students.

Questions about the place where students reside, the mode of Internet connection: mobile or public Internet connection, mode of payment, and what the students used the Internet for and the rest of the survey questions were imperative to provide ways to measure constraints that the social and economic disparities have on the notion of a 'digital nation' envisaged by the government. The study also showed how digital inequalities signify larger consequences to South Africa on the trends and patterns of Internet penetration, access and uses among young in South African.

This study broadly adopted a descriptive analysis of the survey data. The descriptive analysis approach of survey data, according to Yamane (1973) dominantly involves three ways of analysing and summarising data which entails: *frequency distribution* – a response count, usually a formula with a summary of the number of responses to a group, variable, item or enquiry; *relative frequency* – (the frequency of a class)/ $n$ , where

$n$  is the total number of responses or data (Oyedemi, 2012); and finally, *percent frequency* – (relative frequency of the selected group) x 100%. Most of the data presentation will be done in percent frequency in this study.

Again, the Statistical Software for Social Sciences (SPSS) data analysis tool that was used in this study, allows for convenient cross tabulations across variables and measures, and this was done in this study. All the survey data in the current study was mostly analysed in percent frequency and presented in tables, charts and bar graphs to provide the detailed patterns on analysis and presentation of the data to answer the questions set out for this study.

**Table 6.1**

Demographic description of student respondents.

Students respondents by gender, race and geography	%
<b>Gender</b>	
Female	65.5
Male	34.5
<b>Race</b>	
Africans	100
<b>Geography</b>	
Students from rural areas (villages)	75.5
Students from semi urban areas (townships)	18.5
Students from urban areas (cities)	6

**Table 6.1.** Showing demographic description of student respondents.

### **6.3 Influence of high cost of data on the patterns of mobile Internet access**

To assess the impact and influence that the high cost of data has on mobile Internet access, it is imperative to observe the patterns of mobile Internet access and uses among the target population (youth). As indicated below, these types of Internet access, conditions of access, cost of access, gender and geographical locations influence the



patterns on the uses and constantly reveal the forms of inequalities that constrain the digital experience among citizens.

### 6.3.1 Affordability mode of mobile Internet access: prepaid or contract?

Most of the student respondents in this study were on the prepaid mode of Internet access using their mobile devices. The findings of this study reveal that most of the students (96%) accessed the Internet on prepaid conditions. Perhaps this is because more than half (55.3%) of the students in this study indicated that they could only afford R10 – R50 on data bundles per month which is far less than a monthly subscription would require as shown in Table 6.2 below.

**Table 6.2**

Monthly data affordance on prepaid	%
Students on prepaid	96%
R10 – R50	55.3%
R60 – R100	26.1%
R110 – R200	6%
R200 and more	3%
Cannot afford data	9.5%

**Table 6.2.** Showing monthly mobile data bundle affordability by students.

Most of the student (55.3%) respondents could afford only R10 – R50. This becomes critical and portends larger implications for South Africa especially when questions on what one can do with data bundles worth of R10 – R50. Purchasing Internet data bundles on the prepaid mode in South Africa is very expensive. For example, with the Vodacom service provider in South Africa, R115 can purchase 1 Giga Byte (GB) per month – Just-For-You promotion, MTN’s package for 300 MB costs R60 per month, CELL C’s 200 MB data per month cost R49 and Telkom monthly data package for 500 MB costs R69. Table 6.3 below shows the consumption of data bundles on regular Internet use by individuals.

**Table 6.3**

<b>Potential daily activities</b>	<b>Data consumption per category</b>
Sending an email (without attachment)	15 KB
Sending one email with medium quality compressed photo attachment	300 KB
Upload one social media post with an attached photo	500 KB
Browse one webpage	1 MB
Download a one-minute compressed music or streaming music file	1 MB
Download one minute of streaming low definition video	3 MB
Downloading one-minute game or a song (average)	4 MB
Downloading one minute of high definition video	10 MB

**Table 6.3. Source:** Broadband Choices (2019): A guide to Mobile Internet Services.

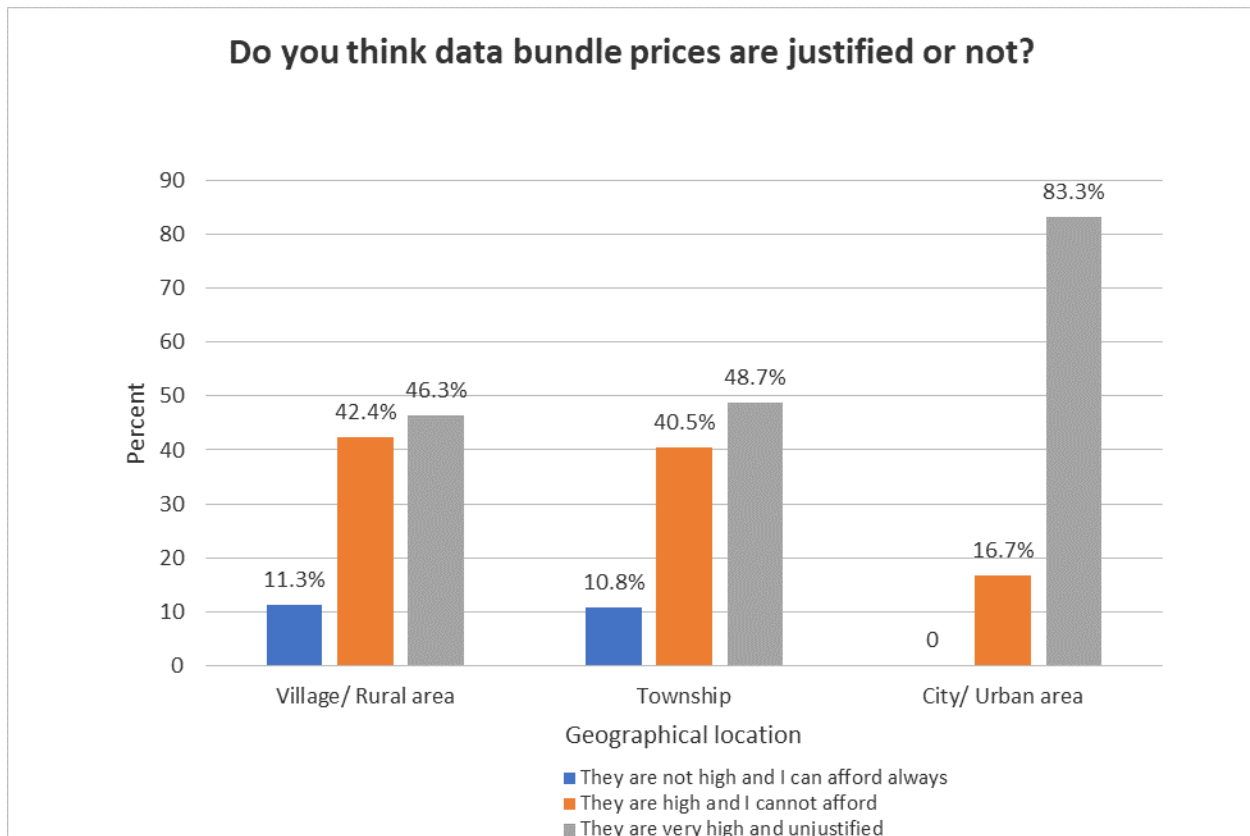
It can be observed from Table 6.3 data review on the consumption of Internet data per online activity that not much can be benefited from the data bundles costing R10 – R50. Youth activities on social media platforms are data consumptive, especially status updating and viewing of a series of photographs and video clips on WhatsApp and Instagram status updates. For instance, if an individual can post 50 social media texts with an attached photograph as a status update, the consumption would be 2.5 MB given data estimates in Table 6.3 above. Hence, little can be done with a data bundle costing R10 – R50, especially when it comes to activities such as searching for jobs online which require an extensive amount of time, streaming and surfing data online.

### 6.3.2 Affordability, high data cost and geography

Most of the students from the findings indicated that the cost of data bundles in South Africa is very high and unjustified. For instance, the data from this study indicates that only 11.3% of the student respondents from those that reported that they were from the rural areas could afford data and the prices were justified as indicated in Figure 6.1 below.

Interestingly, most of the students (83.3%) from the city/urban area indicated that the cost of data bundles in South Africa was very high and unjustified, while 16.7% reported that data bundles were very high, and they could not afford them. This is a different experience from the student respondents who came from the villages/rural areas who were at the peak disadvantage of 42.4% of student respondents who reported that the cost of data was very high, and that they could not afford as shown in Figure 6.1 below.

**Figure 6.1**



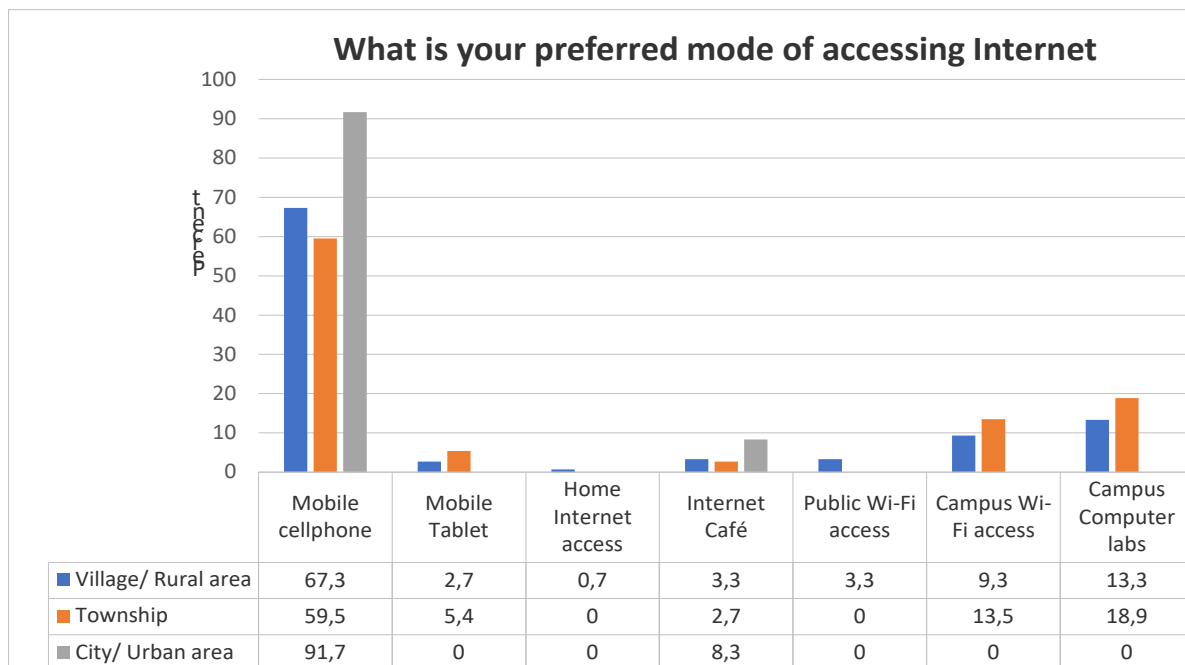
**Figure 6.1.** Affordability and high data bundle prices justification by geography.

### 6.3.3 Preferred mode of Internet access, geography and affordability

Most of the students from this study indicated that they preferred mobile cell phones to connect to the Internet. The findings of this study reveal that more students (91.7%) who owned a smart phone that could access Internet were from the city/urban area as shown in Figure 6.2 below. This is in line with the statistical data that indicates similarity in the trend of mobile cell-phone penetration and use in South Africa. For instance, the Statistical Portal (2018) indicates that 20.3 million people in South Africa use mobile smart phones.

However, this study shows that students from the villages and Townships are the most disadvantaged regarding the access and affordability of the Internet. For instance, students from the rural areas/ villages (13.3%) and Townships (18.9%) largely accessed the Internet on public and non-paying platforms such as University computer laboratories. Even though most of the students from the city accessed the Internet through mobile cell phones, 8.3% accessed the Internet through Internet Cafés, and this was the highest level reached as shown in Figure 6.2 below.

**Figure 6.2**



**Figure 6.2.** Affordability and preferred mode of Internet access by geography.

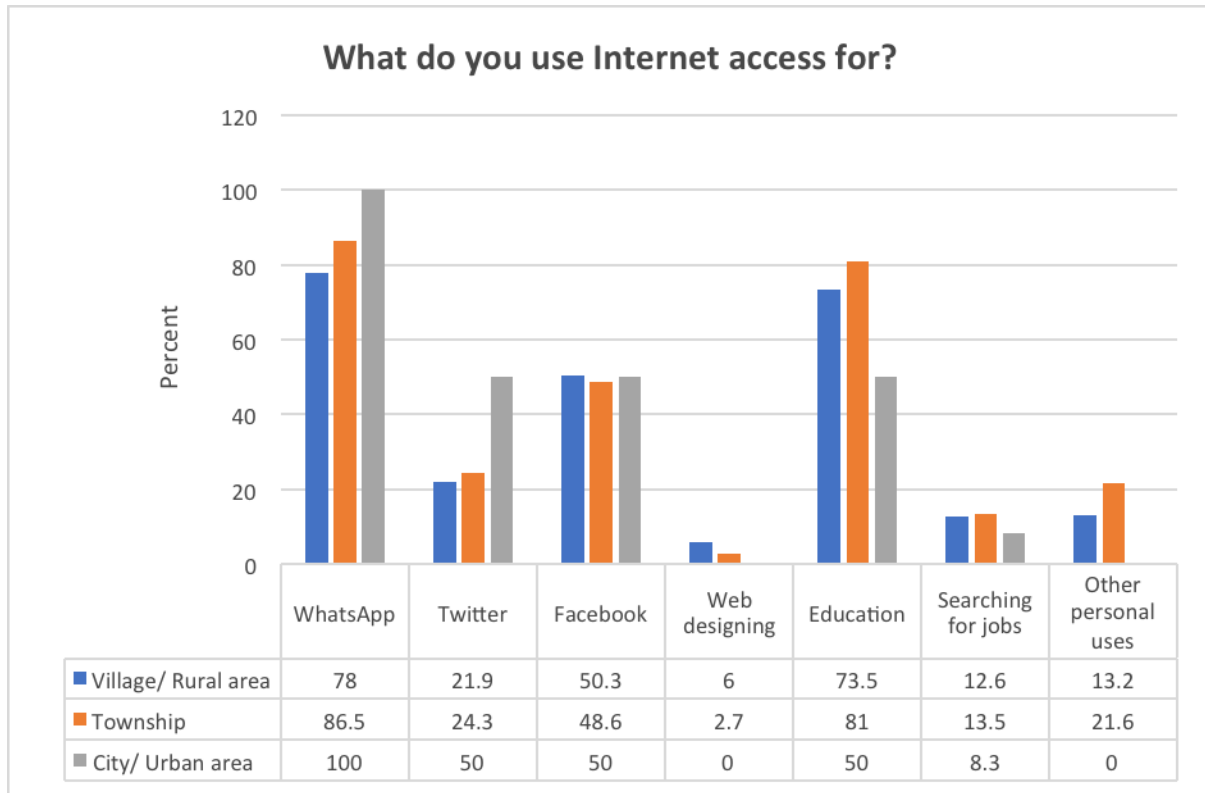
## **6.4 Multimedia uses of Internet and affordability**

In this study, the patterns on the uses of Internet access through mobile cell phones are important to assess the influence of high data cost among youth especially in relation to geography and this is cross tabulated against the reasons for the uses of mobile Internet. The high cost of data inevitably influences the nature and the uses of Internet access among the youth.

### **6.4.1 Uses of mobile Internet access and affordability**

Most of the students in this study used their mobile data bundles for WhatsApp purposes. For instance, only 78% of the student respondents reported to use their mobile data bundles for WhatsApp came from the villages as shown in Figure 6.3 below. Perhaps the fact that most of the students used their mobile data bundles for WhatsApp regardless of geography can be explained in terms of the adjustment of other telecommunications service providers in South Africa on WhatsApp data pricing. For instance, the Telecommunications Service Provider: Cell C offered WhatsApp access bundles for R12 per month, which allowed an individual to chat, send and receive videos, multimedia texts and calls with WhatsApp video calls.

**Figure 6.3**



**Figure 6.3.** Affordability, high data cost and the of mobile Internet access by geography.

The findings of this study show that there were low levels of creativity online and students did not engage on time-consuming online activities because of the high cost of data. For example, only 6% of the students residing in the rural areas claimed to use the Internet for web designing as shown in Figure 6.3 above. However, the use of mobile Internet was significantly high (81%) among the student respondents from the Townships. Perhaps the reason behind the high use of mobile Internet access could be linked to the uses of WhatsApp for academic purposes. The uses of WhatsApp mobile application have been extensively acknowledged (Rambe and Bere, 2013; Yeboah and Ewur, 2014). The telecommunications service providers in South Africa are still lenient with the pricing of WhatsApp Internet data bundles. For instance, Vodacom service provider has a *WhatsApp Ticket offer* of 1Giga Byte (GB) Internet data bundles for 30 days at R35, while Cell C is at R20 for 1 GB for 30 days and MTN at R30 for 20 days.

These are the lowest prices charged for all the networks compared to any other online social activity Internet data bundle purchase.

Apart from that, the data shows that students used Facebook more than they used mobile Internet access for twitter, web designing and searching for jobs. For instance, those who came from the villages/rural areas (50.3%) claimed that they used Facebook compared to 12.6% that used mobile Internet access to search for jobs as shown in Figure 6.3 above. Perhaps this can be explained by the free paid access that Facebook has introduced. The Facebook Lite for Android can allow individuals to access Facebook for free using Internet enabled devices. Though the Facebook Lite comes with limited features, such as not showing photographs and uploaded videos, it remains ideal for most people who cannot afford to purchase mobile data bundles.

#### **6.4.2 Affordability based on geography**

The results show that there was a significant difference based on geography on the uses of social media platforms among students. For instance, even though WhatsApp mobile application was comparatively cheap to use regardless of geography, the results shows that its uses were still skewed based on geography with those from the villages being the most disadvantaged at 78% compared to those from the city and Townships as shown in Figure 6.3 above. What is interesting to note is that, despite the low use of social networking sites such as twitter, the students from the city who reported twitter use were 50% compared to those from the Townships at 24.3% and villages at 21.9%.

#### **6.4.3 Affordability and watching videos online**

The findings from this study indicate that most of the students hardly watched videos online using their mobile Internet access. The findings show that only 12% claimed that they watched online videos all the time using their mobile data bundles as shown in Table 6.4 below. Most of the students in this study claimed that they did not watch videos online using their mobile data bundles because purchasing data is expensive. For instance, 83.2% of the student respondents reported that they never watched videos online. The high cost of mobile Internet data bundles was a barrier to multimedia uses of mobile Internet access such as watching videos making it visible that other

historical barriers such as technological devices: smart phones/ tablets are no longer of much concern and have been overcome as a barrier towards accessing the Internet. For instance, the findings of this study show that only 6% of the student respondents claimed not to have either a smart phone or a mobile tablet as shown in Table 6.4 below.

