A study of how digital inequality impacts remote work: Perception of Information Technology professionals in the Cape Town, South African public sector

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Abstract

Remote work has become a modern day reality and current trends indicate that the future of work will increasingly involve remote working from home in some form or another, a nation with significant digital disparities will put those with limited access to technology, especially the internet and related online services, at a disadvantage. Socioeconomic inequalities that historically existed in South Africa was as a result of the Apartheid policies, and research have shown that these disparities and inequalities still exist in post-Apartheid South Africa.

This research study was conducted at a local government organisation in Cape Town, South Africa. Historical Socioeconomic disparities that obstinately exist today across the country have affected various aspects of daily life for average citizens, particularly in the digital world. The research's findings would contribute to existing knowledge by broadening understanding of spatial, education, and income disparities and how these impact digital inequality.

This qualitative research study primary objective was to understand how Information Communications and Technologies (ICT) may become a barrier to employee's remote working in the public sector in Cape Town. The study's main goal was to uncover more about people's feelings and experiences about digital inequality and other factors that affect remote work. In this study, the same participants who took part in the focused group interview also took part in eight semi-structured interviews. There was one focused group interview with eight participants. The eight one-on-one interviews were conducted to ensure data integrity, validate that the information gathered during the focused group interview was still relevant and accurate, and to reduce researcher bias.

The research study's conclusions show that the digital divide, or the gap in access to ICT technologies, particularly the internet and related services, is a modern day reality in Cape Town, South Africa, and that these digital disparities are increasing. The results of the interviews show that South African society is still segregated along racial lines, with historically underprivileged groups still finding it challenging to compete economically with historically privileged groups under Apartheid rule.

The salary gap between skilled and unskilled labour is expanding at an alarming rate as organizations digitize, automate processes, and minimize manual interaction, with education playing a crucial role in South Africa's labour market. Additionally, this study shows the lack ICT investment in poor areas, and

how corruption in the South African government and the South African power crisis, continue to stifle the country's economic growth.

Both the public and private sector in Cape Town, must work together to invest in ICT infrastructure, especially in rural and underdeveloped areas, in order to close the digital gaps that currently exists. This would help the residents of Cape Town to gain access to the internet and online services.

1   Chapter 1: Introduction

The ICT (Information Communications and Technology) sector is growing rapidly, which is transforming how societies live and work. The way that individuals and organizations interact and use data and information has also changed as a result of technology. Geographical boundaries and restrictions have been eliminated due to tools developed by the ICT sector that enable seamless communication and collaboration between individuals and organizations. With the rise of remote work, the issue of digital disparities has recently come to light and presents the opportunity for investigating the relationship between inequality and remote work.

This research study was conducted at a local government municipal organisation in Cape Town, South Africa. All of the study's participants work for a public sector information and communication technology (ICT) division in Cape Town, South Africa. Each of the study participants work for the same company, a municipality run by a local government that serves more than four million people. There are approximately 28,000 people employed by the organization, of which there are an estimated 2,500 ICT staff members.

Research reveals that Cape Town is ranked as the number one smart city in Africa due to its investment in public Wi-Fi, e-government and enabling digitisation for business through strategies and investments together with the private sector. Studies also show that Cape Town is also one of the best cities in the world for remote workers ranking number one in Africa and number sixteen globally ahead of cities such as New York and Edinburgh. The covid-19 pandemic change the way employees and employers perceive work as remote work, in one form or another has become a global standard. Despite the digital innovation, Cape Town and South Africa, suffer from some of the worst inequalities in the world, thus, there is economic, educational and a digital gap in the country (BusinessTech, 2021).

This paper presents a research study on how access to Information Communications and Technology (ICT), systems and applications, impact remote work for public sector employees in Cape Town. Since the onset of the Covid-19 virus, organisations had to reshape the way it operates as lockdowns and restriction of movement were imposed by governments globally. Cape Town is also known for its investments into ICT infrastructure that enables the digitization of businesses and improves the digital life of its citizens; however, due to the history of the country, many inequalities still exists which gave rise to new inequalities such as digital inequalities.

This paper presents a background on remote work, the research objectives of the study which also highlights the research problem and questions. At present, little to no research studies have been conducted on this topic; therefor, a literature review analysing the advantages and disadvantages of remote work was explored and, the factors influencing the digital environment in Cape Town. Also, the research design and methodology section of this paper indicates which approach would be used to conduct the research taking into account the qualitative methodology, design, philosophy\paradigm, strategy, sampling, data collection and analysis.

Additionally, this paper presents the findings of the research study and a detailed discussion of how inequality impacts remote work in Cape Town, South Africa based on the literature review. The report concludes with a summary that offers additional insights into the research's findings and provides an in-depth list of recommendations. Furthermore, the limitations of the study were stated.