**Table 6.4**

<b>Watching videos online frequency</b>	<b>%</b>
Hardly (once a month)	49.1%
Yes (occasionally)	25.7%
Seldom (once a week)	13.1%
Yes (all the time)	12%
<b>Reason not watching videos online</b>	<b>%</b>
Purchasing data is expensive	83%
I don't have a smart phone/ tablet	6%
I don't like watching videos online	5%
Campus Internet access is restricted	6%

**Table 6.4.** Affordability, high data cost and watching videos online

## **6.5 Affordability, data cost, mobile Internet access, digital skills and uses**

The patterns on the capability of using digital technologies are important to inform the level of affordability among the selected group of youth in this study. Essentially, what students, used the mobile Internet access and how they used it was vital to understand the patterns of affordability and the high data costs in South Africa, especially on engaging what the students used the mobile Internet access for and how.

### **6.5.1 Data cost influence on digital skills and Internet uses**

The findings of this research have evidenced a very low level of digital technology interactivity among students. For instance, only 4.5% of the student respondents acknowledged that they owned either a personal blog or website as shown in Table 6.5



below. The uses of social networking sites were far below expectation. For example, in addition to only 30% of the student respondents reported to have Twitter accounts, only 3.5% reported to post and upload videos on their twitter timelines.

**Table 6.5**

<b>Digital technology interactivity</b>	<b>%</b>	
	<b>Yes</b>	<b>No</b>
Do you own a personal blog?	4.5%	95.5%
Do you own a personal website?	4.5%	95.5%
Do you know how to create a website?	8.5%	91.5%
Do you have a Twitter account?	30%	70%
Do you post videos on Twitter?	3.5%	95.5%
Do you post selfies on Twitter?	18%	82%
Do you check what others post on Twitter?	24.5%	75.5%
Do you check political tweets?	14%	86%

**Table 6.5.** High data cost influence on students' interactivity patterns online

### **6.5.2 Affordability, data cost, digital skills and Internet uses based on geography**

Most of the students did not engage in a lot of activities on their social networking sites such as Twitter on mobile cell phones because of the high cost of data. However, most students from the villages/rural areas seemed to be most disadvantaged regarding their activities on Twitter. For example, only 2% of the student respondents from the villages reported to have uploaded a video on Twitter as shown in Table 6.6 below. Significantly, the low level of the uses of social media platforms was because of the high cost of data that was pervasive and dominant among all the reasons students gave for not being highly active on Twitter.

**Table 6.6**

<b>Twitter activity</b>	<b>Village/ area</b>	<b>Rural</b>	<b>Township</b>	<b>City/ Urban area</b>
Posting selfies	17.8%		16.2%	25%
Posting videos	2%		5.4%	16.7%
Checking what others are posting	21.9%		27%	50%
Checking political tweets	13.2%		16.2%	16.7%
Not having a twitter account	71.5%		70.3%	50%

**Table 6.6.** Affordability and high data cost influence on downloading and uploading videos by geography.

### **6.5.3 Affordability, data cost, digital skills and Internet uses based on gender**

The findings of the study indicate that more males were active on social media platforms than females. For example, 30.4% of male student respondents claimed that they frequently used their twitter accounts to check what others posted and uploaded on their timeline. However, in general the results of the online activities on their social networking site was not impressive. Perhaps this is because most of the students, male (59%) or female (55.7%), regarded the purchasing of data as very expensive which hampered the uploading and downloading of videos on Twitter and possibly their activities online as shown in Table 6.7 below. The high cost of data and affordability remained poignant and key to the low levels of activities on social media such as Twitter as shown in Table 6.7 below.

**Table 6.7**

Twitter activities	%	
	<i>Female</i>	<i>Male</i>
Posting videos online	3.8%	3%
Posting selfies	16%	21.7%
Checking what others are posting	21.4%	30.4%
Checking political tweets	12.2%	17.4%
Do not have a twitter account	60.9%	60.9%
Why not uploading or download videos on Twitter? Purchasing data is expensive.	55.7%	59.4%

**Table 6.7.** Affordability and high data cost influence on multimedia uses by gender.

## **6.6 Affordability, mobile Internet and public Internet uses**

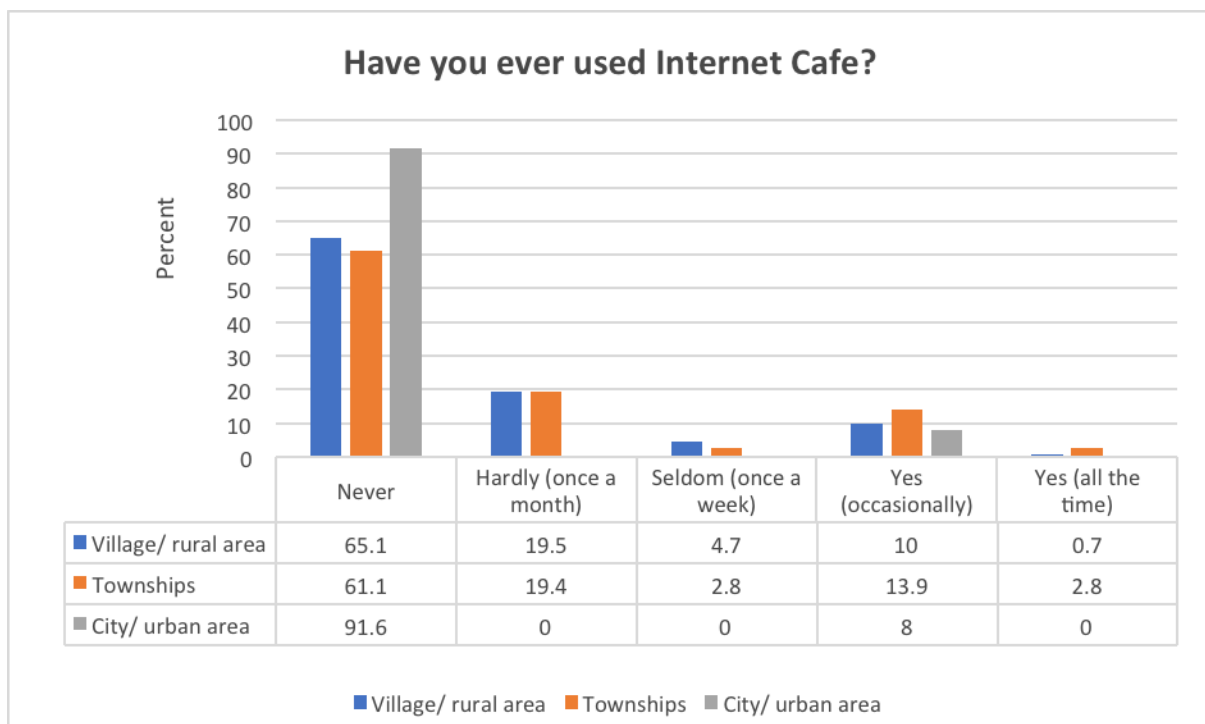
There is a significant growth and development of digital technologies. Affordability and high data cost of data influence the trend in which these digital technologies are being accessed. Patterns on the uses of mobile Internet access and the uses of public Internet access are important to determine affordability patterns among students in this study. This is particularly important where questions are asked about what influences them to use a certain form of access to the Internet, how and what influences them to use it.

### **6.6.1 Affordability and high cost of data influence on public Internet Café uses for multimedia purposes**

Based on the results of the study, most of the students did not use the publicly available Internet Cafés. The findings of the survey reveal that more than half of the students (65%) reported not to have used the public Internet Cafés. However, more students from the City/urban areas claimed that they did not use publicly available Internet Cafés.

For instance, 91.6% of the student respondents from the City/urban areas claimed that they had never used the publicly available Internet Cafés as shown in Figure 6.4 below. Perhaps this can be explained by the fact that those from the City/urban areas (16.7%) reported that the cost of data bundles was very high, and that they couldnot afford to purchase it. This was the lowest recorded rate of usage compared with those from the villages and Townships as shown in Figure 6.1 above.

**Figure 6.4**



**Figure 6. 4.** Affordability influence on students’ use of public Internet Café by geography

### 6.6.2 Affordability and the use of public Wi-Fi hotspots

Most of the students seemed to be using the free public Internet access. The findings of this study reveal that the frequencies in the use of public Wi-Fi access was higher than the use of public Internet access such as the Internet Café. Only a few (1%) of the student respondents claimed to have used the public Internet Cafés. Students preferred the use of free Wi-Fi hotspots, but this was also not highly successful since these Wi-Fi

hotspots were only accessible at specific points far from where the students stayed. For example, 50% of the student respondents who came the City claimed that the access points for the Wi-Fi was far from their homes. These comparisons are shown in Table 6.8 below.

**Table 6.8**

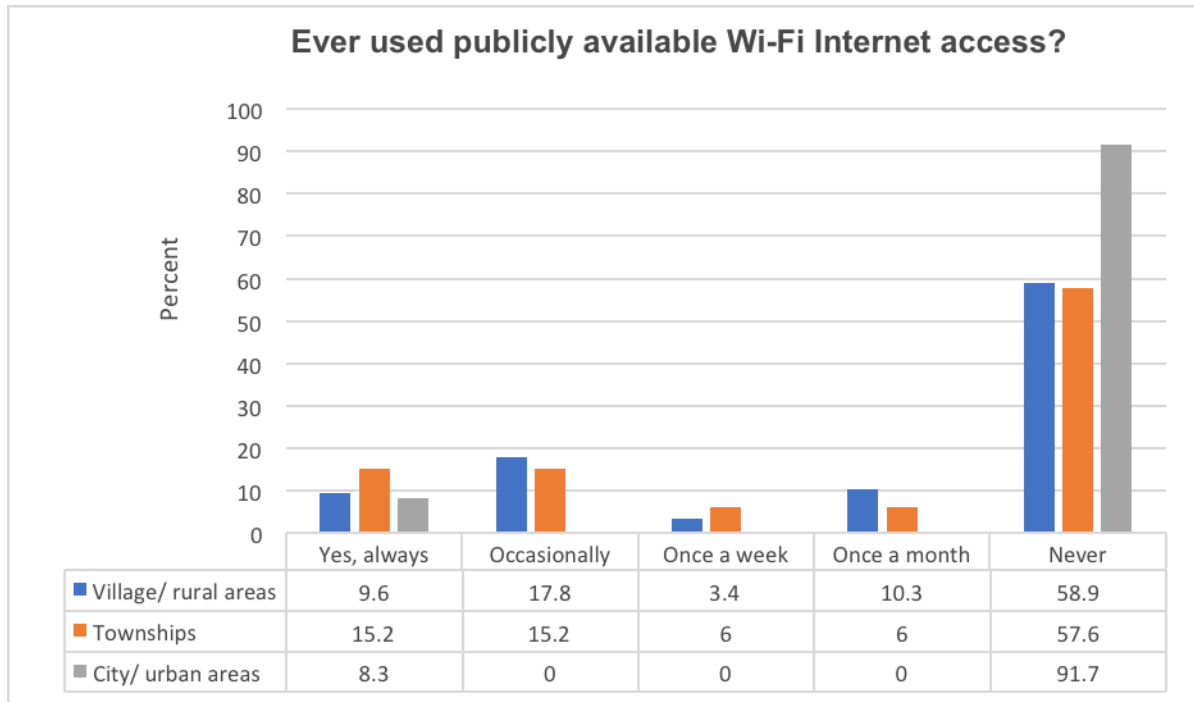
<b>Mode of Internet access</b>	Yes (always) %	Yes (Occasionally) %	Seldom (once a week) %	Hardly (once a month) %	Never %
Public Internet Cafés	1%	10.7%	4.1%	18.3%	66%
Public Wi-Fi Internet access	9.2%	20.4%	4.1%	6.6%	59.7%

**Table 6.8.** Affordability and students' use of public Internet Cafés and public Wi-Fi hotspots.

### **6.6.3 Affordability and the use of public Wi-Fi access by geography**

Most of the students (91.7%) from the city claimed that they had never used publicly available Wi-Fi access. However, there was no significant difference between those who came from the villages and those from the townships with regard to the use of public Wi-Fi hotspots as shown in Figure 6.5 below. Perhaps the reasons why most of the students from the city responded that they did not use publicly available Wi-Fi hotspots was that few of the students reported that they could not afford data bundles. Furthermore, they acknowledged that it was expensive to buy the data bundles as shown in Figure 6.1 presented earlier in this chapter.

**Figure 6.5**

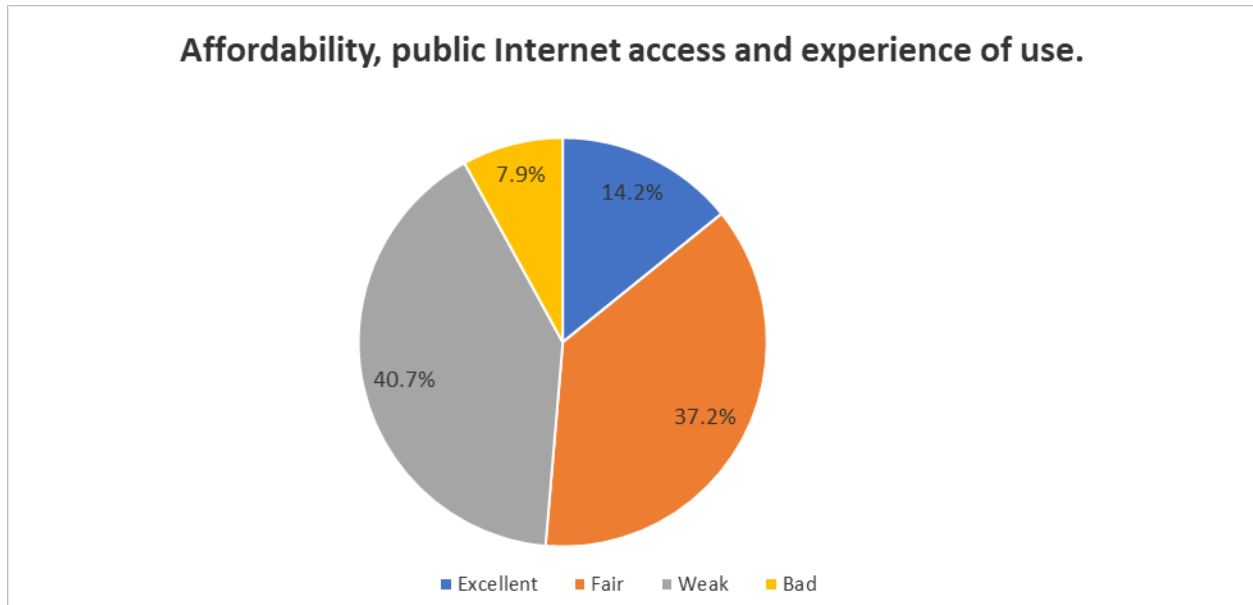


**Figure 6.5.** Affordability and high data cost influence to the use of publicly available Wi-Fi hotspots by geography.

#### **6.6.4 Affordability and high data cost influence on the use of public Internet access and the use experience based on geography**

Despite almost half of the students (49.5%) being aware of the publicly available Internet access points such as that provided by the government: Thusong centres, Post Office and Telecentres, most of the students reported that their experience regarding the use of these public Internet access points was not pleasant. Only 14.2% reported that the experience with the use of publicly available Internet access was excellent as shown in Figure 6.6 below.

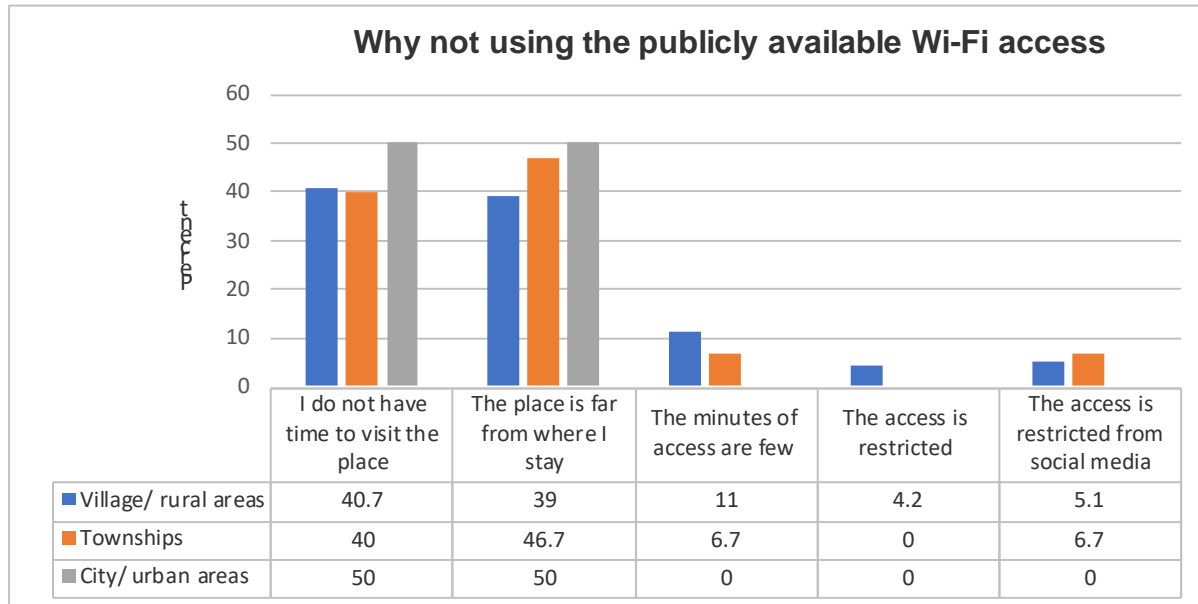
**Figure 6.6**



**Figure 6.6.** Affordability and high data cost influence on the use of public Internet access.

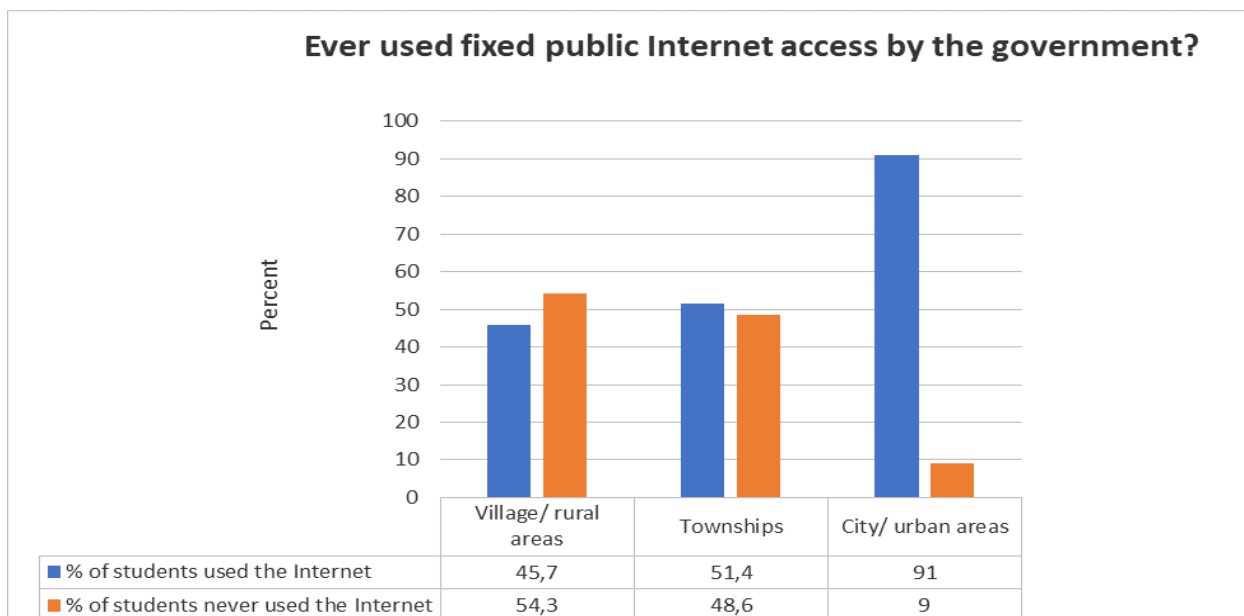
The findings of the study indicate that most of the students did not use publicly available fixed Internet access because the access points were far from where the students lived when they were home. Most of the students (50%) from the city reported that the place to where the publicly available fixed Internet access is far from where they stay when they are home and not at school as shown in Figure 6.7 below. Perhaps the reason why few students from the villages (39%) compared to those from the city, claimed that they did not use the publicly available fixed Internet access was because the fixed Internet access was mostly community based unlike in the big cities where the fixed Internet access points were selective and mostly in the City Business District (CBD). This will require transport fare for those who might not be living in the CBD.