2 Chapter 2: Literature Review

2.1 Introduction

Chapter two is a literature review that focuses on all the major historical contributors that created vast socio economic inequalities in South Africa, historical inequalities continue and persist to aggravate inequality in post-Apartheid South Africa. It provides a brief overview of the Covid-19 pandemic and the significant role it played in shaping current and future organisational and work trends, the chapter further discusses the role racial segregation and its impact to date, how it manifested to the current labour market, and how it created disparities in education and employment during apartheid and in the post-apartheid era, as well as the role of geographic segregation and how it influenced and affected socio-economic inequalities today

2.2 The most unequal country in the world

In a study comprising of 164 nations, South Africa ranked as the most unequal, with race playing a prominent part in South African society. As a result, these historical inequalities has had a significant effect on education and income, resulting in inequality in post-Apartheid South Africa being persistent and obstinate (World Bank, 2022). The World Bank (2022), further states that ten percent (10%) of the South African population is in control of more than eighty percent (80%) of the country's wealth and resources

Table 2.2-1. The world top 10 most unequal countries

Shares of National Income by Country

Inequality Ranking	Country	Bottom 50%	Top 10%	Top 1%
1	South Africa	5.48	66.23	22.0
2	Namibia	6.55	64.2	21.57
3	Zambia	6.95	61.74	23.17
4	Central African Republic	7.63	64.91	31.00
5	Eswatini	7.86	59.88	19.33
6	Botswana	8.12	59.26	22.74
7	Mozambique	8.30	64.63	31.11
8	Oman	8.77	56.21	19.57
9	Qatar	9.02	56.79	23.61
10	Angola	9.04	56.79	23.61

Research ICT Africa (2022), highlights three primary factors that not only cause digital inequality in South Africa but are also the primary reasons why the digital inequality perpetuates in the country, these factors are, education inequality, income inequality and geographical\spatial locations

2.3 History of inequality in South Africa

<u>Background</u>

The Apartheid political system implemented laws and policies where all non-White South Africans not only faced racial discrimination but political and economic segregation as well. Furthermore, all non-white South Africans had limited access education and employment opportunities during the Apartheid regime. This resulted in massive inequalities among the race groups in the country, particularly in respects of education and economically (Mhlauli & Mokotedi, 2015).

The segregation of racial groups and residential areas was one of the ways apartheid drove inequality. This resulted in Black South Africans living in townships and rural areas that were underdeveloped and lacked in essential services such as running water and electricity. Townships and rural areas were also severely under-resourced and under-funded in terms of schooling and health care facilities (Monama *et, al*. 2022).

<u>Inequality in Education</u>

The Apartheid political system further increased inequality by denying Black South Africans equal educational opportunities. The aim of the apartheid system was to create a large pool of cheap unskilled manual labour which resulted in two educational systems, one with sufficient funding and resources for White South Africans and the other with insufficient funding for Black South Africans. Black South Africans schools were also under resourced and had an inferior curriculum than that of White schools. This made it challenging for South Africans of colour to gain the education and skills necessary to succeed in the labour market and contributed to the country's continued education and economic disparity in post-Apartheid South Africa. (Chisholm, 2012)

The Department of Basic Education (DBE) of South Africa (2017) states, that in order to increase access to education all primary and secondary school children in the country, the Department have implemented

several policies and programs such as the "no fee" policy for primary and secondary schools, which enabled millions of children from low-income households to attend school

The South African education system still faces many obstacles and challenges, notwithstanding the progress that have been made. These include shortage of qualified teachers, inadequate and poor school infrastructure in rural and township areas, and persistent gaps in education results between schools in affluent and poor, urban and rural areas. (DBE, 2017).

Studies conducted post-Apartheid highlighted the negative impact that Apartheid policies and laws have had on education and income inequality. Observing Graph 1 individuals with primary or secondary educational backgrounds tend to earn low income which is stagnant and the growth in earning potential over time is slow, whilst individuals with tertiary level qualifications command a much greater income and this income significant increases as they gain additional skills and experience. Graph 1 also reflects that Black South Africans are disproportionately represented within lower educational tiers and this is a primary factor that influences income disparities by race as depicted in Graph 2 (Salisbury, 2016).

Mjozi (2017), asserts that inequality in post-Apartheid South Africa is still visible and still persistent due to Apartheid policies, but there have been significant improvements as statistics reflect that the total number of black graduates from tertiary education level institutes stands at 63% being Black South Africans, whereas in 1995, this figure was estimated at being 28%. This is evident that Black South Africans have much more opportunities to access tertiary level institutions than they did during the Apartheid regime. Van der Berg & Gustafson (2019), further add that statistics indicate that year on year, there is an increase in the number of Black students registered at tertiary level institutions

Graph 2.3-1. Average Earning cycle of Individuals with different education levels
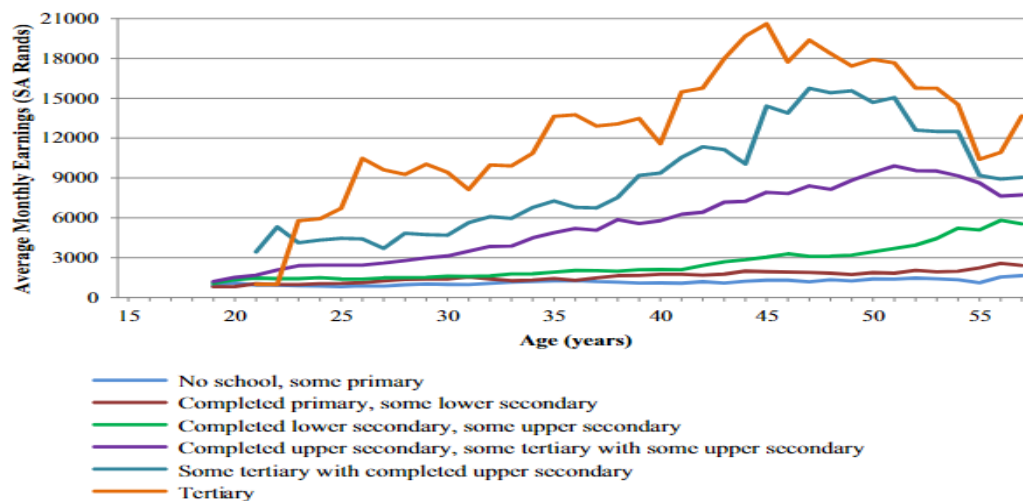
Source: Salisbury, 2016

The Apartheid wage gap and income inequality

Recent studies show that that despite nearly three decades of democracy the economic condition in the country has not changed as expected, the post-Apartheid era was meant to bring new opportunity and growth to the nation, but this is not the case. Income inequality persists and studies reflect that White South African employees with the same education and skill level as non-White South African employees still earn more. This phenomenon is known as the apartheid wage gap and current data reflects the household income for White South Africans is 369% more to that of non-White South Africans (The World Bank, 2022 and Salisbury, 2016).

According to Statista (2023), economists use the Gini coefficient index as a method or mechanism to assess how equally wealthy and income-equally distributed a nation is. This is accomplished using the Gini coefficient method by measuring either expenditure or income data. In summary the Gini coefficient index measures the inequalities of wealth of a country and how this inequality of wealth is distributed among the citizens of a country. Research done by the World Bank (2022), established that South Africa had the highest income inequality in 2021 based on the worldwide Gini coefficient Index, which is further support studies conducted by Statista (2023).

Figure 2.3-1. Global Gini coefficient index
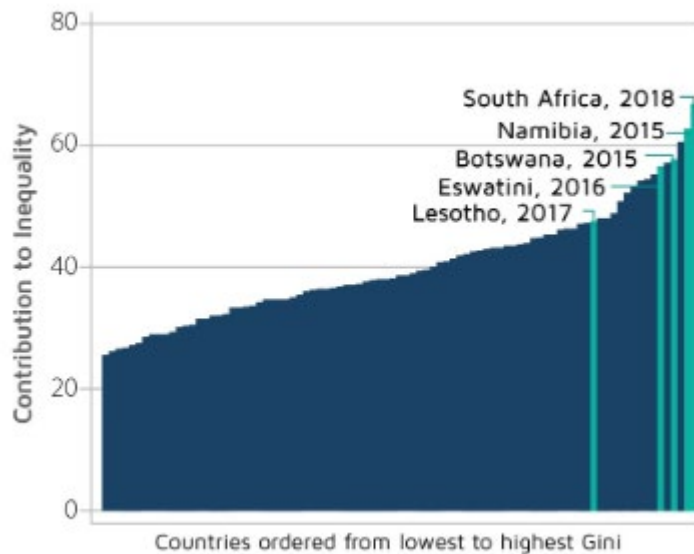
Source: The World Bank (2022)

Because White South Africans are well represented at tertiary level education this allows them gain skills and experience that employers generously reward in the labour market, this is a stark contrast when compared to non-White South Africans who have a history of lower quality education. Education is directly linked to ones standard of living, thus, the more people are educated the more valuable they are in the labour market and would command higher salaries and therefore, education plays a key role to reduce income inequality (Salisbury, 2016).

By implementing a national minimum wage and social assistance in the form of grants to those most vulnerable in society, in order to reduce poverty, the South African government also introduced policies such as Affirmative Action and Black Economic Empowerments in an attempt to reduce economic inequality created by the Apartheid regime (Musabayana & Mutambara, 2022).

However current data shows that government policies have not been effective as projected and that income disparities persist. Additionally, government policies have failed to live up to expectations and that the people who suffered under the policies of the Apartheid regime, which constitutes majority of South Africans, have not benefited from current government economic policies (Musabayana & Mutambara, 2022).

Graph 2.3-1 Income inequality earnings by race
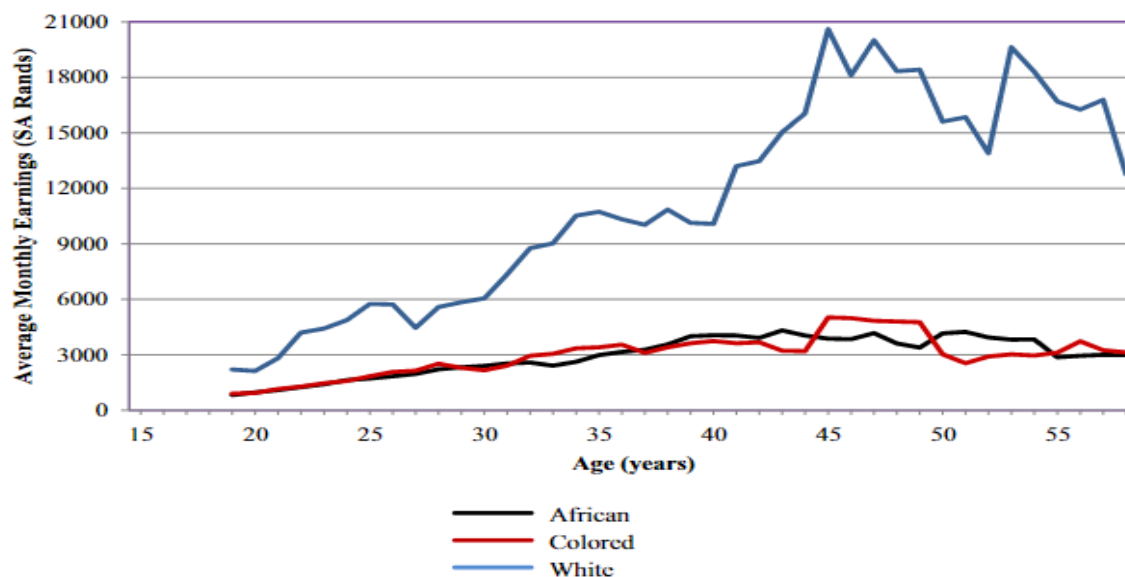
Geographic\Spatial location