**Figure 6.7**



**Figure 6.7.** Affordability, high data cost and motives why students do not use publicly available Internet access points by geography.

**Figure 6.8**



**Figure 6.8.** Affordability, high data cost and students' use of fixed public Internet access provided by the government by geography.



Despite most of the students claiming that the place they stayed was far from where the publicly available Internet access points, students from the villages were more disadvantaged compared to those from the Township and the City. For instance, only 45.7% of the students residing in the villages reported to have accessed the publicly available Internet access points, and this was the lowest reached compared to 91% of those from the City as shown in Figure 6.8 above.

## **6.7 Activism against high data prices in South Africa**

The high data prices and affordability are not a new phenomenon. Most of the students (91.5%) of the student respondents acknowledged that they were aware of the #DataMustFall campaign which was against the high prices of mobile data bundles as shown in the Table 6.9 below. However, only 5.5% claimed that they participated in the #DataMustFall campaign. Perhaps this can be explained by the fact that much of the activism and conversations were done mostly on social media platforms such as Twitter, Facebook and most of the students could not participate since they had no access to Internet. There were also online radio presentations led by Thabo – ‘Tbo Touch’ Molefe, who was constantly calling for telecommunications service providers in South Africa to lower their data bundle prices under the banner #DataMustFall.

### **6.7.1 Affordability, high cost of data and purchasing airtime for calling**

Most of the students remarked that telecommunications service providers who offer free calling minutes should instead provide free mobile Internet access deals. The data from the survey indicate that most of the students when asked what they will prefer between being provided with free minutes for calling and free mobile Internet access, 91.5% preferred free mobile Internet access to free calls as shown in Table 6.10 below. Perhaps the reason why most of the students preferred free data bundles than free minutes to call was due to the high cost of data bundles and that perhaps purchasing airtime for calling was affordable.

**Table 6.9**

<b>Preferred offer from the service providers</b>	<b>%</b>
Do you prefer mobile free calls (free minutes)?	91.5
Do you prefer mobile free Internet access?	8.5

**Table 6.9.** High data cost influence on preferred offers between free calls and free data

**Table 6.10**

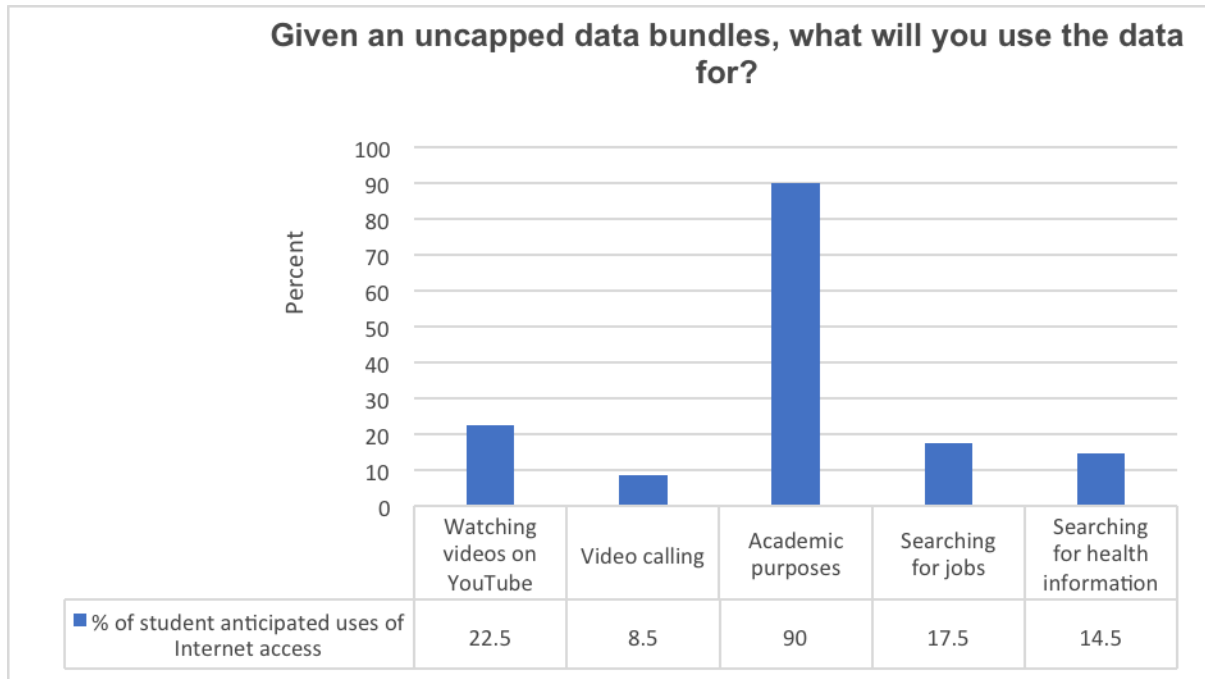
<b>#DataMustFall campaign</b>	<b>%</b>
Do you know about the #DataMustFall campaign?	95.5
Have you participated in #DataMustFall campaign?	5.5

**Table 6.10.** Affordability and high data cost activism

### **6.7.2 Affordability, high data cost influence on the potential uses of Internet access**

The findings show that most of the students were not tapping the benefits associated with the use of Internet. There was a cross sectional increase on the anticipated uses of Internet access among students given the opportunity to experience an uncapped and free data bundles. For instance, most of the students (90%) had a strong interest in the use of Internet access for academic purposes as shown in Figure 6.10 below.

**Figure 6.9**



**Figure 6.9.** High data cost influence on anticipated uses of Internet access by students

## 6.8 Conclusion

This chapter has presented, discussed and analysed the data that were collected from the questionnaires using the University of Limpopo students as a sample population of the youth in South Africa. This chapter presented the influence of affordability and high data cost on the patterns of Internet access and uses among youth in South Africa. The influence of affordability and high data cost is strongly intertwined with the Internet uses and access patterns. In the next chapter, the research discusses, interpretes and analyses the findings of the data that were collected using the standardised interview from the universal service and access policy-makers, from USAASA and ICASA.

## **CHAPTER SEVEN**

### **UNIVERSAL SERVICE AND ACCESS IN THE AGE OF DIGITAL MOBILITY**

#### **(DATA PRESENTATION AND ANALYSIS)**

##### **7.1 Introduction and background**

This chapter discusses, interpret and analyse the findings of the data that were collected using the standardised semi-structured interviews with the Project Manager for USAASA Branch in Polokwane and an official from the Independent Communication Authority of South Africa (ICASA) responsible for policy on mobile Internet access. USAASA is the State-owned agency of government established through the Electronic Communications Act, No. 36 of 2005 to ensure that citizens are connected, communicate and get access to information through Information and Communication Technologies (ICTs). ICASA is an independent regulatory body of the South African government established in 2000 through the ICASA Act to regulate the telecommunications and the broadcasting sectors in the public interest.

The standardised semi-structured interviews were guided and informed by the interview guide which consisted of questions that addressed accessibility and affordability of Internet access in South Africa. The data were interpreted and analysed with reference to the policy documents on universal service and access policies in South Africa. The findings presented here are based on two interviews and the analysis of the South African Broadband policy (2013) and ICASA Annual Report 2018/2019.

These two institutions: ICASA and USAASA are important to gain opinions regarding the post-apartheid reform policies on universal service and universal access. The focus of this study was to contextualise the universal service and universal access policy reforms in the age of digital mobility. ICASA is a telecommunications regulatory authority while USAASA is constitutionally bound to implement programmes that intend to enhance accessible and affordable telecommunication services, Internet access

included. Thus, opinions from these two institutions towards the attainment of mobile Internet access for the poor in South Africa are relevant.

The standardised semi-structured interviews were designed in a way that questions were specifically tailored to explore what USAASA and ICASA were doing to ensure the accessibility and affordability of mobile Internet access in South Africa. The questions explored the conditions and types of mobile Internet access available for citizens, opinions of policy-makers towards the affordability of mobile Internet access and the nature of government involvement on initiatives that ensure affordability of mobile Internet access. All these the factors were further linked to the high cost of mobile Internet data bundles among the youth in South Africa. The questions were designed to observe:

- 1 If the government is effective and supportive on reform policies on universal service and access towards addressing the affordability of mobile Internet (data bundles) among citizens in South Africa such as subsidising the telecommunications service.
- 2 The opinions of the policy-makers on the relevance of the universal service and access policy strategies in relation to the age of digital mobility.
- 3 If addressing mobile Internet access affordability is topical among policy-makers in South Africa.

The responses to these questions were presented along with the analysis of policy documents on universal service and universal access in South Africa. The opinions and perspectives of policy-makers towards the focus of universal service and access policy framework was imperative to inform ways on how affordable mobile Internet access can be achieved against the background of socio-economic constraints. This was also important to show how the policy-makers envisaged the importance of Internet access against the background of the socio-economic disparities in South Africa. This study broadly adopted the thematic analysis of data from the standardised semi-structured interviews.

## **7.2 The Broadband policy backhaul: Addressing the challenges of mobile Internet access in the age of digital mobility**

There is a strong policy commitment to achieving universal service and access in South Africa (Lewis, 2013: 95). This commitment is accompanied by interventions to extend Internet access, through programmes such as the South African broadband policy – South Africa Connect – (2013). Therefore, a critical assessment of the South Africa's Broadband policy and practice in relation to global practice in order to identify impacts and shortcomings is necessary. The lessons from such an analysis are valuable not only in South Africa but to other developing countries who intend to design strategic national broadband policy towards attaining universal service and access in the age of digital mobility. South Africa is one of the countries that are currently engaged in ICT policy reforms. This is indicated through the South Africa Broadband Policy (2013) on Information and Communication Technologies.

The South African Broadband policy (2013) objectives are progressive and rational. However, the clear-cut target and projections of the Broadband policy for South Africa can be categorised in several areas of shortfalls. The Broadband for South Africa is based on the market structure approach. The market approach within the telecommunication services favours the telecommunications service providers at the expense of the customers. The other shortfalls include the policy strategies, infrastructural costs, lack of funding, not emphasising much on the importance of skills, and the notion of open accesses (Broadband policy for South Africa (2013: 23). The gap analysis between market structure and regulatory regime is clear:

The primary gap in this regard is that the regulator, which is key to successful implementation of this policy, has had neither the human and financial capacity nor sufficient autonomy to undertake the critical task of regulating the highly imperfect markets that have emerged. This arising regulatory bottlenecks are hampering the expansion of the telecommunication sector, the fairness of competition and, ultimately, the welfare of consumers (South Africa National Broadband policy, 2013).

It is largely from these shortfalls that the analysis of this chapter will flow. The analysis will engage the universal service and access policy framework along the perceptions gathered through interviews from officials of the two institutions of ICASA and USAASA. The interviews were critical in providing relevant commentaries and insights on the policy direction and government involvement on Internet access in South Africa with reference to mobile Internet access.

Arguments on the notion of Internet access as an essential tool for individual welfare and development in any society largely draws on Article 19 of the Universal Declaration of Human Rights, certainly on the right to 'seek, receive and impart information and ideas through any media and regardless of frontiers.' A government attempt towards providing Internet access for all in South Africa indicates a one-sided approach focusing on providing universal access rather than universal service. Universal access, as a telecommunication policy, implies that individuals have a reasonable means of access to publicly available telecommunication services (Oyedemi, 2012). The focus on universal access of the Internet aims to provide public Internet access to the people. On the other hand, there is universal service which connotes access to Internet on the personal level of connection. The focus on universal service will mean the provision of personalised Internet access such as mobile Internet access.

Therefore, a critical assessment of South Africa's universal service and access policy and practice in relation to the global best practice, to identify impacts and to account for shortcomings, is highly necessary. This section of the research engages the South African Broadband Policy (2013) – *South Africa Connect: Creating Opportunities, Ensuring Inclusion*, which is a roadmap for initiatives aiming at providing Internet access to the citizens. The lessons from this analysis will be valued to the developing countries which are still designing and implementing universal service and access interventions in relations to broadband plans.

The Broadband South Africa acknowledges universal access as a central pillar of the telecommunications reforms. The policy hinges on the importance and primary objective of attaining affordable access to telecommunication services that characterise the modern economy in South Africa. This is inspired by the vision to build a vibrant and

dynamic information society that has the capacity to move South Africa forward within the National Development Plan (NDP). Technically, the broadband policy aims to ensure that universal service and access becomes reliable, affordable, and that the broadband services is accessed by all South Africans, specifically those from the disadvantaged groups – rural and semi-rural areas as a high priority.

The importance of providing Internet access to all is a genuine concern. The Internet, as a medium of information and communication technologies, has the potential to address socio-economic and political ills, in the same way as any other socio-economic and political policy reform can do. For example, the Broadband for South Africa (2013)'s targets on Internet access seek:

To improve the quality of life of all citizens and free the potential of each person and enable equality in the rights, privileges and benefits of citizenship, including the guarantee of the freedom of expression and association in the Bill of Rights in line with the declaration by the Human Rights Council of the United Nations General Assembly that indicates access to the Internet as a basic right that every individual is entitled to, so that they exercise their rights to freedom of expression of their opinions (South Africa National Broadband policy, 2013).

The South Africa's Broadband Policy (2013) aims to achieve a universal average download speed of 100 Megabits per Second (mbps) by 2030. According to this policy, for this to be achieved, 5 mbps was set to be attained by the year 2016, and this to be available to 50% of the population, and to 90% by the year 2020, with the quality of services monitored by ICASA. However, the policy targets are still extensively set focusing on connecting the public institutions such as public schools, public clinics, public hospitals, Thusong centres and community libraries.

In response to the advent of the digital age, the roll-out of Internet access, under the universal service and access policy, has taken another form of access through Wi-Fi access points in some communities in South Africa rather than through fixed cable access. However, this form of Wi-Fi under the universal service and access policy framework remains a fixed form of Internet access. The Wi-Fi access points do not support the nature of mobile Internet access of always-on culture regardless of location.



The Internet access is accessed at specific public places such as within the public schools and the one that can be accessed at the Presidency in Pretoria. This approach is not much different from the fixed Internet access at Thusong centres and community libraries through cable Internet connection. The introduction of Wi-Fi hotspots did not help meet the demands of mobile Internet access of always-on culture and affordability but extended the mode of connection to allow individuals to connect with their devices still at fixed positions. The advantage of this approach helped to enhance the capacity of connection in that the Internet access is no longer limited to the computers of the given community library for instance, but individuals with Wi-Fi enabled devices can now connect to the same Internet access using their own devices.

The telecommunications policy makers need to acknowledge ICT skills and access to Internet as public goods, since, like education, they are proficient to provide beneficial externalities that, among other things, are associated with economic growth and stimulating democratic governance. This is in line with the strategies to enhance Internet access and equip individuals ready for these technologies as mentioned in the South Africa National Broadband policy (2013):

To enable competitive infrastructure sharing, stimulate demand through skills development and e-literacy, incentivise low entry-level prices for devices and services, support local content development including e-government services, and also enable research and development and innovation. However, this cannot be of much and direct helpful to ensure that people have access to ICTs if the strategies are not linked to the initial lack of Internet access (South Africa National Broadband policy, 2013).

The capacity to expand Internet access in South Africa is backed by the South African policy narratives and regulatory statutory (South Africa National Broadband policy, 2013). The Bill of Rights enshrined in Chapter 2, Section 1 – 2 of the South African Constitution can only have true meaning through other resources such as the Internet in this digital age. For instance, the freedom of expression could not have true meaning if individuals are limited to express themselves online since the affordability of Internet access remains beyond the reach of many South Africans. The definition of ‘Broadband’

for South Africa is by itself a guide to universal service and access policy initiatives. The definition highlights that information technology access, uses and skills are imperative to provide essential externalities of socio-economic, political and cultural growth. This definition is a guide to universal service and access policy initiatives. The South Africa Broadband policy defines broadband as:

An ecosystem of high capacity, high speed and high-quality electronic networks, services, applications and content that enhances the variety, uses and value of information and communications for different types of users (The South Africa Broadband policy, 2013).