Apartheid policies has had a fundamental impact on geographic and spatial locations in the country which plays a critical role in respects of public service delivery as basic services were limited in rural and non-white areas. Additionally the infrastructure investment in terms of schools, health facilities, housing requirements and so on, were significantly underfunded perpetuating the trend of poverty and inequality (Tigere & Netshitangani, 2022).

Rural areas and townships still lack infrastructure investment in post-Apartheid South Africa, particularly when it comes to ICT infrastructure. High speed internet connectivity is almost non-existent when compared to the investments made in city suburbs (Tigere & Netshitangani, 2022). Additionally public facilities such as libraries and schools in rural and township areas severely lack in ICT tools and resources, such as computer rooms\labs and online services (Coetzee, 2016).

Furthermore, public transport in rural and townships areas are unreliable and commuting to city centres where most employers are located, is often difficult and costly, exacerbating the cycle of poverty and inequality (Mokonyane & Adeyemo, 2017). Coetzee (2016), adds that based on academic studies, 68% of residents living in city suburbs have access to ICT tools and resources such as laptops, PC's, smartphones and the like, compared to 50% to that of residents living in rural and township areas.

2.4 Corruption in Post-Apartheid South African and its impact on inequality

Corruption, mismanagement and wasteful expenditure has a direct impact on service delivery and hinders progress and development (Camerer, 2009). Lekubu (2021), adds that the South African government have not effectively addressed corruption in the public sector institutions and that evidence suggests that corruption is not being reduced or slowing down. As can be seen from figure 2.4-1 below, a study by Transparency International (2022), scored South Africa 44 out of 100 on the Corruption Perception index, indicating that there has not been much improvement in the fight against corruption in the country and that corruption has become chronic. The data provided by figure 2.4-1 also reflects that there is an urgent need for government to implement measure to reduce corruption in the country.

Mismanagement and theft have had a negative impact on the country and hindered efforts to improve the nation's electricity infrastructure, additionally, corruption and mismanagement have worsened the energy crises in South Africa. Resulting in an unstable supply of electricity in the country. (Lekubu (2021), Camerer (2009) and Salahudin et, al., (2022).

Table 2.4-1 Corruption Perception Index

Country / Territory	ISO3	CPI score 2021	Rank
Seychelles	SYC	70	23
Cabo Verde	CPV	58	39
Botswana	BWA	55	45
Mauritius	MUS	54	49
Rwanda	RWA	53	52
Namibia	NAM	49	58
Sao Tome and Principe	STP	45	66
South Africa	ZAF	44	70
Ghana	GHA	43	73
Senegal	SEN	43	73

Source: Pikoli (2022)

2.5 The South African power crises

South Africa has an energy shortage and when demand exceeds supply, load rationing also known as load shedding is implemented. It is estimated that load rationing\shedding may cost the county up to four billion rand (approximately two hundred and fifty million euro) daily and, the year 2022 have presented record levels of load rationing\shedding for South Africans. Business, citizens and government are all

dependant on electricity thus load rationing\shedding has a direct impact on the economy, service delivery and the general life of citizens. This results in many organisations having to implement alternative solutions to avoid load rationing, such as generators, solar energy devices and so on. Load rationing directly impacts remote work as it may negatively affect employees online presence whilst, employers struggle to maintain productivity as can be observed in figure 2.5-1 (Sucheran & Olanrewaju, 2021).

Load shedding in South Africa can be describe as the controlled rolling blackouts that are implemented by the country's power utility, Eskom, to avoid a total system failure due to a lack of power supply. Load shedding has been a significant issue in South Africa for many years, and its impact on remote work has been significant. The primary and most noticeable impact of load shedding on remote work is that it disrupts the electricity supply, which affects internet connectivity and electronic devices such as computers, laptops, and mobile phones. This makes it problematic for remote workers to access online work tools, communicate with colleagues, or complete work-related tasks. As a result, productivity and efficiency are significantly reduced, and organisational objectives may be missed, which is a hindrance for both employers and employees (Hanto et. al., 2022).