### **7.2.1 The impact of mobile Broadband: A key enabling technology for citizens**

The government, through the Broadband policy: *South Africa Connect* (2013) indicates that the growth in the ICT sector has not been accompanied by the efforts to ensure that the access is affordable for all (Broadband policy for South Africa, 2013:15). The high cost of Internet data bundles and communication is constraining investments, entrepreneurship, and access to information, outsourcing and opportunities on individuals to explore their potential online. The high pricing of mobile data bundles and broadband in general is shrinking the exponential growth of mobile broadband uses and constraining the full-scale growth of South Africa as the regional economic hub in southern Africa. Concurrently, the government seems to lack strategies to address the high cost of mobile broadband in South Africa. In an interview with an official from USAASA, the Limpopo Provincial Project Manager for USAASA, noted that:

*I think the problem is that the government is not putting the effort to seek strategies that focus on providing mobile Internet access. Also, I think the Broadband South Africa Connect (2013) initiative was to extend mobile broadband accessibility to otherwise unconnected areas in South Africa, and not to facilitate or address the issue of affordability. However, the government has been focusing on subsidising telecommunications service providers such as MTN and Vodacom to extend mobile broadband accessibility (Personal communication, August 10, 2018).*

Recognising the fundamental and growing positive aspects of information and communication technologies in modifying possibilities for organising communication, work, business, and government is imperative to ensure affordable Internet access through policy reforms in South Africa. These technologies influence various innovations and significantly, the Internet is the epitome of development and in most cases, it influences the structure of the state of affairs with governments and developmental aspects (Christou and Simpson, 2009). Thus, government initiatives to enhance access should become pivotal such as setting targets, within policy narratives, to achieve affordable mobile Internet access to those otherwise unconnected. However, some policy-makers seem to be disagreeing with this assertion arguing that it will be a burden to the government to intervene directly in the reduction of prices of data bundles on attempts to make mobile broadband affordable to all. He, the official from USAASA, noted that:

*I think policy reform engagements do not need a radical approach. The current targets enlisted in the Broadband policy (2013) which include enhancing the reach of broadband by 90% of the population to have broadband access at 5Mbps by the year 2020 and 100% of the population at 10Mbps, and schools to reach 100% connection by the year 2020, health facilities to be at 80% connection at 100Mbps in 2020, and government facilities to be 100% at 10Mbps and 100% at 100Mbps by 2030 are rational and progressive. The effort to reduce the costs of high data bundles instantly are likely to have a negative impact adding to financial deficit by the government.*

However, an unavailability of always-on Internet access, Internet-on-the-go, is impacting negatively on the nation's developmental agendas and global competitiveness. The advent growth in the ICTs had not been accompanied by reform policies to enhance affordable Internet access to all in South Africa. The high costs of mobile broadband is stubbornly constraining the individual capacity to explore opportunities available to them and participating in the global economy. The positive impacts of digital technology are well-documented (Davison and Cotton, 2010; Mack, Anselin and Grubestic, 2011; Bischof, Bustamante, Feamster, 2018; Prieger, 2018). The mobile broadband

accessibility and connectivity becomes important to ensure sustainable developments in the age of digital mobility.

### **7.3 Universal service and access approaches: Established practices on expending funds on Internet access**

There are several funding sources that are identified and discussed in the Broadband policy of South Africa (2013). These include the Department of Communication, Neighbourhood Development Partnership Grant, Department of Rural Development and Land Reform, Media Development and Diversity Agency (MDDA), Sector Education and Training Authorities (SETAs), the Universal Service and Access Fund (USAF) and the Skills Development Fund (Broadband policy of South Africa, 2013). The challenge, according to Lewis (2013), is that the Universal Service Fund (USF) interventions in South Africa did not contribute to the upsurge of mobile Internet access. This is because the emphasis on expending these funds is towards digital skills development programmes through computer literacy community projects and universal access – which focused on the provision of fixed Internet access through Thusong centres, community libraries and public hospitals.

The Universal Service and Access Fund (USAF) was established under the Electronic Communications Act (ECA) of South Africa to fund projects and programmes that strive to achieve universal service and universal access to Information and Communication Technologies (ICTs). It appears that the sources of funds influence the potential uses of funding to the agency. In an interview with the official from Universal Service and Access Agency of South Africa (USAASA), the interviewee claimed that the sources of the funds influence and dictate what the funding should be used for, making it difficult for USAASA to independently strategise on reform policies towards attaining universal services and access. The official from USAASA reiterated that:

*Much of the funding for universal service and access come from the government. However, most programmes from the government have been focusing on providing fixed Internet access; therefore, the annual allocation of funds to maintain these facilities becomes a priority to the government. This could also explain why it might seem like the extension of mobile Internet access is being*

*relegated to individual capacity to connect (Personal communication, August 10, 2018).*

The creation of the universal service and access mandate and obligation strongly reflects a structural intervention. The findings of this study indicate that the imposition of targets and patterns of obligations towards attaining universal service and access is rigidly limited to providing fixed Internet access. This structural rigidity is making it difficult to shift the approach from fixed to mobile Internet access. Perhaps the Broadband policy's focus on providing fixed Internet access is because the government is still determined to enhance fixed Internet access through Thusong centres, community libraries, schools, and clinics. The opinions about the focus on fixed Internet access rather than mobile Internet access are largely explained in terms of shortages of finances and what the government prioritises. An official from USAASA explained that:

*There is a need by the government to act on reform policies in telecommunication services such as initiating some strategies on how to direct funds to fund the mobile Internet instead of fixed Internet access. The annual budget that is being allocated to USAASA by the government to extend Internet access is still very limited. I think there is a need for an increased awareness about how the Internet can benefit the citizens, perhaps maybe more attention can be directed to providing Internet access. The government needs to shift the focus from funding and extending fixed Internet access to more of focusing on universal services especially in this digital age where the Wi-Fi and mobile connection have become the source and search engine of most of the aspects of life (Personal communication, August 10, 2018).*

From the analysis of this study, the USFs for the universal service and access are ineffective attempts towards attaining mobile Internet access. The focus is on funding the variety of forms of Internet that remain fixed in the age of digital mobility. The critique, according to Lewis (2013), is twofold, which is the prioritisation of fixed Internet over mobile Internet access that could have laid the proper foundation for broadband access funding. Secondly, is the ineffective funding of Internet access projects such as the telecentres, community libraries where Internet connection is poorly operationalised and maintained (Snyman and Snyman, 2003; Attwood, Diga, Braathen and May 2013:

6). Chigona, Lekwane, Westcott and Chigona (2011) observe that telecentres are not a meaningful mode through which Internet access can be delivered to citizens in this digital age.

#### **7.4 Interventions towards attaining mobile Internet universal service and access**

According to Netflix calculations by Nam, Kim, Kim, Calin and Schulzrinne (2014), the proper individual streaming experience should be somewhere between 5.3Mbps to 7Mbps for Internet uses such as video downloading or online gaming. This means that the 90% population to have broadband access at 5Mbps by the year 2020 does not suffice to applaud success against the global best practice although it remains a crucial step towards attaining universal service and access to most South African citizens. The findings of this study show that most of the programmes towards universal service and access aim at extending the access and connectivity to all corners of South Africa and little is done about affordability. In an interview with an official from USAASA, he noted that:

*Most of our programmes before and after the growth of mobile broadband have been mostly aiming at extending the reach of Internet access to all citizens, and in most cases the Agency will subsidise the telecommunication service provider such as MTN to extend the Internet access to remote areas and speed up the process. The issue of who connects to the Internet and how is then left to the community, but we would have provided the access (Personal communication, August 10, 2018).*

There is a crucial need to focus reform policies on affordability of Internet access in South Africa. Digital technologies are imperative to confront the resources necessary to break the circle of poverty to the community among the poor (Oyedemi, 2012). Stressing on the analysis of the importance of digital technologies, Servon (2008) illustrates, in a comparative way, how digital technologies provide people with skills and resources to get out of poverty. The argument is that Internet access provides people with primary resources to develop and improve their lives through individual means. The ANC in 1994 indicated that the Rural Development Programmes (RDPs) on telecommunications were imperative as an “*Indispensable backbone for the development of all other socio-economic sectors*”. The implications of this is two-fold: 1.

This has resulted in an extensive focus on extending the reach of Internet access by telecommunication companies through monetary subsidies from the government. 2. It has also resulted in the neglecting of affordability aspects on the individual capacity to be connected and access the benefits that the Internet can offer.

For individuals to realise their full potential through the Internet, this calls for a compelling commitment by the government and policy reforms, by policy-makers, that aim to provide universal and affordable mobile Internet access within sustainable and viable telecommunications systems. This recognition for the provision of affordable access to all finds further expression in the objectives of the South Africa broadband policy of 2013 (*South Africa Connect*). The first listed objective of the South Africa broadband policy (2013: 13) states that the policy aims to ensure “affordable broadband nationally, to meet the diverse needs of the public and private sectors, both formal and informal consumers and citizens.” However, most of the programmes under the universal service and access focus on extending the reach of mobile broadband and not addressing the issue of affordability. The official from USAASA stressed the issue of costs and budget problems that face government. He reiterated that:

*I think it is difficult for the government to implement strategies that can address the individual connection through mobile Internet access. There is a tight budget allocation currently for maintaining current programmes of providing Internet access to citizens through fixed Internet access means such as community connection centres – community libraries, schools and clinics. However, there is a need for well thought-out strategies to ensure [that] mobile Internet access is attained under universal service and access obligations.*

Also, the successful deployment, accessibility and affordability of digital technologies can bridge the rural and urban digital divide in tapping the benefits associated with the information economy. The South African Broadband policy (2013) acknowledges the socio-economic and political benefits of broadband in improving the quality of education, the quality of access to health services, the quality of government service delivery and in general the quality of life. Section 3.1.4.3 of the Broadband policy for South Africa (2013) indicates that:

Access to broadband will contribute to reducing spatial inequalities in South Africa, which had developed out of a system that fostered lopsided economic development through unequal distribution and access to economic opportunities and assets. The ability to communicate increases the marketability of especially rural provinces and municipalities as investment destinations, making it more attractive for business to directly invest into these areas (Broadband policy for South Africa, 2013).

This is complimented by various instances and strategies by the government in South Africa to extend Internet access and potentially public Wi-Fi hotspots that can be accessible to citizens at no cost. The Public Wi-Fi Policy Paper (2016) focusing on developing Smart Public Wi-Fi access points in South Africa based its rationale on the premise that the Wi-Fi, especially in the city centres, should be accessible at no cost to create an information society. However, the rollout of the strategy has been skewed on geographical location with some other city centres having been connected while others are not and those from the rural areas being left without being connected. For instance, only the Cities of Tswane and Cape Town have been recently declared Wi-Fi Cities in South Africa. However, the official from USAASA indicated that the reasons for some cities being connected and others being left out, varies on the basis of municipal priorities depending on what is socially valued to be prioritised. In an interview with the official from USAASA, he noted,

*I think the problem of other cities in South Africa having Wi-Fi access points and the others not having it, is the problem of the municipalities' focus of attention in the budget allocation. Some municipalities are still focusing on serious challenges of extending tap water and construction of roads and even building houses for citizens. Also, government municipal budget allocation is critically tight and might influence the way these municipalities allocate the monies for their annual program[me]s and activities (Personal communication, August 10, 2018).*

The endeavour to connect the cities is progressive and rational. However, according to Research ICT Africa (2016), these developments point to the top-down approach in the provision of ICTs where the users of the services are not regarded as important towards developments of ICT structures that are relevant to them. The payment and



maintenance of these development projects and services is monitored by the USAASA through the Universal Service Funds (USFs). This has resulted in the provision of fixed Internet access in the age of digital mobility. Focusing on providing Wi-Fi access points within cities does little to bridge the digital inequalities. For example, this might imply that those that are not staying in the cities should travel to the city centres where they can access the government provided Internet, while those who reside within the cities need to move closer to the Wi-Fi access points to be connected. The advent of digital mobility calls for fundamental policy reforms and approaches to achieve universal services.

The South Africa Broadband Policy's strategy towards attaining universal service and access also stresses on *digital readiness* – through the removal of regulatory bottlenecks; *digital development* – through the pooling of public sector demand and procuring of affordable costs, *digital future* – through various network building and *digital opportunity* – through enhancing awareness, skills and the realisation of relevant content and application. However, the policy intervention is somehow tilted in favour of some of the strategies and not others. In an interview with the official from USAASA on opinions of priority interventions, he acknowledged some of these shortfalls:

*I think some of the delay[s] in the extension of Internet access is [due to] the lack of awareness of the vast benefits associated with [the] Internet both by the government and the citizens. It is unfortunate to say that through the public Wi-Fi hotspots or Internet access points such as those installed in the community libraries; the usage percentages are critically low especially in the rural areas. This can reflect the lack of skills and the knowledge about how the Internet can benefit [them] (Personal communication, August 10, 2018).*

In South Africa there is skewed and limited Internet access which is highly influenced by the high cost of data. Hence, programmes and initiatives focusing on enhancing Internet access to the citizens at affordable prices become imperative. However, the programmes given priority by the Universal Service and Access Agency of South Africa (USAASA) are more on extending fixed public Internet access. When asked what the Agency's role in addressing affordability of Internet access to the poor is, the Limpopo

Provincial Project Manager for USAASA, noted that while the Agency was aware of the high cost of data in South Africa, there were other projects such as the rolling out of infrastructure, telecentres and the connection of institutions and community centres such as hospitals, clinics and primary and secondary schools which were yet to be accomplished. The official from USAASA noted:

*The initial interest of USAASA was more on providing Internet access points through telecentres in [the] rural areas for those otherwise not connected on individual initiatives. For instance, we only have 20 telecentres and 38 schools that are connected in the Province. However, we subsidise these rollouts that are facilitated by MTN [as a] service provider. The Agency will therefore pay for data costs after installation at these telecentres and for a period of 2 years at public institutions such as hospitals (Personal communication, August 10, 2018).*

The advent of mobile broadband and mobile Internet access calls for a shift on government initiatives to provide Internet access for the poor. Therefore, making Internet access available, accessible and affordable to the poor through providing subsidies to the telecommunications service providers to provide mobile Internet access might be the future benefit for those who are not able to afford Internet access. The Limpopo Provincial Project Manager for USAASA agreed with this assertion but indicated that the problem had to do with the lack of funding from the government and that this also requires the shift of mind sets of many stakeholders including the government and those directly involved in policy making. He said that:

*The more the government and all interested parties become aware that the Internet is as basic as access to water or electricity, the better. The government needs to understand that the Internet is increasingly becoming a priority so that they can be allocations of budget for the provision of Internet access to the poor. It is not a matter of only focusing the budget to provide Internet access to poor individuals, but a policy requirement and recognition. Therefore, the government must also look into serious policy reforms that are flexible and reflect the reality about the contemporary needs (Personal communication, August 10, 2018).*

Most of the programmes by the government are still focusing on addressing fixed Internet access. This approach of providing Wi-Fi access points or Wi-Fi towers in communities needs a shift from the provision of fixed Internet access to a more flexible

because individual connection remains critical and provides numerous speculations. The argument is that the provision of Wi-Fi hotspots such as that found in City of Tswane and the Presidency's offices in Pretoria, for example, remains a fixed Internet access since one needs to move to the hotspot to access the Internet. However, the Limpopo Provincial Project Manager for USAASA held a different perception on this programme, contending that the approach is no longer perceived and addressed as the rollout of fixed Internet access since individuals can now connect to the Internet using their mobile cell phones. He noted that:

*The program[me]s that we are currently implementing cannot be all categorised as focusing on providing fixed Internet access. The provision of Wi-Fi access is a move away from the provision of fixed Internet access such as the one you can access on community libraries. Individuals can now connect to these Wi-Fi hotspots using their mobile cell phones, a practice different from the one used through community access centres such as the community library connection. What you need to do is to go to the access centre such as the hospital or the community library to access the Internet with your mobile devices (Personal communication, August 10, 2018).*

The approach to be taken to address the problem of Internet access to the poor is of critical concern. It evokes different opinions and priorities depending on what is perceived as the barrier. Some arguments stress that it is not necessarily the need to attain affordable Internet access that is worrying but the literacy level of individuals and skills on how to use the access available to them. The Limpopo Provincial Project Manager for USAASA reiterated that the lack of skills on how to successfully use the Internet and tap the benefits associated with the Internet is another problem that needs to be addressed. He said:

*I think some of the community members do not possess the skills and relevant literacy levels that are necessary to tap the benefits that the Internet can offer. Some individuals do not know how to use the Internet to improve their lives. Sometimes people can gather around the connection point to download music or videos connecting with friends on social media. I am quite sure that only a few will be connected to look for job opportunities and apply, browse for health information and education related information (Personal communication, August 10, 2018).*

This assertion is supported by the acknowledgement of the need to enhance skills and initiatives to provide the citizens with relevant information about digital applications in the policy framework, in the form of the South Africa Broadband policy (South Africa Connect). It is apparent that the focus has not been much about how to solve the problem of lack of Internet access because of the high cost of data and affordability. The South Africa Broadband Policy (2013) states that:

To enable competitive infrastructure sharing, stimulate demand through skills development and e-literacy, incentivise low entry-level prices for devices and services, support local content development including e-government services, and also enable research and development and innovation. However, this cannot be of much and direct help to ensure that people have access to ICTs if the strategies are not linked to the initial lack of Internet access (South Africa Broadband National Policy (2013)).

Making Internet access affordable does not mean that everyone has affordable Internet access provided by the government, but coming up with a legislation, or a policy that can recognise Internet access as a basic need that is binding to the government to facilitate and monitor the deployment of Internet access to poor people through programmes such as the Rural Development Plan where the government provides shelter, tapped water and electricity to the poor. This can ensure that people have access to the Internet through subsidies from the government towards the telecommunication services providers. In response to this argument, the Limpopo Provincial Project Manager for USAASA reiterated his agreement about the policy by saying that:

*I think this is achievable, and I think the challenge about the budget can be eliminated through the government having stipulated policy frameworks that deal with the cost of data effectively. The reason why other countries have managed the low costs of data and affordable Internet is through their clear-cut and determined policies regulating the telecommunication services providers. It is also through these policy frameworks that the government can align subsidies to the telecommunication service providers especially in the rural areas (Personal communication, August 10, 2018).*

## **7.5 Perceptions of policy-makers on student activism on social media platforms against the high cost of Internet data bundles**

The South African youth ignited a furore on social media platforms in the year 2017, including through radio and television media, expressing their frustrations over the high cost of Internet data bundles. The social media campaigns led by Thabo – ‘Tbo Touch’ Molefe – called for the telecommunications service providers to lower the costs of data bundles under the banner #DataMustFall. This campaign was mostly led by university students who had free Internet access on campus from computer laboratories, Wi-Fi access on campus, and arguably most of them could locate these free Wi-Fi Towers around the cities and public libraries Internet access. This indicates that the problem of limited Internet access cannot be solved through the provision of public fixed Internet access. The problem seeks universal service policy reforms that address the provision of mobile Internet access that is flexible, mobile and affordable. The Limpopo Provincial Project Manager for USAASA disagreed with the assertion that the government should provide mobile Internet access to the poor through subsidising the telecommunication service providers:

*I think we still a bit far to achieve this phase where everyone can access the Internet, at the comfort of their homes, which is being paid or subsidised by the government. This is because the government is focusing on a lot of developmental projects of social, health, sanitation, electricity, shelter and even provision of running water. Some of the citizens in remote areas do not have these basic needs. This is not the case with South Africa alone, but this is experienced in most developing countries. In my opinion, compared to other African nations, South Africa is striving to bring the citizens close to these digital technologies though fixed public Internet access (Personal communication, August 10, 2018).*

It is critical to frame affordability of mobile Internet access as an issue that needs top priority in policy regulation. For some policy makers, the affordability of mobile Internet access is not an issue in South Africa. The official from ICASA, working under the data bundle regulatory portfolio argued that the problem of affordable mobile Internet access is not an issue in South Africa, rather to him the problem is being dealt with through the

breakdown of the network Internet connectivity such as the 3G and the 4G speeds. When asked what ICASA was doing to simplify the mission to ensure mobile Internet access to the poor, the official from ICASA said:

*My understanding is that Internet access and affordability is really not any issue in South Africa as operators have managed to cover approximately 90% of the population with 3G and approximately 50% of the population with 4G in the country and the figures continue to rise. These different generations of Internet connection also help in terms of affordability. Those who cannot afford high speed Internet connection generation such as the 4G speed can access the 3G speed that is less expensive since it does not include the high-speed data surfing (Personal communication, November 21, 2018).*

However, this assertion does not explain the affordability aspect of Internet but somewhat explains the Internet reach. The notion of universal service and access obligation by the government in South Africa that aims to provide accessible and affordable Internet access is also not explained. This understanding of providing Internet access to the people by the official from ICASA can therefore be explained in market terms. The notion seeks to define and understand the problem of lack of Internet access to the poor and the historically disadvantaged population in market terms. This is typical of the structuralist approach to digital technology gaps that aims to benefit the market through confining the problem in market terms rather than universal service (Stevenson, 2009). The 3G and 4G problem solving approach widens the digital divide gap with attempts to simplify the technology gaps through market terms. This is typical of desperate attempts of solving affordability problems through quality terms (West, 2015) which still widens the digital gaps in terms of quality of experiences between different categories of those who can afford high speed networks and those that cannot.

## **7.6 Understanding universal service and access in the Digital Age: Policy Approach**

Directing the universal service and access funds towards maintaining and sustaining the Thusong centres, telecentres and community libraries among others is progressive and rational towards attaining universal service. The Limpopo Provincial Project Manager for USAASA claimed that the establishment of telecentres is a complimentary service by

the government to support broadband connection. However, in the developed countries or the global best practices, mobile broadband has become the primary form of Internet access (Bold and Davidson, 2012). However, in South Africa, there is the Wi-Fi hotspots were established in response to the mobile and wireless connectivity that is increasingly characterising the digital age – an ‘*always on culture*.’ This approach, though it is progressive and rational, remains a constrain to the full experience of mobile broadband since it can be interpreted in terms of fixed Internet access. The rationale to provide fixed Internet access is explained in terms of the government not being able to provide individuals with Internet access since it is costly. The Limpopo Provincial Project Manager for USAASA was in agreement with the policy, as he noted:

*I think the establishment of Thusong centres, telecentres and community connection through community libraries, public schools and clinics is not far-fetched from attempts to achieve universal service in South Africa. Since Wi-Fi connection is becoming the mode of Internet connection for most people using mobile cell phones, the government, in small scales, is also transferring the mode of Internet connection to be accessible on mobile cell phones through Wi-Fi hotspots. I think it is almost impossible for radical reform policy from fixed Internet access to mobile Internet access (Personal communication, August 10, 2018).*

For the government to be able to solve the problem of Internet access, policy reform is important. However, the general trends on reform policies from policy-makers have shown an inclination towards attaining the availability of mobile Internet access and not on how individuals will access the Internet. For socio-economic or political reform policy to be effective, rational and progressive, the policy should locate and address the problem as envisioned. This will compel the government, under universal service policy reform, to seek strategies that ensure that the relevant mode of Internet access is attained at an affordable price. If affordability is addressed under the universal service and access policy terms, it becomes compelling for the government to attend to the problem of Internet access and the high cost of Internet data bundles. When asked if the attainment of mobile Internet access was achievable through the government

subsidising a fixed amount of data to the needy persons, the Limpopo Provincial Project Manager for USAASA remarked that:

*I think the government can achieve it. Through the same program[me]s and initiatives that are used to identify the poor people and building them Rural Development Programme (RDP) houses, the government can identify the poor and provide mobile Internet access through subsidising their mobile Internet data. I still agree that the universal service and access policy reforms and implementation should help those residing in the rural areas most. The directing of universal service and access on the cities and some cities declared as smart cities, is to some extent neglect the relevant needy people in the villages (Personal communication, August 10, 2018).*

Under the universal service and access policy framework, the government is obliged to provide Internet access to individuals through the relevant modes of access. Mobile broadband access is the epitome of Internet access mode that is relevant in this age of digital mobility. However, the government is currently engaged in the establishment of Wi-Fi towers as a move to allow individual connection to the Internet with their own mobile devices. Although, this approach is plausible, rational and progressive; it remains a fixed Internet access approach in the sense that the connection is available at a certain point that is fixed such as the public hospital or the Thusong centres.

The focus of universal service and access policy should be on making Internet access available to individuals on affordable prices. The official from ICASA heralded the achievement of Wi-Fi towers to address Internet access to extremes. He argued against the provision of mobile Internet access to individuals even through propositions of subsidising the Internet data bundle packages for the poor. The argument is that it is impossible to achieve this initiative since the country is experiencing other socio-economic problems such as people not having shelter and other basic needs. Although the official from ICASA believe that the Internet is important for uses such as searching for jobs or entrepreneurship skills, online trading, access to information and provides individual with various opportunities, he strongly agreed that providing shelter, water and sanitation should precede the provision of Internet. He reiterated that:



*I think the government need[s] to address the socio-economic ills that it is faced with before we can even talk about the provision of mobile Internet at the individual level. The government should accomplish the provision of shelter, water and sanitation before attending to mobile Internet access. In my own opinion, the government of South Africa is amazing and trying for its people through the improvement of the living conditions of the citizens. I am not dismissing the rationale towards the provision of mobile Internet, but in my opinion, people need to be sheltered first before we can identify who is connected and who is not connected (Personal communication, November 21, 2018).*

Furthermore, the need by governments across the world to expand accessible and affordable Internet access to the citizens is based on Article 19 of the Universal Declaration of Human Rights' section that expresses the "seeking, receiving and impartation of information and ideas through any media regardless of frontiers". South Africa is one of the countries that is determined to expand reach and affordable Internet access to the poor and to build the global economy. However, although the policy-makers generally believe that the government of South Africa should be involved in initiatives to provide Internet access to the needy persons, they are not clear on what should be done and by whom. When asked if the government was doing anything on attempts to decrease the high costs of Internet data in South Africa, the official from ICASA said that:

*I think to make mobile Internet access affordable in South Africa should be the subject to be also consulted with the Department of Telecommunications and Postal Services. ICASA's responsibility is to give effect to government policy goals, which among other things including reducing the cost to communicate. However, part of giving effect to the cost to communicate, ICASA has adopted the three-phase approach for interventions for data services. The first phase deals with tariff transparency, data expiry and out-of-data bundle business rules. The second phase is about identifying priority markets that may be subject to regulation. That last phase will involve market analysis of priority markets which could lead to price regulation if competition is found to be ineffective. I don't think ICASA is directly involved in the pricing of data bundles (Personal communication, November 21, 2018).*

In South Africa the Internet data pricing regulatory framework by telecommunications service providers seems to be regulated in market terms and neglect individual connection to the citizens' capacity. The last phase, from the above-mentioned statement by the official from ICASA, is the strategy adopted by ICASA to reduce Internet access gap which is intrinsically indicative of the approach that seeks alternatives to harness the issue of the high cost of data bundles in market terms. The trend in the opinions of the policy makers is the assumption that making Internet access affordable to the poor can be attained through the introduction of market competition. When asked how the telecommunication service providers in South Africa justify their data pricing, the official from ICASA acknowledged that:

*Different telecommunication service providers use different pricing strategies driven by competition dynamics in the market. Also, it should be noted that data pricing is not being regulated in South Africa. ICASA has not done price impact analysis on subscribers by income, which may not be feasible as ICASA does not have detailed information at customer level to be used as proxy (Personal communication, November 21, 2018).*

Furthermore, numerous demonstrations and complaints about the expensiveness of Internet access in South Africa have been counteracted through different strategies and interventions by the Independent Communications Authority of South Africa (ICASA). However, these interventions, such as introducing market competition through loosening restrictions on licensing, are not directly addressing affordability of Internet access. The policy-makers themselves seem not to accept that Internet data bundle prices from the telecommunication service providers are expensive in South Africa. When asked what the Agency is doing in addressing affordability of Internet access for citizens in South Africa, the official from ICASA responded by saying that:

*ICASA has the mandate to regulate the telecommunication service providers in South Africa. Hence, the institution has introduced three phases of Interventions on attempts to address the problem of Internet data pricing on consumers, and these interventions are categorised as amendments of the end-user regulations which are prescribed as minimum standards of the services that are provided by the service providers. These include that; (1) service providers*

*are supposed to send consumers text notifications at regular intervals notifying them of their data bundle usages so that they can monitor the usage of data; (2) the telecommunication service providers must allow the consumers to roll-over data to help solve the problem of data expiring prematurely. The roll-over of data will allow end-users to be able to transfer the data to other customers, friends and family using the same network service provider; (3) Telecommunication service providers must not default prepaid data bundle subscribers for out of data bundle usage – meaning that service providers must not charge out of data bundle rates to consumers without consent from the consumers; and (4) the intervention requires the operators to educate the consumers about how to use the data bundles (Personal communication, November 21, 2018).*

Similarly, in the Annual Report of ICASA 2017-2019, the Acting Chairperson of ICASA, contested the out-of-data bundle prices by telecommunication service providers. The Chairperson indicated that the out-of-data bundle prices have been a serious debate in the select Committee on Communications and Public Enterprises and that the data bundle costs have changed from the year 2010 with the advent of WhatsApp, Skype and other social media platforms. The Chairperson also argued that an intense penetration of smart phones in South Africa and the call termination regimes that have resulted in call tariffs dropping, also contribute to the increase in the cost of data bundles. In the Annual Report of ICASA 2017-2019, he reiterates that:

The out-of-data bundle prices are relatively high, depending on the kind of bundle that the consumer is subscribing to. In South Africa, if you buy higher bundles, the less you spend per megabyte, and the little you spend the higher you pay per megabyte. This is worsened by out-of-data bundle prices that can double the average purchasing price of data bundles from approximately 5 cents to R2 price per megabyte. This is an area of concern for our Agency and I think it needs to be nipped in the bud (ICASA Annual Report, 2018/2019).

When individuals go online, they need affordable access and services, diverse content streaming, costs that are reasonable (West, 2015), viable infrastructure, uncensored information and optional local language translation. This will in turn encourage the economic growth, strengthen the civil society around the globe, extend infrastructures to access health, education and communication. However, in South Africa the costs of

Internet data are well above the affordability of many and far beyond the capabilities of many millions of South African citizens, given also the need to cover the costs of shelter, food, transportation and the general welfare. Officials from ICASA seemed to differ in perspectives on the affordability of data in South Africa. The pricing of Internet data bundles in South Africa remains high compared with other developing African countries such as Tanzania and Mozambique where the telecommunication service providers are the same such as Vodacom. In Mozambique for instance, 1 GB of Internet data bundle costs around R30 on 4G networks while in South Africa Vodacom offers 1 GB of Internet data bundle only for WhatsApp social networking application, as a special offer. However, when asked to explain how ICASA maintains this huge pricing difference since Vodacom Headquarters is in South Africa, the official from ICASA argued that, in terms of quality, assuming that the quality of the services in South Africa are better when compared to those from other African countries. He noted that:

*We cannot compare the prices of data bundles of South Africa with other underdeveloped and developing African countries without involving the aspects of quality. I think the quality of services experienced by the South African citizens is better compared to most of these African countries with cheaper price rates on their data bundles. Personally, I have been in Mozambique and my experience with surfing the Internet was not much good. The Internet is slow in browsing and streaming or doing any other activities on Internet (Personal communication, November 21, 2018).*

The understanding of some of the policy-makers in South Africa regarding the affordability of Internet access, but rather it is about how and what the data is being used for. The official from ICASA interpreted the problem of affordability and campaigns against the high cost of data bundles as frustrations emanating from the lack of skills and how to use the Internet data bundles. The argument is that, people need to be educated on how to use the data effectively. He indicated that:

*I think the people need to be educated on how to use the Internet. Some do not know the difference between streaming content, videos or music files online and to download and watch later. Some stream a video and at the same time they will be downloading the video. Some individuals use the Internet for non-socio-economic and political benefits. Therefore, I think citizens need to be educated on the benefits that are associated with the Internet and on how best*

*the data bundles can be utilised apart from the social communication and updates (Personal communication, November 21, 2018).*

The theory of digital citizenship which stresses on the ability to participate in society on online environments (Mossberger, Tolbert and McNeal, 2008: 1), remains central in bringing closer digital technologies as the central aspect and imperative on the economic, political, cultural and social development of the developing nations. Therefore, policy reforms on practical aspects of digital technologies and development become imperative. The problem with the current policy reform measures is on interpreting Internet access and availability in terms of coverage and not on how the high prices of data bundles can be addressed in South Africa. When asked if there was a need to address the affordability of Internet access for the poor with a view to enhance opportunities for all, the official from ICASA said that the Internet in South Africa was to some extent affordable. He noted the Internet is affordable by saying:

*I think the Internet in South Africa is affordable. If you look, apart from the data packages that one can purchase from the telecommunication service provider, there are other free offers that can be offered to the customers. For example, Vodacom telecommunication service provider has introduced “just for you” offers that are more personalised to address individual data bundle and airtime needs. Vodacom also runs a programme called “summer gigs” that promotes the services by offering data bundles to individuals depending on the data bundles one spends every day. There is also the “play and shake” programme by Vodacom that promotes the services by giving rewards to customers in the form of gifts of data bundles and airtime each time they play using their mobile cell phones (Personal communication, November 21, 2018).*

It appears that, attaining digital economy requires an understanding of practical approaches based on theory to formulate new systems and strategies towards attaining Internet access in a timely manner. This requires putting in place a well-developed, systematic and rational regulated framework of systems to ensure that all relevant departments and institutions work positively towards to attain affordable Internet access in South Africa. This will enable the building of a digital economy with digital mobility

characteristics. A key factor is that digital technologies can help the nation to address socio-economic, political and cultural challenges in this age of digital mobility.

Despite the markets increasingly becoming liberalised, with several telecommunication service providers emerging, the Internet is still beyond the reach for most South Africans. The notion is that the high prices of Internet data bundles in South Africa require a rethinking of the regulatory framework to enable the citizens to participate in the global economy. Imperatively, the Internet provides new forms of equal opportunities for Individuals to participate in the global economy through online trade, forex, buying and selling online, the list is endless. The benefits that the Internet provides, makes the Internet to be important in this age of digital mobility where almost every aspect of business, social, economic and political spheres is going digital. This is in line with South Africa's agenda of creating a digital economy based on the information society.

## **7.7 Conclusion**

This chapter has presented, discussed and analysed the data that were collected from USAASA and ICASA officials. The data were analysed in a parallel engagement with universal service and access policy documents of South Africa. The interviews from officials from ICASA and USAASA were imperative to provide the basis on universal service and access policy approaches in South Africa, indicating the strength and potential failures towards attaining affordable mobile Internet. The key findings in this chapter are that universal service and access policy framework still focuses on providing fixed Internet access and there is a lack of knowledge among policy-makers on how affordable mobile Internet access can be achieved. The introduction of free Wi-Fi access did little to address the contemporary characteristics and demands of the mobile digital age but has extended the connection to be accessed on personal devices but from the same spot. In the next and final chapter, the research summarises and discusses the social implications of the findings presented in Chapter Six and Seven. The chapter further presents the research strength, potential limitations and recommendations towards achieving mobile Internet access and future research.

## **CHAPTER EIGHT**

### **FROM PUBLIC FIXED ACCESS TO PUBLIC MOBILE INDIVIDUALISED INTERNET ACCESS**

#### **(SUMMARY, DISCUSSIONS, RECOMMENDATIONS AND CONCLUSIONS)**

##### **8.1 Introduction**

Key findings of this study were provided in chapter six and seven respectively. This chapter concludes as an integrative chapter on the implications of the findings revealed in the preceding chapters on youths and Internet access in South Africa. It shows how communication technologies, affordability and high cost of data bundles affect approaches to universal service and access policy. This chapter also shows the relevance of these findings to the previous studies. In this study, the findings are discussed in relation to the experiences of the South African youths' uses of Internet data bundles, affordability and high cost of Internet data bundles. The limitations of this study are identified and recommendations for future studies provided.

The findings of this study largely indicate that there is limited access to mobile Internet due to the levels of affordability amongst students at the University of Limpopo. This assertion is justified depending on how the concept of affordability is discussed in this study. The concept of affordability, in this study, is engaged in relation to the following:

1. Flexible and affordable mobile Internet access among University of Limpopo students as a sample representative of youth in South Africa.
2. Affordability of mobile Internet access for multiple online tasks among youth in South Africa, which include being able to create, share and receive content online.
3. Affordability of mobile Internet access that enhances the socio-political, economic, and educational participation among youth.

Similar to previous studies such as Resnick (2002); Loader (2007); Hargittai and Hinnant (2008) and Oyedemi (2012) that claim that young people, especially university students have limited Internet access, this study also claims that University of Limpopo students have limited Internet access because of the high cost of mobile Internet data bundles. It must be acknowledged that most of the population in South Africa do not have access to the Internet and are limited from tapping the benefits of Internet access because of the high cost of Internet and affordability that is beyond the reach of many South Africans. Therefore, this limited Internet access is used for limited Internet activities and low participation in socio-economic, political and cultural aspects of life. Not being able to connect to the Internet, especially mobile Internet access, results in the university students (youth) rallying behind public forms of connection that have varied constraints.

## **8.2 Achievement of the research questions**

This research has achieved the goals set at the onset of the study. This study was set to examine the patterns of mobile Internet access and affordability among youth, explore the universal service and access policy strategies relevant to the digital age and to explore the possible ways of addressing access to the Internet relevant to the age of digital mobility through universal service and access policy.

- ***What are the patterns of mobile Internet access and affordability among youth in South Africa?***

This study was set to investigate the patterns of mobile Internet access and affordability among youth in South Africa using a sample population of the University of Limpopo students. The findings of the study reveal that most of the student respondents cannot afford regular mobile Internet data bundles with only 16.7% of the student respondents from the urban areas indicating that the Internet mobile data bundles are high, but they can afford to purchase the Internet data on a regular basis. The findings of the study have shown the significant influence of geographical location to the patterns of mobile Internet access and uses among the University of Limpopo student respondents. For instance, students from the city (16.7%) reported that the purchasing of Internet data bundles is expensive, and they cannot afford. This is a different experience of students



from the villages (42.4%) who reported that they cannot afford to purchase Internet data bundles because it is expensive. Hence, students from the villages are more disadvantaged in terms of affording Internet data bundles. This goes beyond what the previous studies by Hargittai (2001); DiMaggio and Hargittai (2001); Gillwald (2005); Hargittai (2010) and Cerf (2012) observed on the socio-economic constraints that impede Internet access in terms of digital skills, lack of training, unbalanced family income and the autonomy of use. The findings of this study reveal that affordability of Internet access influences the uses and skills constraints online.

The findings of the study show that a slightly above half of the student respondents (55.3%) can only afford R10 – R50 of Internet data bundles. This portends the low levels of access and uses of mobile Internet data bundles among youth in South Africa. For instance, according to the Broadband Choices (2019), a guide to mobile Internet service, indicates that sending an email, without an attachment, requires 15 Kilo Bytes (KB), while uploading a social media post with an attached photo requires 500 KB data consumption. On the other hand, the challenge of affordability is also heightened with the mobile data costs packages on prepaid that are very high. For instance, the Vodacom network service provider in South Africa costs R55 for 325 MB per month on a special offer called – ‘*Just4You*’ – package option. Thus, little can be achieved online with the purchasing of Internet data bundles for only R10 – R50. This expands the literature on the study by Oyedemi (2012) that observed skewed Internet uses and online activities in terms of different family income levels in South Africa. Hargittai and Dobransky (2017) observed that little can be done online due to lack of digital skills.