Figure 2.5-1. Load rationing\shedding leads to reduced productivity
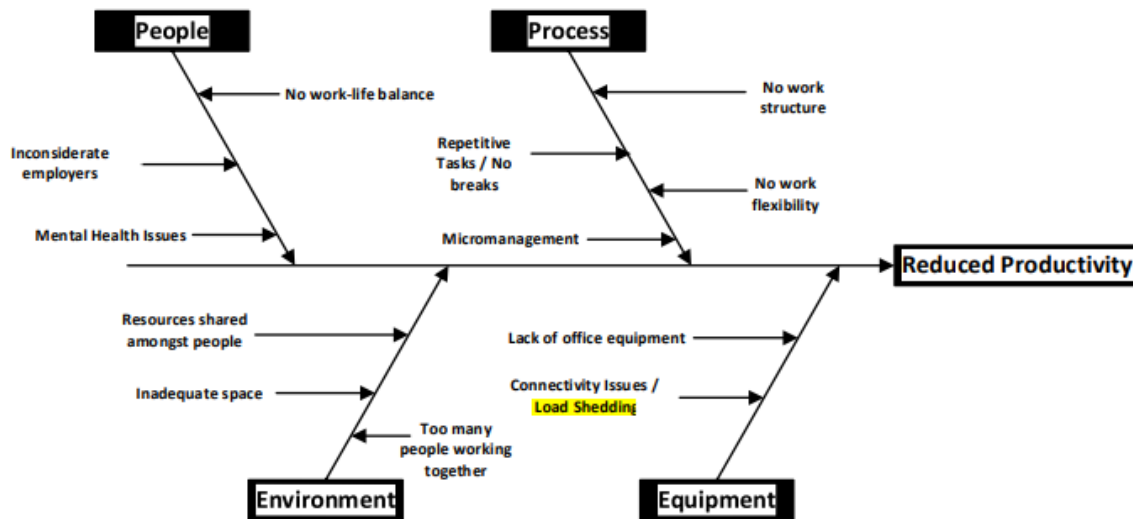
Source: Sucheran & Olanrewaju, 2021

Additionally Baker and Phillips (2018), states that, load shedding negatively impacts remote workers as it may interrupts their work timetables. Load shedding may also be implements at any time and at short

notice further impacting remote workers as load shedding schedules is often unpredictable, therefore maintaining a consistent remote work timetable can be difficult.

Furthermore, load shedding has a devastating impact on the economy of Cape Town and South Africa as a whole as it leads to reduced productivity and loss of income, exacerbating the cycle of poverty and inequality. Individuals and business need a stable source of energy in order to participate in the digital economy as digital tools and online services, depend and cannot function without electricity. Thus, a stable source of energy and electricity sources, are critical to both individuals and organisations if they are to be competitive in the digital economy (Baker and Phillips (2018).

2.6   The digital divide

The digital divide is also referred to as the information or knowledge gap, which is defined as the gap or inequalities in respect of digital literacy, access to and the consumptions of ICT systems and applications. Essentially the digital divide seeks to understand who have and who do not have, access to ICT tools and resources, specifically the internet. As countries, organisations and societies become more exposed to technology and digitisation, understanding the digital divide becomes important as it has a direct impact on digital skills. Thus having access and exposure to ICT tools and systems, determines the effective and efficient utilisation of ICT resources (van Dijk, 2006). Academic literature shows that access and exposure, to ICT tools, systems and applications or the lack thereof creates disparities in society, thus it is essential that the unequal distribution of ICT tools, systems and applications be addressed as it impacts social development and is critical for economic growth. (Varallyai *et.al*., 2015)

Van Dijk (2006) and Varallyai et al., (2015), agree that the digital divide impacts both developed and developing nations as it has a vast effect on social, economic and political policies, as ICT tools, systems and applications, have become the primary medium to access information as can be seen in figure 2.6-1 below.

Figure 2.6-1: Illustration of factors influencing the digital divide
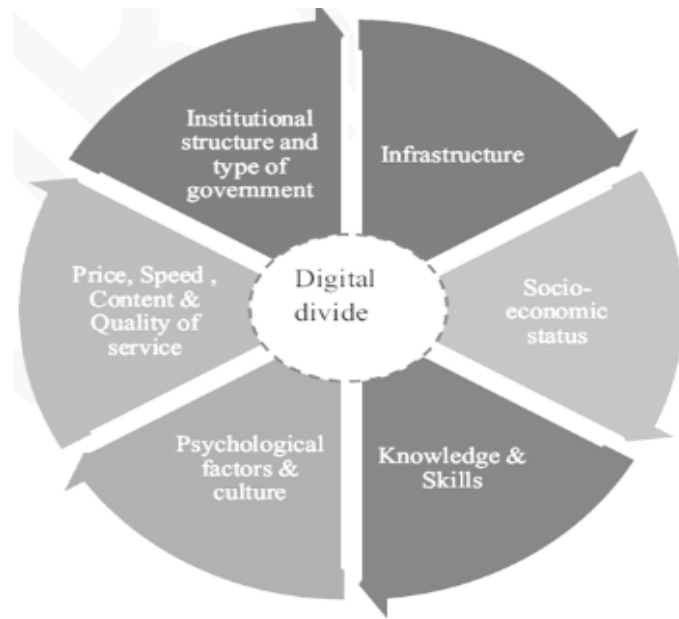
Gillwald (2018) explains that unemployment in South Africa is one of the highest in the world and plays a significant role in the country's digital divide, as a lack of financial resources prevent people from accessing technology tools such as laptops, Personal Computers (PC's) and so on. Both corporate and government organisations are rapidly digitising and this would result in missed opportunities and a lack of service delivery, to both those who are unable to use technology and those who do not have access to technology. Most investments in ICT infrastructure are primarily in the city centres and surrounds; therefore, people residing in informal settlements and rural areas, in Cape Town and South Africa in general, would not able to take advantage of technology and specifically the internet due to the lack of investment in technology tools and infrastructure in those areas.