Moreover, mobile Internet access is the most preferred mode of Internet access by most of the University of Limpopo students where 59.5% of student respondents come from the townships. However, even though the students prefer the use of mobile phones to access Internet, the constraints of affordability and high cost of Internet data bundles make most students to rally behind public forms of Internet connection such as the access through the university computer laboratories and university campus Wi-Fi hotspots. This is similar to the finding by Oyedemi (2012) on the implications of social inequalities and different income levels among families in South Africa that results in

most youth accessing public forms of Internet at Thusong centres, public libraries and university campus computer laboratories. However, the campus computer laboratories in some institutions such as the University of Limpopo are limited with the activities one can do online. For example, some social networking sites are blocked, hence creativity online is restrained.

The study reveals that the high use of WhatsApp and Facebook mobile applications among students, with 78% of the student respondents from the village reporting to use a significant portion of their mobile Internet data bundles on WhatsApp, is explained by the fact that most of the telecommunications service providers in South Africa have been lenient with the mobile Internet data bundles prices for WhatsApp. For instance, Vodacom service provider has a *WhatsApp Ticket offer* of 1Giga Byte (GB) Internet data bundles for 30 days at R35, while Cell C is at R20 for 1 GB for 30 days and MTN at R30 for 20 days. These are the lowest prices charged for all the networks compared to any other online social activity Internet data bundle purchases. A considerate use of Facebook among students with 50.3% of the student respondents from the rural areas reported that they use Facebook because Facebook Lite mobile application allows for individuals to access Facebook for free using Internet enabled devices. Although the Facebook Lite provides limited features in showing photographs and uploading videos or photographs, it remains ideal for most people's preference when they go online since very few students can afford the purchasing of Internet data bundles. This expands on the study by Gupta (2016) which observed that the move by Facebook to introduce Facebook Lite as a relatively cheap alternative was to show value on the customer to continue using Facebook despite the market challenge.

Also, the findings of this study have shown that digital skills, interactivity and creativity are constrained because of the high cost of Internet data bundles. For example, 95% of the student respondents reported that they do not have a personal blog or a personal website for free such as WordPress. Most of the students (71.5%) reported that they do not have Twitter accounts. Among the students who claimed to have Twitter accounts, only 3.5% reported that they post videos on their timeline on Twitter. The reason for not uploading videos or updating personal statuses on their social networking platforms

such as Twitter is that the Internet data bundles are expensive to purchase. For example, 75% of the student respondents from the city claimed that they hardly upload videos on Twitter since purchasing Internet data bundles is expensive. The findings of this study expand the literature on digital inequalities in terms of digital skills (DiMaggio and Hargittai, 2001; Livingstone and Helsper, 2007; Hargittai and Hinnant, 2008), revealing that inequalities in digital skills are linked to the high cost of Internet data and affordability. This means, prior experiencing skills and uses digital constraints, Internet access is important.

- ***What is the effectiveness of government universal service and access policy in addressing the affordability of mobile Internet i.e. Data bundles, among citizens in South Africa?***

This study was also set to investigate the effectiveness of government universal service and access policy on addressing affordability and high cost of mobile Internet data bundles. The findings have shown that government together with the Universal Service and Access Agency of South Africa (USAASA) is still focusing on the provision of fixed Internet access through Thusong centres, public hospitals, public schools and community library centres. The government has also embarked on other strategies to extend fixed Internet access through the provision of public Wi-Fi hotspots mostly at these public centres. However, the Wi-Fi Internet access (hotspots) by the government can still be viewed as fixed in the sense that it can be accessed within a specific public centre where the Wi-Fi is installed. This goes beyond what Furuholt and Sæbø (2018) observed that the combination of mobile Internet access and fixed Internet access, through Telecentres, is the future alternative of providing Internet access. The findings of this study indicate that the future of Internet connection is mobile, hence the government through the universal service and access policy could provide individualised mobile Internet access through subsidising needy persons.

The new aspect through the Wi-Fi hotspots is the idea that individuals can now connect to the Internet using their smart mobile phones at these public centres. Therefore, the Public Wi-Fi Policy Paper (2016) which proposes and intends to develop smart cities in South Africa based on the rationale of providing Internet Wi-Fi hotspots is skewed

towards specific access points and still fails to address the mobility aspect of Internet access that is characterised by the digital age – Internet-on-the-go. This approach also limits Internet access to geographical locations through the provision of Internet Wi-Fi hotspots access in the cities meanwhile neglecting the rural areas. This approach has received much criticism among scholars. For instance, Gibbons and Ruth (2006) argue that the initiatives to expand Internet Wi-Fi access points should extend to all municipal areas.

Also, the findings of this study indicate that there is lack of determination among policy-makers for the provision of mobile Internet access on assumptions that mobile Internet access is not a priority to harness the socio-economic ills that the country is facing. This correlates with what Oyedemi (2012) found out that policy-makers and government officials think that addressing the social inequalities can be achieved through the provision of secondary resources such as shelter, food, electricity and water.

The findings of the study show that the government has been focusing on subsidising the telecommunications service providers such as MTN and Vodacom to extend Internet accessibility in South Africa. This is a strategy envisaged in the South Africa's NDP for broadband expansion. The aim is to attain a seamless information infrastructure by the year 2030 that supports a vibrant information society (Broadband Policy South Africa Connect, 2013). However, according to Business Tech (2019) research on the biggest social media and chats, the overall Internet penetration rate is at 54%, representing over 31 million people online in South Africa. This indicates a growth of 7% internet penetration from the year 2017. Therefore, from the global best practices and of a country inspiring to be an information society, the penetration growth is still below par. Lessons that can be learnt from this practice by the government or the policy-makers is that subsidies to the telecommunications service providers to extend the Internet reach is not linked to the actual uses of the Internet, but affordability does. This is similar to what Lewis (2013) found out that the Universal Service Fund in South Africa did not contribute the actual uses of Internet access.

- ***What are the universal service and access policy strategies relevant to the age of digital mobility?***

The findings of this study indicate that the universal service and access policy strategies are still focusing on providing universal access – provision of fixed public Internet access – neglecting the universal service – which focuses on providing Internet access to individuals. Some causes of this emanate from the lack of knowledge among policy-makers about how mobile Internet access can be achieved in South Africa. This universal service and access policy framework is not addressing the needs and demands of mobile Internet access in this age of digital mobility. The findings of the study indicate that the strategies by the policy-makers and government are constrained against the background of socio-economic disparities of South Africa. However, to enable individuals with the capacity to grow themselves, the government and policy-makers should strive to seek solutions that can sustain growth and development in the digital age. Focusing on subsidising mobile Internet access for the needy persons is relevant to provide primary resources to citizens (Servon, 2002). The government can use the same way used to locate the disadvantaged citizens to build houses under the Rural Development Plan to allocate them Internet subsidies.

In South Africa, there is the Universal Service and Access Fund (USAF) that was established under the Electronic Communications Act (ECA) to fund projects and programmes that aim to achieve universal service and access in the country. There are established funding mechanisms towards the universal service and universal access in South Africa. However, the findings of this study reveal that there is a challenge regarding the way these funds are distributed. The emphasis on expending the USFs focus on digital skills development through computer literacy projects within communities and the maintenance of fixed public Internet access at Thusong centres, telecentres, community libraries, public hospitals and public schools and less focus in the contribution of mobile broadband affordability. This is similar to what Lewis (2013) observed that the Universal Service Fund (USF) interventions did not contribute to the upsurge of mobile Internet access.

- ***What are the possible ways of addressing affordability issues regarding youth access to mobile Internet?***

The findings of this study show that the patterns of mobile Internet access among youth are significant indicators to the government and policy-makers to expand universal service and access policy to focus on providing mobile Internet access to the needy persons. This will be a relevant and significant policy approach to address the demands of digital mobility. Policy approaches towards attaining affordable mobile Internet access in South Africa should involve comparative insights from other developing nations. This is done to compare price rates and how the service providers justify their pricing for the same services rendered, especially where the same service providers can be found.

The government and policy-makers need to benchmark with other nations' mobile Internet policies on pricing and affordability, especially with countries that have managed to attain affordable mobile Internet access. For instance, the Alliance for Affordable Internet (2017) shows that South Africa was at 2.50% price, as percentage of income, in the year 2017 price of broadband data of 1 Giga Byte (GB) on prepaid. This was high compared to other developing countries such as Egypt which was at 0.33%, India at 1.53%, Botswana at 2.19% and Morocco at 2.21%. Subsequently, the study by Omarjee (2019) observed that South Africa is ranked number 143 out of 230 countries for Internet data pricing and affordability. The study indicates that in India 1GB cost \$0.26, compared to an average of \$7.19 per 1GB in South Africa in October and November in the year 2018. The global average of 1GB was observed to be at \$8.53. This presents a critical situation for South Africa, especially when the government aspires to be part of the global economy and to build a vibrant information society by the year 2020 (Broadband Policy, 2013).

The current universal service and access policy together with the policy documents such as the South Africa Broadband policy (2013) seem to be interpreting the problem of Internet access in terms of “*always-available*” and not on how the “*always-on*” Internet connection can be achieved. However, these initiatives by the government and the policy-makers provides a significant roadmap towards providing Internet access to citizens. Lessons learnt from this study are critical to understand and map the demands

of future Internet connection in the age of digital mobility. Policy-makers and government should be focusing on achieving mobile Internet access through reform-policies on a legislative level. In line with this approach, studies by Mansell (2002); Mossberger, Tolbert and McNeal (2008); Kravets (2011); Oyedemi (2014) confront digital inequalities from the citizenship entitlements and rights.

The telecommunications policy approach should control the market structure's tendency of benefiting the markets while neglecting the mobile Internet connection to Individual capacity (Servon, 2002). Subsequently, this study is not promoting the government to subsidise mobile Internet access for needy persons, as an act to justify and embrace the high Internet data bundles prices by the telecommunications service providers, but it is exploring practical solutions towards attaining affordable mobile Internet access for the needy persons in the age of digital mobility.

### **8.3 Social implications of high cost of data in South Africa and recommendations for redress.**

The findings of this study indicate that there is a relationship between the affordability of Internet data and patterns of social inequalities among individuals. The implications on the patterns of mobile Internet access have a bearing on the existing social inequalities. The findings from this study have two critical implications to the patterns of social inequality in South Africa. Firstly, the study reinforces the argument that digital inequalities, especially through the high cost of data and affordability, should be approached and seen as important as any other social resources such as housing or access to education. Secondly, the study indicates that unless universal service and access policy framework shifts from focusing on addressing the fixed Internet access to mobile Internet that is characterising the digital age, digital inequalities will continue to exist.

#### **8.3.1 Implications for participation in the age of digital mobility, and recommendations**

The mobile technology and wireless Internet connection have shifted the way people might have imagined communication in the past. Individuals can now communicate from

anywhere at any time – an always-on culture. This has an implication on the universal service and access policy. Universal service seeks to address the individual Internet access and the universal access focuses on addressing public Internet access. The universal service policy approach becomes ideal for this digital age to address the individual connection rather than the focus on public connection. Digital communication has become an on-going phenomenon. Therefore, the establishment of telecentres or provision of Internet access through community libraries and telecentres should be a complimentary service by the government to support broadband connection. This is similar to what Walmark and Beaton (2011) have discovered that the key focus for universal service and access policy reforms should be on addressing the discrepancies of access to broadband in support of the multipurpose community telecentres. O' Hara and Stevens (2006) observed that policies by government to bridge the gap narrowly focus on providing physical access and neglect the problem of individual access.

The South Africa's Broadband Policy (2013) aims to achieve a universal average download speed of 100 Megabits per Second (mbps) by 2030. According to this policy, for this to be achieved, 5 mbps was set to be attained by the year 2016, and this to be available to 50% of the population, and to 90% by the year 2020, with the quality of services monitored by ICASA. However, the policy targets are still widely set to expand public access connection at institutions at the national, provincial, and municipal levels such as schools, hospitals and clinics. Although the establishment of public Internet access is rational, the focus on mobile Internet access is more important given that most of the student respondents in this research indicated that their preferred mode of Internet access is through mobile cell phones with 91.7% of the student respondents from the urban areas as the highest. From the interviews with the officials from ICASA and USAASA, it is clear that the focus on fixed Internet access rather than mobile is explained in terms of budget constraints and prioritisation of needs by the government. However, this study cautions that the government needs to expand Internet access to focus on mobile Internet access. This can be achieved in rural communities through the allocation of annual budgets under the Rural Development Programmes (RDP).



The findings of this study also observed that barriers such as digital skills and uses of Internet access are likely to continue widening if individuals remain unconnected. Online participation does not only require the digital skills, but also affordability of Internet access. This goes beyond the findings of digital inequalities in terms of skills and autonomy of use (DiMaggio and Hargittai, 2001; Hargittai, 2001; Livingstone and Helsper, 2007; Junco, 2013; Lee, Park and Hwang, 2015; Pénard, Poussing, Mukoko and Piaptie, 2015; Chetty, Aneja, Mishra, Gcora, and Josie, 2017), emphasising that affordability determines the autonomy of uses and enhances the digital skills through individual connection and actual practice. Mobile Internet access is imperative to ensure that individuals can participate and contribute meaningfully in the social, economic and political spheres in this digital age. Some policy makers worry that some citizens do not possess the relevant digital skills necessary to tap the benefits associated with the Internet. Improving people's lives through Internet access requires the provision of preferred modes of Internet access. Digital skills and developmental uses of Internet among citizens can be revamped through the provision of individualised mobile Internet access. The provision of mobile Internet access could be carried under the National Development Plan (NDP) and youth development programmes.

The findings of this study observe that the amount of time youths spend online, and the variety of activities accomplished online are inevitably influenced by the affordability and the high cost of Internet data. Consequently, the skills and uses gaps in digital inequalities (Hargittai, 2002; Van Deursen and Van Dijk, 2011), should be approached from the problem of affordability and high Internet data. Digital skills are learnt online and practical. For example, people can learn how to trade online through social networking sites such as YouTube, leading to the actual trial and practice of *forex trading* online. Individuals learn how to accomplish activities online through being online and having access to digital devices. For instance, it is rare for one to be taught how to upload a profile picture on their social networking sites or comment on an online discussion. This study indicates that students who claimed to afford Internet data bundles spent more time online, showing to be creative and accomplishing more online than those without access. While previous studies such as Chetty, Aneja, Mishra, Gcora, and Josie (2017) indicate that digital skills are a catalyst for the poor to break the

cycle of poverty and empower themselves through digital technologies, this study reveals that affordability is equally important for individuals to benefit from digital technologies.

The findings of this study indicate that in South Africa the costs of data bundles are well above the affordability of many and far beyond the capabilities of many millions of South African citizens, given also the need to cover the costs of shelter, food and the general welfare. This shows that despite the markets being liberalised, with several telecommunications service providers operating, Internet access is still beyond the reach of most South Africans. Although most scholarship has put forward the benefits associated with the Internet (Naismith, Lonsdale, Vavoula and Sharples, 2004; Ishida, 2015; Sassi and Goaid, 2013; Jin and Cho, 2015; Asongu, 2015; Salahuddin and Gow, 2016), this study links the celebration of the Internet as a panacea for socio-economic and political opportunities to affordability and the high cost of Internet data.

The findings of this study show that the current universal service and access policy reform strategies are narrowly interpreting Internet access in terms of “*always-available*” and not on how the aspect of “*always-on*” can be attained. This has resulted in the USFs and the government subsidising the telecommunications companies to extend broadband networks. The substitute Internet access that remains for needy persons is through fixed public Internet access that has varied constraints. Table 8.1 below shows the basic differences between fixed public Internet access and mobile public Internet access.

**Table 8.1 Basic differences between public fixed and mobile individualised Internet access**

<b>Public Fixed Internet access</b>	<b>Public Mobile Internet access</b>
<b>Internet access</b>	
Fixed Internet access:	Flexible mobile Internet access:
Access is largely gained in public places such as community libraries and academic institutions.	Access is largely gained through mobile devices such as the cell phone and Wi-Fi routers that

	will connect multiple mobile devices.
Cost of access is free.	Cost of access is on individual capacity and meaningful access is limited to those who can afford.
<b>Uses</b>	
Restricted uses of Internet access usually limited to surfing the Web and opening Google mails. Socio-economic uses are restricted to surfing the Web and limited social networking. For example, the Internet access at the community library cannot allow individuals to be on Facebook.	Unrestricted uses of Internet access that is intensified by the internet-on-the-go culture of digital mobility. The only restriction is through affordability and digital skills.
The Internet is accessed and used in fixed points.	Individual content creation is a continuous activity using mobile devices.
Content creation is limited through the uses of firewall software that is used to filter network traffic.	The restriction is the amount of data one can afford on the Internet-on-the-go using mobile devices.
Content creation can be limited with time allocation of government fixed Internet access such as Internet access through community libraries meaning less can be achieved online.	Content creation is limited with the skills and affordability of Internet access. For example, if one can afford less Internet data, then little can be achieved online.
<b>Policy</b>	
Policy approach is usually focused on providing fixed Internet access. For example, the provision of fixed public Internet access on community libraries, public schools and public hospitals.	Policy approach emphasise individual Internet access. This implies that Internet access is through individual devices. For example, providing mobile Internet access through mobile Internet subsidies.

### 8.3.2 Implications for education in the age of digital mobility, and recommendatios

The contemporary education and learning are increasingly incorporating virtual learning environments through the Internet. For instance, the use of WhatsApp mobile

application has been celebrated by many scholars (Rambe and Chipunza, 2013; Susilo, 2014; Willemse, 2015; Raiman, Antbring and Mahmood, 2017). The problem with these studies is that they neglect the aspect of affordability of Internet access to ensure the always on and always connected Internet. Most of the students at the University of Limpopo do not reside at the University residences or the campus where they will be having access to campus Wi-Fi and campus computer laboratories. Since most of the students (96%) reported to access Internet on prepaid with 55.3% affording only R10-R50 per month, this has implications on their experiences and benefits of using WhatsApp for academic purposes, especially with the seamlessly transmission of messages on WhatsApp study groups as indicated by Rambe and Bere (2013).

To ensure the incessant online academic participation and seamless communication to occur, the universal service and access policy needs to focus on mobile Internet access rather than fixed Internet access. Indeed, for South Africa to be part of the global best practices on universal service and access policy, in terms of Internet access, it needs to address universal service policy framework, identify the impacts and account for potential shortcomings. While this research acknowledges the South African Broadband Policy (2013) – *South Africa Connect: Creating Opportunities, Ensuring Inclusion*, as a roadmap for initiatives aiming at providing Internet access to the citizens, lessons from this study are critical to map the demands of the future Internet connection in the age of digital mobility.

Research has shown that mobile technologies have the potential to foster a new expansive academic communication stance. The use of WhatsApp for educational purposes has been celebrated by many. For example, Echeverría, Nussbaum, Calderón, Bravo, Infante and Vasquez (2011); Hwang, Huang and Wu (2011); Caverly (2012); Rambe and Bere (2013); Lauricellaa and Kay (2013); Bapurao and Subhash (2015); Ali, Islam and Hoque (2016) indicate that WhatsApp has the potential to increase access to academic content, fostering academic interaction among students. Consequently, Motiwalla (2007: 584) envisaged the usefulness of mobile technologies in the learning environment as inevitable. This study is critical to the seemingly positive “consensus-based” approach to the celebration of mobile technologies for academic

purposes. It seems that the potential use of mobile technologies has been oversimplified, only its virtues celebrated with vigour, leaving no room for ambiguity to speculate potential challenges and limits towards an inclusive application of this technology for academic purposes. The findings of this study reveal that unless affordability and the high cost of Internet data is resolved, many youths will be left out from experiencing the benefits associated with Internet for education.

#### **8.4 Implications for universal service and access policy, and suggested recommendations**

*“The modern industry is increasingly establishing the world markets as capital based, pushing back the economic approach into the background history of class struggle”*

(Karl Marx and Frederick Engels, 1953).

In most developing nations, capital-based markets are increasingly shaping the socio-economic, political structures and policy reforms of those countries. The telecommunications reform policies in South Africa are also capital influenced. The focus of universal service and access policy framework on extending the availability of Internet access and not on improving affordability to enable the poor to access the Internet is beneficial to the neo-liberal state. This is similar to what Stevenson (2009) discovered that rhetoric on the digital divide that stresses the establishment of physical and public access and relegating individual access to individuals, is beneficial to the neoliberal agenda. The provision of mobile Internet access will undoubtedly assist in unveiling the opportunities available to different groups of the population in this digital age. Unless this is achieved, inequality in terms of class will always remain in the discourse of digital inequalities. This has the implication that those who are poor will remain poor while those who are rich will become richer.

The State interventions and targets of the Broadband for South Africa (2013) seem to be limited and skewed in several areas of shortfalls. The support for affordable broadband that help facilitate development in all spheres of life as declared in the Broadband policy for South Africa (2013) has not moved from being rhetoric to practical action and agenda that ensures socio-economic and political stratification in the digital

sphere by citizens. The digital divide continuum which can be measured in various ways and aspects such as access versus non-access, the skilled versus the unskilled, activities and the amount of time spent online are all influenced by affordability of Internet access. Hence, it could be imperative for the government to subsidise mobile Internet access for the needy people to lessen the gap between the “information-rich” and the “information-poor” in the digital age.

Making Internet networks access, 3G, 4G or the next-generations, available to all South Africans is not directly linked to the problem of having access to the Internet. Affordability of Internet access is the key and a determining factor. The government could initiate a legislation or design a policy that recognises access to Internet as a basic need and as important as other basic needs such as food and shelter. In line with this approach, studies by Servaes and Malikhao (2007); Servaes (2013) and Oyedemi (2014) confront social inequalities through highlighting the importance of providing primary resources such as Internet that can allow individuals to develop themselves. Servaes (2013) indicates that digital technologies are imperative to provide the resources necessary to break the circle of poverty among the poor. Thus, the importance of mobile Internet access in this digital age is binding for the government to initiate the deployment of Internet access to the poor through subsidising. This goes beyond what Oyedemi (2014) has observed that the government can provide Internet access to needy persons using the same programmes used to allocate shelter and electricity under the Rural Development Program (RDP) initiatives. However, this study proposes that the government, through the universal service and access policy and USFs could subsidise mobile Internet access for the poor, for example, 1GB monthly. The same criteria used to locate poor people to provide them with RDP houses can be used to locate the needy persons to provide mobile Internet subsidies monthly.

The universal service and access reform policy need to be flexible to complement existing efforts in confronting the challenges of the digital inequalities in the age of digital mobility. According to Fukuda-Parr (2003); Narasimhan, Brown, Pablos-Mendez, Adams, Dussault, Elzinga, Nordstrom, Habte, Jacobs, Solimano and Sewankambo (2004); Porter and Ronit (2006) policy reforms should have a human aspect, financial

capacity and the independence to adopt the task of regulating. The universal service and access policy reform in South Africa has been one-sided, focusing on providing fixed public Internet access, neglecting the mobile Internet access to individual capacity. Consequently, if Internet access provides the channel to information access, participation and sociability for everyday online citizenship activities (Oyedemi, 2014), the focus on the provision of mobile Internet access becomes essential in the digital age. Access to individualised mobile Internet is an affirmation of equal opportunity for socio-economic and political participation to all citizens in the creation of a digital economy.

The contemporary world and the socio-economic, political and cultural aspects are increasingly becoming technologically driven and technologically dependent. Hence, mobile Internet access is important to ensure always-on Internet access. The Internet provides access to the global markets, banking, social networking sites, participation, learning, entrepreneurship and information. The digital age marks a historical shift of focus from fixed public Internet access to mobile Internet access. This has implications on the universal service and access policy to expand the Internet access to focus on mobile public Internet access rather than only focusing on fixed public Internet access. Consequently, the provision of mobile Internet access will also address the challenges of elderly people and the physically challenged individuals on accessing fixed public Internet access (Oyedemi, 2004). According to Oyedemi (2004), there is a need to address different categories of individuals with special needs such as those physically impaired under the universal service and access policy. There might be few, if any, established Telecentre that caters for physically impaired individuals in South Africa since it is quite expensive. Therefore, this implores the universal service and access policy to focus on the provision of individualised mobile Internet access as an inclusive mode of public Internet access suitable for all categories of people in South Africa.

The findings of this study present an opportunity for the policy-makers on Internet access to respond to the mobile characteristics of Internet connection in this digital age. The focus should be on recognising the more practical solutions towards providing personalised Internet access to citizens in South Africa. Key areas and factors that

policy-makers should be focusing on to effect positive outcomes are clear. The government should provide mobile Internet subsidies to the needy persons. Unless the government, through the universal service and access policy, employ strategies that seek to provide individualised mobile Internet access, the policy attempts that focus on providing fixed public Internet access remains useful but limited in the age of digital mobility where convenient access to Internet is through smart mobile phones.

### **8.5 Implications for universal service funds, and suggested recommendations**

Universal Service Fund (USF) is a funding system intended to fund and achieve universal service and access policy goals in South Africa. Achieving universal service and access initiatives requires government funding through generated revenues and annual budget allocations. This research has revealed that the USF is used to fund the roll-out and maintenance of fixed public Internet access at public schools, public clinics, Thusong centres, Telecentres, community libraries and fixed Wi-Fi hotspots mostly at these public centres. This correlates with what Lewis (2013) found out that despite various telecommunications amenities that the USF can fund, much emphasis has been on funding fixed public Internet access. The Research ICT Africa (2016) also asserts that the USF is channelled to fund the maintenance of Telecentres. However, with the mobile Internet access increasingly characterising the digital age and the preferred mode of Internet access by most youth, the USF should be expanded from focusing on fixed public Internet to focus on providing mobile public Internet access.

This study revealed that devising structures that facilitate the channelling of funds to mobile public Internet access for citizens is important. USFs intervention should be accompanied by structures that manage and administer the roll-out of funds. This will enhance accountability and relevance of channelling the funds in addressing the mobile public Internet access. This correlates with what Lewis (2013) said that the expenditure of the USFs needs to be monitored to ensure relevant spending on expanding the telecommunications services to the people.

There are several funding sources that are identified and discussed in the broadband policy of South Africa. The first one is the Department of Communication, Neighbourhood Development Partnership Grant, Department of Rural Development and



Land Reform, Media Development and Diversity Agency (MDDA), Sector Education and Training Authorities (SETAs), the Universal Service and Access Fund (USAF) and the Skills Development Fund. These funds with a proper management and regulation could effect change. Currently, the funds are directed for enhancing digital skills development programmes, the provision of fixed public Internet access and maintenance of Telecentres and the public fixed Internet access centres.

This study revealed that the sustainability and maintenance of fixed public Internet access is a challenge and costly. A study by Fortier (2003) observed that various attempts to provide information networks to rural areas through telecentres failed to serve the actual needs of the rural communities to be economic viable. A study by Rauniar (2008) also observed the challenges of fixed public Internet access by its virtue of being public, that the centres are likely to be vulnerable to misuse including conduct of cyber-crimes. The study by Oyedemi (2004) observed that some communities vandalise the Telecentres Internet infrastructure and steal the Computer Processing Monitors, Keyboards and other computer hardware properties. A study by Benjamin (2002) observed that the telecentres and their roles were misunderstood in South Africa, with the initiatives such as Vodacom Phone shops and the Multi-Purpose Community Centres by the government encountering resistance, and public Pay Phones were vandalised. However, the provision of mobile public Internet access through a subsidy could be helpful to circumvent all these problems. This implies a shift from the USFs to expand the provision of fixed public Internet access to mobile public Internet access.

## **8.6 Implications for theoretical approaches towards digital inequalities and recommendations for redress**

The structuralist approach to digital inequalities limits access to physical access, it remains an important step in unveiling access gaps in terms of rural-urban divide, high-income and low-income gaps. On the other hand, the culturalist approach to digital inequalities expands digital technology gaps to focus on inequalities in the autonomy of use, skills inequalities, access to technological devices and the variation of uses. These approaches lead to the universal access policy strategy that focus on providing fixed

public Internet access, with little attention to universal service policy approach that intends to focus on the provision of public Internet access to individuals. Thus, the focus on mobile public Internet access has an appeal that is effective in the explanation of digital inequalities in this digital epoch and provide a rationale for universal service and access policy to expand Internet access from fixed public Internet access to mobile individualised Internet access. Thus, policy approaches to universal service and access should be engaged under the postmodernist theoretical approach to digital inequalities.

The findings of this study support the postmodernist theoretical approach to digital inequalities as providing a relevant theoretical perspective and a more fine-graded set of distinctions on how social inequalities exist in the mobile digital age. The findings of this study indicated that approaches to Internet access in policy terms should focus on mobile Internet access, especially under the universal service and access policy. The postmodernist approach to digital inequalities is a paradigm shift to the framing of ICT gaps focusing on the individual (Oyedemi, 2016). This study advocates a paradigm shift of the provision of Internet access under the universal service and access policy from providing fixed mass Internet access to focus on providing mobile individualised Internet access through subsidising the needy people.

Concepts such as social inclusion and digital citizenship are used to link the digital technology access in ways that enhance meaningful participation, equality and empowerment (Servaes, 2013). The postmodernist approach to digital inequalities provide lenses to engage digital inequalities in the digital age through the multidimensional approach engaging of the universal concepts such as human rights and citizenship (Cerf, 2012; Best, 2004; Wicker and Santoso, 2013; Tully, 2014; Oyedemi, 2015). The postmodernist discourses on digital inequalities focus on the individual capacity to access Internet. This research has explored the financial capital – affordability and high cost of Internet data – as a contemporary constraint to Internet access. This expands the theoretical framework by showing that mobile public Internet access is a value-producing opportunity that can redress the problem of digital inequalities in this digital age. The opportunity to address this gap presents itself

through the universal service and access policy of South Africa to which this study adds that the policy needs to focus on the provision of mobile Internet access that is the preferred mode of Internet access in this digital era.

### **8.7 Concluding arguments**

The summary of the whole research and the arguments proposed in the study are:

- The popular mode of Internet access in today's digital age is increasingly through mobile Internet access and connection.
- Fixed public Internet access such as access through telecentres and community libraries has some challenges and does not meet the flexible nature of mobile Internet culture of today.
- The provision of public Wi-Fi Internet access is still in the form of fixed Internet access that can be accessed in specific points. Hence, it is also limited in meeting the demand of a mobile generation.
- There is a need for the use of Universal Service Funds to fund the public mobile Internet access that subsidises personal individualised access.
- Every needy person should be subsidised through a minimum amount of Internet data, for example, 500 MB every month.
- Needy persons will be identified as defined in the South African universal service and access policy for Internet connection.
- This definition may also be based on identifying a certain threshold of family income as a requirement for subsidised individualised personal access to the internet.
- This personalised access does not cancel the fixed public access, but it helps to expand access in an increasingly digitally mobile generation.

### **8.8 Limitations of the study**

Limitations of this study refer to the weaknesses that were noted in the entire study. In this instance, the following limitations were noted:

Although the sample population used for data collection is relevant to inform the objectives set for the study, the population is small. Only the University of Limpopo students might not suffice to inform the social inequalities and patterns of mobile Internet access, representing other students that were not part of this study from other institutions, and those not at universities and colleges. Although the data are limited in this scope, they provide a representative picture of mobile Internet access among the South African university students, which is a relevant group for studying digital technologies and understanding of the future patterns of accessing the Internet in South Africa.

There are many policy documents that aim to address the problem of Internet in South Africa. However, the discussed Broadband Policy of South Africa - *South Africa Connect* (2013) is current and highlights on initiatives by the government to extend broadband connection to the otherwise unconnected by the year 2030. The scope of this study also limits the number of policy documents that can be consulted. The policy documents were engaged from a descriptive level, focusing on the discourses of universal service and access policy frame and programmes implemented.

Also, the other problem might be that the sample population of students used in this study comprises one race, that of black students only. This is due mainly to the fact that University of Limpopo is a predominantly black university and located in the rural areas of South Africa far from the historically dominant cities of South Africa such as Johannesburg whose university surroundings comprise mixed racial groups. Therefore, studies on other different racial groups need to be conducted.

Although the data collected through questionnaires were loaded and analysed on SPSS for accurate description, there was no gender and demographic parity during the collection of data to ensure an even and balanced population representation in this study.

## **8.9 Recommendations for future studies**

The researcher believes that the income levels of university students are linked to the affordability patterns of mobile data bundles a student can afford monthly. Therefore, I

suggest that future research on the patterns of mobile Internet access should investigate deeper to find the actual location where the student comes from. This will impact a move away from the notion of asking a student if they come from the city or urban area in a general way but to ask a specific area in the urban area to get a full picture of the student's demography. I believe there is a difference between those who come from the suburban areas and those who come from the Ghetto. Perhaps within the urban/city area alone, a researcher can identify different classes of parent's income levels that can have an impact on the affordability of mobile Internet access by a student.

I believe that a study that can include the youth not in the universities and colleges can expand the true reflection of the lived experiences of the youth and the access of mobile Internet access in South Africa. Subsequently, a large population of students such as including more universities and colleges to the sample population can also broaden the results and implications of the high cost of Internet data bundles and affordability in South Africa.

### **8.10 Summary**

Chapters in this study were outlined as follows:

#### **Chapter One: Introduction and background of the study**

In chapter one of this research, the researcher discussed the background, the aim and focus of the study. As already mentioned, the study was set to investigate the influence of affordability and high cost of data on the uses of mobile Internet access among the youth in the age of digital mobility using the University of Limpopo as a case study. Also, the universal service and access policy framework was outlined to be engaged from the perspectives of two officials, one from ICASA and the other from USAASA.

#### **Chapter Two: Internet, digital mobility and digital dividends (Literature Review)**

Chapter two of this research engaged the literature on the issues around the Internet, digital mobility and digital dividends. The chapter discussed the practices and the increasingly importance of mobile Internet in the digital age within the socio-economic and political context.

### **Chapter Three: Digital inequalities and universal service and access policy (Literature Review)**

Chapter three of this research engaged the literature on digital inequalities and universal service and access policy frameworks. The chapter discussed the background of achieving universal service and universal access under the telecommunications reforms with reference to different countries in Africa and beyond. The chapter also highlighted on the factors impeding the attainment of universal service and the shortfalls of the policy in South Africa.

### **Chapter Four: Social inequalities and digital inequalities: A Theoretical framework**

Chapter four of this research provided the theoretical framework adopted in this research. The theoretical framework of this research focused on the social inequalities and digital inequalities stressing the different dimensions of social and digital inequalities from the structuralist, culturalist and the postmodernist approaches.

### **Chapter Five: Research methodology**

Chapter five of this research provided an in-depth discussion of the methodological procedures used in this study. This research adopted the mixed method research approach. The chapter also discussed the research paradigm, research design, sampling, data collection methods and data analysis.

### **Chapter Six: Youth Internet access and affordability (Data presentation, discussions and analysis)**

Chapter six of this research focused on the presentation, interpretation and discussion of data that were collected through a survey from the University of Limpopo students. The chapter discussed the findings of the research solely based on the data collected.

### **Chapter Seven: Universal service and access in the age of digital mobility (Data presentations, discussion and analysis)**

Chapter seven of this research presented and interpreted the data that were collected through the standardised semi-structured interviews with the two officials from ICASA and USAASA. Only the data collected this exercise were presented.

## **Chapter Eight: From public fixed access to public mobile individualised Internet access (summary, recommendations and conclusions)**

Chapter eight of the study provided the summary of the findings, conclusion and recommendations. The concluding arguments were solely based on the findings of the study.

### **8.11 Conclusion**

Beyond the simple binary conceptions on the lack of Internet access and the desperate philosophical attempts to solve the problem, the inclusion of the affordability and high cost of data bundles allow for a more complex picture of how the digital divide continuum co-exists in the age of digital mobility. The engagement of affordability and the high cost of data allows for an understanding that, the digital divide is not only the discussion about the skilled and the unskilled, social status and qualification. The provision of fixed Internet access is rather becoming a supplement to the demands of Internet access in the digital age. The high level of relevancy on universal service and access policy to the dynamics and demands of the digital age towards Internet access relies on the mobile mode of Internet access. Affordability and the high cost of data is constraining the Internet access experience of many people. Therefore, the concept of Internet access changes to become a combination of potentialities and hindrances experienced in the age of digital mobility, thereby presenting new modalities of digital inequalities.

As more activities of social life migrate to the digital world, it becomes much expected that the influence of the digital divide has an increasing effect on how individuals access the socio-economic, political and cultural benefits that the Internet provides. While new technologies may provide opportunities for all individuals to improve their lives and prosper, it seems this possibility is not equally realised in terms of affordability. In fact, those who cannot afford Internet access are disadvantaged and cannot exploit the benefits that the Internet can offer. It appears that the digital inequalities are intensified in the digital age. The possibility that an increase of 10 per cent in mobile broadband penetration in Africa would yield an increase in 2.5 per cent in GDP per capita (ITU, 2019), remains unfulfilled if individuals cannot afford the mobile broadband.

The notion of simply providing fixed public Internet access to solve the problem of digital inequalities is partially supporting the demands of the digital age where the Internet is increasingly becoming mobile. This approach moves the technology gap problem from a multifaceted phenomenon to an access issue. This benefits the neo-liberal agenda of benefiting the markets within the telecommunications industry (Servon, 2002; O'Hara and Stevens, 2006; Oyedemi, 2016). The possibility of overcoming such inequalities, potentially presents itself through the universal service and access policy in South Africa. The policy needs to focus on individualised mobile Internet access in addition to focusing on public fixed Internet access. Access to the Internet should be regarded as important towards individual quest for self-development through relevant and preferred modes of Internet access.