South Africa has been cited by the World Bank (2022), as one of the most unequal countries in the world in respect of wealth distribution due to the previous political regime that excluded all non-Whites from economic activities and the effects of these are evident in the digital divide which appears to be increasing. Approximately forty percent (40%) of South Africans cannot afford any mobile hardware due to its cost, fifteen percent (15%) of South African citizens cannot afford internet and related services and approximately fifty percent (50%) state that their online presence is limited because of the cost thereof (SurfShark Ltd., 2022).

According to studies on the 'Digital Quality of Life', studies indicate that South Africa ranked 66 out of 117 nations in 2022, an improvement of two places from the 2021 rankings, the study measured by five

criteria namely; internet access, quality of internet, electronic infrastructure, electronic security and electronic government. Whilst, there has been an improvement of South Africa's overall ranking, research show that poor internet connection and inadequate ICT infrastructure investments remains persistent (SurfShark Ltd., 2022). Additional research conducted by SurfShark Ltd., (2022), supports the view of Gillwald (2018), that due to a lack of access to digital resources people living in rural communities and informal settlements, are still being negatively impacted and is causing that these digital gaps to increase.

The digital divide examines inequalities in society in respects of availability and access to technology, particularly among underprivileged groups. Digital readiness examines how effectively people can use technology (van Dijk, 2006 and Varallyai et.al., 2015).

2.7   Digital readiness

Digital readiness is one of the key indicators that reflect how effectively and efficiently technology is used making digital readiness a key issue as more organisations are adopting remote working strategies. Digital readiness points out how effectively organisations and society utilise, adopt and take advantage of available technology. Digital readiness is one of the key factors that separate countries to becoming world leaders at digital transformation as it enables organisations and society to attain maximum benefit in the use of technology and the digital environment (Cisco Systems Inc. 2020).

Pew Research Centre (2022), agrees with Cisco Systems Inc., (2020), that both organisations and societies ability to digitally navigate their digital environments is critical, as this influences how they solve problems and make decisions, therefore, digital readiness has a direct impact on digital inequality and, particularly those of citizens, as digital resources are only available to the extent of how government invests to make technology available. Research show that South Africa was ranked no.78 in 2020 and no.72 in 2021 in the Digital Readiness index. One of the primary outcomes of the study resulted that based on South Africa's low ranking, corporate organisations\business within the country see themselves leading the way for digital transformation at a rate faster than that of the country, resulting in a divide between the digital capabilities of corporate organisations\business and that of government (Cisco Systems Inc., 2020).

A parallel independent study was conducted by the Institute for Management Development (2022), involving a total number of sixty three countries from all over the world and measures their ability to

create, deliver and maintain digital environments for corporate enterprises. Observing Figure 2.7-1, below, the Digital Readiness ranking shows South Africa annual performance from 2019 to 2022 which shows a decline from 2019 to 2021 and a slight improvement in 2022. Figure 2.7-1 shows that although there is a solid presence of digital readiness in the country, vast gaps still exist which requires urgent investment in ICT infrastructure, tools and resources.

Figure 2.7-1: South Africa's global digital readiness competitiveness ranking from 2018 to 2022

Overall Performance
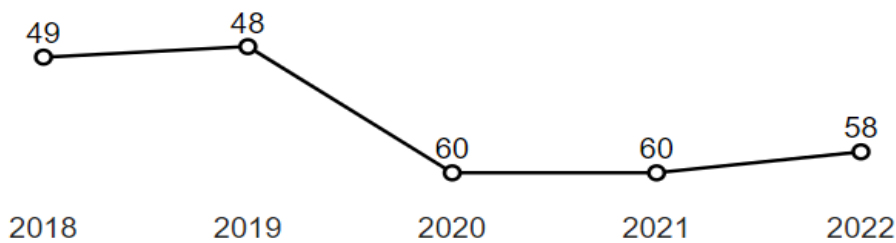
Source: Institute for Management Development (2022)

Digital readiness is one of the fundamental factors that impacts remote work, particularly in terms of technology. Technology, such as video conferencing, collaboration software, and other tools, are frequently and widely utilized in remote work. It would be challenging for those who are not digitally capable to adapt and utilize such technology (Pew Research Centre, 2022 and Cisco Systems Inc., 2020).

2.8   Remote work

Urbaniec (2022) states that current studies indicate that prior to the global covid-19 pandemic less than six percent of employees in Europe worked fully remote and independent from their organisations and that up to nine percent of employees engaged in remote work in one form or another. Parallel studies reflect that since the onset of the global covid-19 pandemic to date, approximately sixteen percent of all companies globally have completely digitized, having promoted the remote work concept and having already enabled employees to work remotely at one hundred percent capacity. Thus, since the start of the covid-19 outbreak there is a global trend that remote work is becoming more standardized and that organisations are formulating and adopting policies to encourage the remote work trend (Owl Labs Inc., 2022).

Figure 2.8-1. High income and educated workers, and remote work
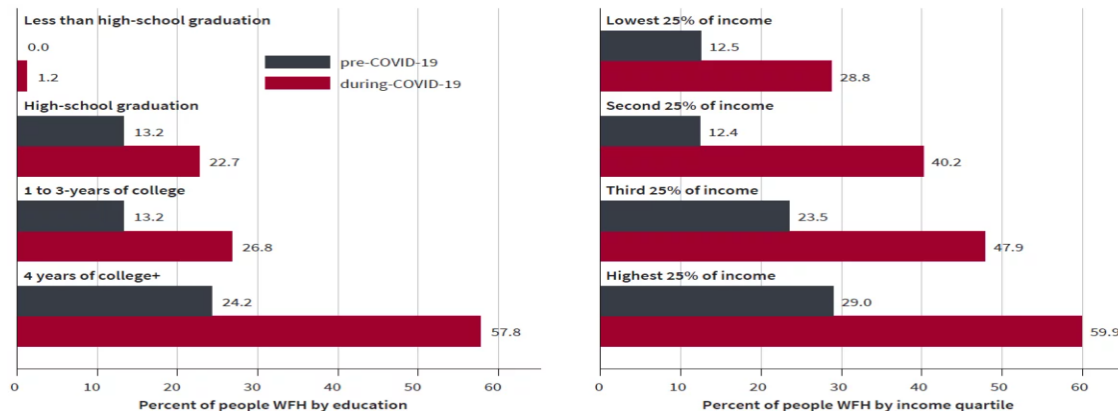
Source: Bloom (2020)

Figure 2.8-1, above, depicts that studies conducted by Stanford University show that remote work is more common among educated high end workers, whilst parallel research conducted by Ladders Inc., (2022), in Figure 2.8-2, that from August 2019 to August 2021 across the top fifty thousand hiring employers, data showed that remote working job opportunities among high income earners increased to an estimate of fifteen percent over the two year period, with the Information and Telecommunications Technology industry seeing a 1132% increase in high paying remote jobs. (Bloom 2020 and Ladder Inc., 2021)

Advantages and disadvantages

Studies show that the primary advantages of remote work is the flexible working conditions that remote work offers together with the time saved from commuting as well as offering employee's a more comfortable and relaxed working environment. Remote workers also show high levels of job satisfaction with an overall reduction in office politics and confrontations, and co-worker tensions. Employees that remote work also do not seek alternative employment as frequently as office bound workers, meaning greater employee retention, there is also a reduction in employee absenteeism when comparing remote workers to office bound workers (Klopotek, 2017).

Published research further show that organisations reported an increase in productivity from employee's remote working whilst, also benefitting from real estate costs as many organisations tend to scale down office space when adopting and implementing remote work policies. Remote work also provides organisations an opportunity to digitise and automate systems as much as possible whilst, reducing

operational and Information Technology and Communications infrastructure, such as office printers, telephones and so on (Klopotek, 2017).

Despite the advantages to both employee and employer, studies also reveal that employees tend to work more in silos which may lead to individual departments setting their own goals and objectives which may potentially not be in the interest of the organisation. Departments may also tend to operate independently and not synergistically within the organisation creating communication barriers between departments minimizing the impact of ICT tools utilized for remote work. (Flores, 2019)

Flores (2019), further states that based on analytical data available mistrust increased to up to seventy five percent between managers and staff in organisations and that managers would like employees to be visible at the work place to ensure that employees are performing their duties in an effective and efficient manner. This becomes significant as ICT tools enable employees to perform their roles, yet, manager's sense that employees are not performing at maximum capacity. To add, Thiel (2020), affirms that there is a global trend from employers to implement monitoring software to monitor remote workers, the demand for employee remote monitoring software more than doubled in 2020. Online searches for software that tracks and monitors, remote workers increased by over 1700% in 2020 alone and sales of monitoring tools that censored remote working employee activity increased significantly in the same year. Thiel (2020), thus supports the view of Flores (2019) that employers need to ensure that output and performance from employees remain at a certain level.

Figure 2.8-2 High Paying Jobs trend

PERCENTAGE OF HIGH PAYING JOBS AVAILABLE REMOTELY
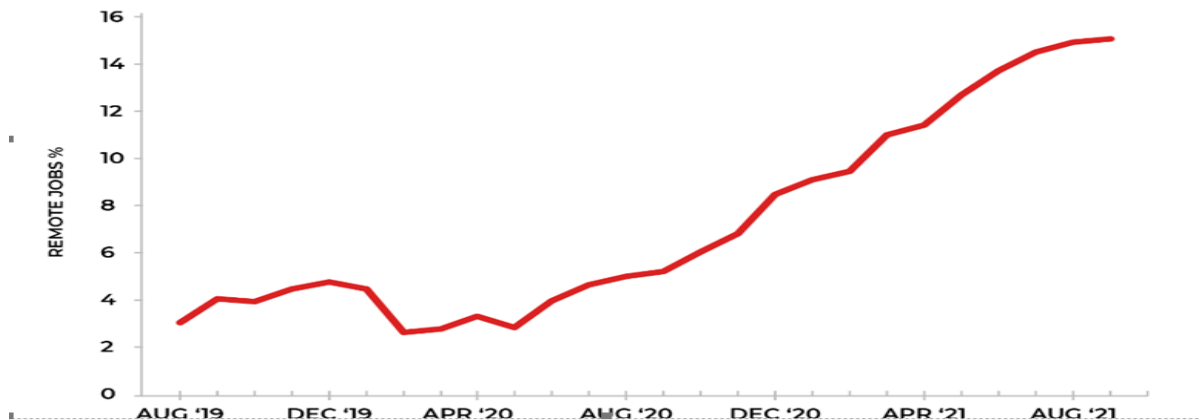
The Global trend