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## **APPENDIX 1: Informed consent for students' questionnaires**

### **WRITTEN INFORMED CONSENT FOR STUDENTS' QUESTIONNAIRES**

**Dear Respondent:**

**Title: Mobile Internet access and affordability among youth in South Africa:  
Rethinking universal service and access in the age of digital mobility**

This survey is intended for academic research study only. The aim is to explore and describe the patterns of mobile Internet access and affordability among youth in South Africa, using a sample population of the University of Limpopo students and propose a frame of the universal service and access policy strategies relevant to the age of digital mobility.

Information produced by this study will be confidential and private. **No names or personal identifiers are required for this survey.** If the data are used for publication, conference, presentation and for teaching purposes, no names or any identifier of the participants will be used or disclosed. You are under no obligation to participate in this project, and you may withdraw your participation at any time without prejudice. This survey takes minimum of about 25-30 minutes to complete. The data from this survey will only be accessible to me, **Masimbe Chinoza**, and my supervisor **Prof Toks Oyedemi**, it will be protected with a password on my computer.

Please note that the study is aimed at gaining the information on mobile Internet access and affordability among youth in South Africa. Therefore, I kindly appeal to you that you ensure honest in your contribution on answering the questions that follows.

There are no right or wrong answers to the questions, hence simply answer the questions honestly to the best of your understanding. Please read all answer options before selecting the most appropriate choice. Answer all questions relevant to you.

**Thank you for participating.**

## APPENDIX 2: QUESTIONNAIRE FOR STUDENTS

### ANNEXURE: QUESTIONNAIRE FOR STUDENTS

#### Background and informed consent

This survey is intended for academic research study only. The aim is to explore and describe the patterns of mobile Internet access and affordability among youth in South Africa, using a sample population of the University of Limpopo students and propose a frame of the universal service and access policy strategies relevant to the age of digital mobility.

Information produced by this study will be confidential and private. **No names or personal identifiers are required for this survey.** If the data are used for publication, conference, presentation and for teaching purposes, no names or any identifier of the participants will be used or disclosed. You are under no obligation to participate in this project, and you may withdraw your participation at any time without prejudice. This survey takes minimum of about 25-30 minutes to complete. The data from this survey will only be accessible to me, Masimbe Chinoza, and my supervisor Prof Toks Oyedemi, it will be protected with a password on my computer.

Please answer the questions honestly to the best of your understanding. Thank you.

Put [x] in the correct box of your choice.

**Please read all answer options before selecting the most appropriate choice.**

**Answer all questions relevant to you.**

#### 1. Age

Below 18	
18 – 21	
22 – 26	
27 – 30	
31 – 40	
Above 41	



2. Gender

Female	<input type="checkbox"/>
Male	<input type="checkbox"/>

3. How would you describe where you stay when School is not in session and you are home?

- a.) Village/ rural area [  ]
- b.) Township [  ]
- c.) City/ urban area [  ]

4. Do you own a smart phone that can access Internet?

- a.) Yes [  ]
- b.) No [  ]

5. Do you own a tablet that can access Internet?

- a.) Yes [  ]
- b.) No [  ]

6. Are you on prepaid or contract?

- a.) I am on prepaid [  ]
- b.) I am on contract [  ]
- c.) Both contract and prepaid [  ]

7. If you are on prepaid, about how much do you spend monthly on data bundles?

- a.) R10 – R50 [  ]
- b.) R60 – R100 [  ]
- c.) R110 – R200 [  ]
- d.) R200 and more [  ]

8. If you are on contract, who pays for the contract?
- a.) My parents
  - b.) Myself
  - c.) My boyfriend/ girlfriend
  - d.) Others, please specify.....  
.....
9. If you are on contract, what is the data bundle package of your contract?
- a.) 100MB
  - b.) 250MB
  - c.) 500MB
  - d.) 1GB
  - e.) 2GB
  - f.) 2GB and more
10. If you are on contract, do you buy extra bundles before the month ends?
- a.) Yes
  - b.) No
11. If you are on contract and you buy extra bundles before the month ends, how much money do you spend on extra bundle?
- a.) R10 – R50
  - b.) R60 – R100
  - c.) R110 – R200
  - d.) R200 and more
12. In general, how much money do you spend per month?
- a.) R10 – R50
  - b.) R60 – R100
  - c.) R110 – R200
  - d.) R200 and more

13. Do you think out of data bundle prices are justified or high?

- a.) They are not high, and I can afford always [ ]
- b.) They are high, and I cannot afford [ ]
- c.) They very high and unjustified [ ]

14. What is your most preferred way of accessing Internet?

Mobile cell phone	
Mobile tablet	
Home internet access	
Internet café	
Public Wi-Fi access	
Campus Wi-Fi access	
Campus computer labs	
Others, please specify,	

15. If you use Internet Café, how often do you use it?

- a.) Yes, all the time [ ]
- b.) Yes, occasionally [ ]
- c.) Seldom (once a week) [ ]
- d.) Hardly (once a month) [ ]
- e.) Never [ ]

16. If you use public Wi-Fi access, how often do you use it?

- a.) Yes, all the time [ ]
- b.) Yes, occasionally [ ]
- c.) Seldom (once a week) [ ]
- d.) Hardly (once a month) [ ]
- e.) Never [ ]

17. How much data worth can you afford monthly?

- a.) I can't afford data [ ]
- b.) R10 – R50 [ ]
- c.) R60 – R100 [ ]
- d.) R110 – R200 [ ]
- e.) R200 and more [ ]

18. What do you use Internet access for? (Tick all relevant options)

- a.) For WhatsApp [ ]
- b.) Twitter [ ]
- c.) Facebook [ ]
- d.) Web designing [ ]
- e.) For educational purposes [ ]
- f.) Searching for jobs [ ]
- g.) For personal business [ ]
- h.) Others, please specify.....  
.....

19. Do you watch videos online?

- a.) Yes, all the time [ ]
- b.) Yes, occasionally [ ]
- c.) Seldom (once a week) [ ]
- d.) Hardly (once a month) [ ]

20. If you don't watch videos online, what could be the reason?

- a.) Purchasing data is expensive [ ]
- b.) I don't have a smart phone/ tablet [ ]
- c.) I don't like watching videos online [ ]
- d.) Campus Internet access I use is restricted [ ]
- e.) Others, specify.....  
.....

21. Are you aware of online radio broadcast?

- a.) Yes [ ]
- b.) No [ ]

22. Do you listen to online radio?

- a.) Yes [ ]
- b.) No [ ]

23. If you do listen to online radio, how often you listen to it?

- a.) Yes, always (multiple times daily) [ ]
- b.) Yes, occasionally (2 – 3 times weekly) [ ]
- c.) Seldom (once a week) [ ]
- d.) Hardly (once a month) [ ]
- e.) Never [ ]

24. If you don't listen to online radio broadcast through your smart phone/ tablet, what could be the reason?

- a.) Purchasing data is expensive [ ]
- b.) I don't like to listen to online radio [ ]
- c.) I don't have a smart phone/ tablet to access online radio broadcast [ ]
- d.) I don't have time to listen to radio [ ]

25. Have you ever posted/ uploaded a video online with your mobile phone?

- a.) Yes, always (multiple times daily) [ ]
- b.) Yes, occasionally (2 – 3 times weekly) [ ]
- c.) Seldom (once a week) [ ]
- d.) Hardly (once a month) [ ]
- e.) Never [ ]

26. If you have never posted/ uploaded a video online with your mobile phone/ tablet, what could be the reason?

- a.) Purchasing data is expensive [ ]
- b.) I don't know how to post/ upload a video [ ]
- c.) I don't like posting/ uploading videos [ ]
- d.) I don't have a smart phone/ tablet [ ]

27. Have you ever downloaded an article of academic material using your mobile data?

- a.) Yes, always [ ]
- b.) Yes, occasionally [ ]
- c.) Never [ ]

28. If you have never downloaded any academic material, what could be the reason?

- a.) Purchasing data is expensive [ ]
- b.) I don't have the smart phone/ tablet [ ]
- c.) I use campus computer labs [ ]
- d.) Others, please specify.....  
.....

29. Do you have a personal blog?

- a.) Yes [ ]
- b.) No [ ]

30. Do you have a personal website?

- a.) Yes [ ]
- b.) No [ ]

31. Do you know how to create a blog or website?

- a.) Yes [ ]
- b.) No [ ]

32. Do you have a Twitter account?

- a.) Yes [ ]
- b.) No [ ]

33. What do you use your twitter account for? (tick all relevant)

- a.) Posting selfies [ ]
- b.) Posting my videos [ ]
- c.) Checking what others are posting about [ ]
- d.) Checking political tweets [ ]
- e.) No I do not have a tweeter account [ ]

34. Do you know of any free public Wi-Fi hotspots?

- a.) Yes [ ]
- b.) No [ ]

35. If you know of any free public Wi-Fi hotspot, have you ever used it?

- a.) Yes (always) [ ]
- b.) Yes (occasionally) [ ]
- c.) Seldom (once a week) [ ]
- d.) Hardly (once a month) [ ]
- e.) Never [ ]

36. If you do not use the public Wi-Fi hotspots, what could be the reason?

I do not have time to visit the place	
The place is far from where I stay	
The minutes of access are few, 15-30 minutes, and I cannot finish my work	
The access cannot allow me to watch videos online	
The access cannot allow me to access Facebook or social media	

37. Have you heard of the #DataMustFall campaign of 2016?

- a.) Yes [ ]
- b.) No [ ]

38. Have you participated in the #DataMustFall of 2016?

- a.) Yes [ ]
- b.) No [ ]

39. Does the mobile network you are using have free minutes' calls?

- a.) Yes [ ]
- b.) No [ ]

40. If given the opportunity to ask, what would you prefer: free minutes' calls or free mobile Internet access?

- a.) Free minutes calls? [ ]
- b.) Free mobile Internet access [ ]

41. Given uncapped free mobile Internet access, what would you do with the data?

- a.) Watch videos on YouTube always [ ]
- b.) Do video calling always [ ]
- c.) Use it for academic purposes [ ]
- d.) Searching for jobs [ ]
- e.) Searching for health information [ ]
- f.) Others, please specify.....  
.....

42. Have you ever accessed free Internet access in any government provided access, such as library, Thusong centre, post Office and Telecentre?

- a.) Yes [ ]
- b.) No [ ]



43. If you have accessed the Internet free in any government public places mentioned in question 42 above, how would you describe the service

- a.) Excellent [ ]
- b.) Fair [ ]
- c.) Weak [ ]
- d.) Bad [ ]
- e.) Other descriptions of your experience, please specify .....
- .....

44. Have you ever accessed government provided Internet access from a free Wi-Fi hotspots?

- a.) Yes [ ]
- b.) No [ ]

45. If you have ever accessed government provided Internet access from a free Wi-Fi hotspot, how would you describe the service?

- a.) Excellent [ ]
- b.) Fair [ ]
- c.) Weak [ ]
- d.) Bad [ ]
- e.) Other descriptions of your experience, please specify.....
- .....

46. Part of government policy is to provide access to those who cannot afford it. How best do you think the government can provide access to the poor?

a.) Through public access in a computer centre [ ]

b.) Through Wi-Fi hotspots in communities [ ]

c.) Through providing individual a limited amount of free data to individuals who cannot afford data [ ]

d.) Any other suggestions .....

.....Thank you.....

## **APPENDIX 3: Informed consent for officials from ICASA and USAASA**

### **CONSENT FORM**

University of Limpopo

Masimbe Chinoza

Department of Communication, Media and Information Studies

Contacts: 0796345259, email: masimbec@gmail.com

### **CONSENT FORM**

**Mobile Internet access and affordability among youth in South Africa:  
Rethinking universal service and access in the age of ‘digital mobility’.**

### **INVITATION TO PARTICIPATE**

You are kindly invited to participate in this research study because your responses will be useful.

### **PURPOSE**

The purpose of this study is to explore and describe the patterns of mobile Internet access and affordability among youth in South Africa and propose a frame of the universal service and access policy strategies relevant to the age of ‘digital mobility’.

### **PROCEDURES**

The standardised semi-structured interviews questions are relating to the high cost of data and affordability in South Africa. The questions seek to explore the current trends in universal service and access policy in addressing the challenges of affordability of mobile Internet access.

### **COSTS AND FINANCIAL RISKS**

Please note that there are no financial costs associated with participating in this project.

**COMPENSATION**

Participants will not receive any compensation or financial reward as participating in this study is voluntarily.

**ALTERNATIVES**

Participation in this research project is voluntary and you may choose not to participate.

**CONFIDENTIALITY**

Information collected in this study is strictly confidential and will be used for academic research purpose, except that it may be required by court order or by law. If any publication results from this research, you will not be identified by name.

**ADDITIONAL INFORMATION**

Your participation in this study is voluntary, and you are free to refuse to participate. You may discontinue your participation at any time. If you choose to discontinue participation in this study, you may request that the researcher do not use the information already contributed to the study.

**PARTICIPANT RIGHTS**

If you have questions pertaining to your participation in this study, you may contact the researcher Chinoza Masimbe by telephoning 0796345259 or through email: masimbec@gmail.com

**CONCLUSION**

By signing below, you are indicating that you have read and understood the consent form and that you agree to participate in this research study.

.....  
Participant’s signature

.....  
Date

.....  
Researcher’s signature

.....  
Date

## **APPENDIX 4: USAASA INTERVIEW GUIDE**

### **ANNEXURE: Standardised structured Interview for the Universal Service and Access Agency in South Africa (USAASA).**

#### **Background and informed consent**

This interview guide is intended for academic research study only. The aim is to determine the effectiveness of government universal service and access policy in addressing affordability of Internet access in South Africa and suggest ways of addressing high data cost among youths' access to mobile Internet access. This interview guide is designed to guide and inform of the standardised structured interview with one official from the **Universal Service and Access Agency in South Africa (USAASA)**.

Information produced by this study will be confidential and private. **No names or personal identifiers are required for this study.** If the data are used for publication, conference, presentation and for teaching purposes, no names or any identifier of the participants will be used or disclosed. You are under no obligation to participate in this project, and you may withdraw your participation at any time without prejudice. This interview takes a minimum of about 25-30 minutes to complete. The data from this interview will be recorded with a recording device and will be later transcribed to identify emerging themes that answer the objectives set for this research. The data from this interview will only be accessible to me, **Chinoza Masimbe**, and my supervisor **Prof Toks Oyedemi**, and it will be protected with a password on my computer.

Please answer the questions honestly to the best of your understanding. Thank you.

1. What is the Agency's role in addressing affordability of Internet access for citizens in South Africa?
2. Is the Agency doing anything to ensure the provision of mobile Internet access rather than fixed Internet access?

3. What are the programmes and interventions by the Agency to ensure the high cost of data does not affect the poor people negatively?
4. Why is it that most of the policy programmes and strategies by the Agency together with the government still focus on providing fixed access rather than mobile access? (i.e. Thusong centres, Post Offices, community libraries and Telecentres).
5. What do you think are the challenges for providing mobile Internet access for the poor?
6. What is USAASA doing to decrease the high cost of data for mobile Internet access?
7. Do you think mobile internet access is expensive in South Africa compared to other African countries using the same networks used in South Africa such as Vodacom?
8. The formulation of the broadband policy (*South Africa Connect*) is a citizen-centric approach. What is the Agency doing to ensure the provision of Internet access is focusing on the individual?
9. Do you consider fixed mass connection as providing a complimentary service to mobile Internet access or as the best strategy effective that have ever happened?
10. Do you think the government should provide free mobile Internet access to the Poor in through purchasing a fixed amount of data bundles for them monthly?
11. Do you think free mobile Internet access is achievable if the government should purchase a fixed amount of data for the poor?
12. In your opinion, what can you suggest should be done to provide mobile Internet access to the poor?

.....**Thank you**.....

## **APPENDIX 5: ICASA INTERVIEW GUIDE**

### **ANNEXURE: Standardised structured Interview for the Independent Communications Authority of South Africa (ICASA)**

#### **Background and informed consent**

This interview guide is intended for academic research study only. The aim is to determine the effectiveness of government universal service and access policy in addressing affordability of Internet access in South Africa and suggest ways of addressing high data cost among youths' access to mobile Internet access. This interview guide is designed to guide and inform of the standardised structured interview with one official from the **Communications Authority of South Africa (ICASA)**.

Information produced by this study will be confidential and private. **No names or personal identifiers are required for this study.** If the data are used for publication, conference, presentation and for teaching purposes, no names or any identifier of the participants will be used or disclosed. You are under no obligation to participate in this project, and you may withdraw your participation at any time without prejudice. This interview takes a minimum of about 25-30 minutes to complete. The data from this interview will be recorded with a recording device and will be later transcribed to identify emerging themes that answer the objectives set for this research. The data from this interview will only be accessible to me, **Chinoza Masimbe**, and my supervisor **Prof Toks Oyedemi**, and it will be protected with a password on my computer.

Please answer the questions honestly to the best of your understanding. Thank you.

1. What is ICASA doing in addressing affordability of Internet access for citizens in South Africa?
2. ICASA took part in the Dynamic Spectrum Alliance Global Workshop on sharing and dynamic spectrum access taking place in Cape Town between 9 to 11 May 2017. What were the draft regulations in making affordable mobile Internet through dynamic spectrum access?

3. What is ICASA doing to simplify the mission to ensure mobile Internet access to the poor?
4. What challenges, if any, is ICASA facing on attempts to addressing mobile Internet access for the poor?
5. Is the government doing something to decrease the high cost of data for the poor?
6. According to David Carte (2017), Mybroadband Magazine, the Altech company reported that:  
“Some tech observers think that ICASA is the stumbling block for broadband by not liberalising the whole telecommunication, multimedia and IT businesses rather than protecting Telkom.” What is your opinion about this?
7. Do you think there is a need to address mobile Internet access for the poor?
8. As a regulatory board where do you feature on attempts to attain universal service/ affordable Internet access/ data bundle costs?
9. Do you think the telecom service providers are currently effective towards ensuring affordable mobile Internet access?
10. What do you consider important: between network service providers providing free calling minutes rather than providing free Internet access.
11. How are the telecommunication providers justifying their data prizing?
12. Part of the government policy is to provide access to the poor. What is ICASA doing to ensure accessible and affordable Internet access to the poor?
13. As a regulatory authority, do you think mobile Internet access is expensive for the poor?

.....**Thank you**.....



## APPENDIX 6: ETHICAL CLEARANCE CERTIFICATE



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### TURFLOOP RESEARCH ETHICS COMMITTEE CLEARANCE CERTIFICATE

**MEETING:** 02 November 2017

**PROJECT NUMBER:** TREC/396/2017: PG

**PROJECT:**

**Title:** Mobile internet access and affordability among youth in South Africa: Rethinking universal service and access in the age of 'digital mobility'

**Researcher:** C Masimbe

**Supervisor:** Prof T Oyedemi

**Co-Supervisor:** N/A

**School:** School of Languages and Communication Studies

**Degree:** Masters in Communication Studies



**PROF. T. MASIMBE**  
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: REC-0810111-031

**Note:**

- i) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee.
  - ii) The budget for the research will be considered separately from the protocol.
- PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.