Gartner (2021), explains that at the end of 2021 remote workers stood at thirty two percent of all employees worldwide representing a fifteen percent increase from 2019 where remote workers accounted for seventeen percent of all employees globally. At present, the United States of America (USA) is the world leader in respects of remote work, with remote workers constituting fifty three percent of its work force. In the United Kingdom fifty two percent or all workers are remote workers followed by Germany and with representation of thirty seven. Furthermore, studies show that in 2022 India had a remote workforce of thirty percent and China twenty eight percent.

Statistics conducted by Owl Labs Inc., (2022), show that compared to 2021, in 2022 there has been a twenty four percent increase of employees choosing to remote work full time and a sixteen percent increase in hybrid work. Based on the academic studies and statistics gathered from academic surveys, there is a clear trend that more organisations across the world are moving in the direction of remote work in one form or another.

Figure 2.8-3 below is a graphical depiction of how employee work preference has changed in the USA from 2020-2022, where thirty six percent of employees preferred to work remotely in 2020 as compared to sixty one percent of employees in 2022.

Figure 2.8-3. Depiction of employee behaviour change.

Their workplace is closed or unavailable **They choose not to work from workplace**

	Their workplace is closed or unavailable	They choose not to work from workplace
Jan. 2022	38	61
Oct. 2020	64	36
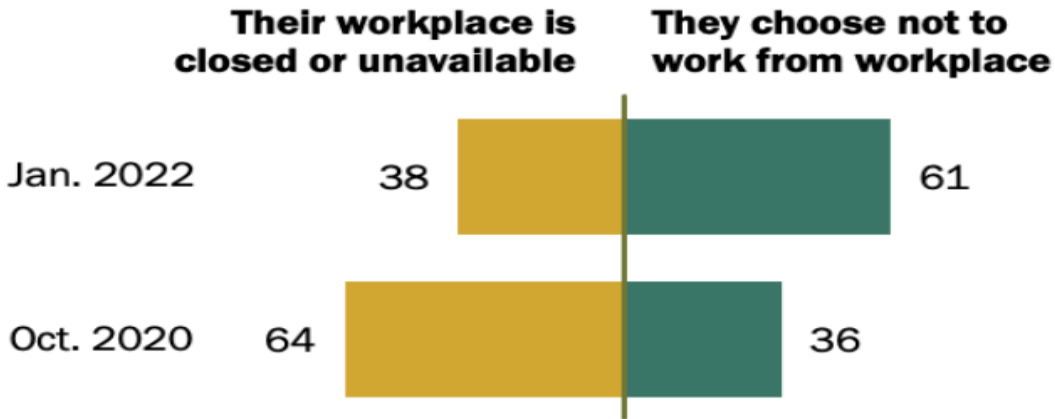
Source: Pew Research Centre 2022

Remote work in South Africa

As the South African governments implemented lock downs organisations needed to ensure they remained productive and to continue to perform at optimal levels. The covid-19 pandemic had a significant impact on the South African work force as data reflects that up to fifty percent of employees in the country worked remotely in one form or another post the pandemic. The remote work trend looks at only increasing as the covid-19 pandemic fundamentally changed the way the South African private and public sector maintained their operations during the lock downs implemented by the South African government (BusinessTech, 2019).

Although South Africa has a large portion of workers remote working in one form or another, it becomes essential to recognise that majority of all employees in South Africa do not work in an office setting. This becomes significant as it does not truly reflect the digital capability of South Africa, its digital readiness or South Africa's digital divide. Analysis on these factors would allow for a greater understanding of how effective ICT tools are, and together with ICT tools how these factors collectively influence remote workers in the country as digital transformation is essential to attain remote work productivity (Cisco Systems Inc. 2020).

2.9   Conclusion

This chapter reviewed the historical inequalities created by the Apartheid regime that continue to exacerbate inequality in post-Apartheid South Africa. Research indicate corruption is chronic and stagnant in post-Apartheid South Africa and that the South African government is not addressing corruption in an effective and efficient manner. The South African power crises have a significant impact

on the country's economy as well as the daily lives of its citizens. The digital divide and digital readiness, have a direct impact on the digital literacy of people and organisational digital readiness is critical for organisations to remain competitive in the digital economy. Also discussed was modern day concept of remote work brought on by the covid-19 pandemic.

3   Chapter 3: Research Context

3.1   Introduction

A detailed overview of the research study is provided in this chapter. This chapter emphasizes the research problem, the research background, and the study's objectives. Along with a brief overview of the entire research study, the research objectives and significance of the study are also discussed.

3.2   Background

The covid-19 pandemic had a significant impact on organisations across the world, the global covid-19 pandemic has changed the way many organisations behave as well as the way both employers and employees think about work in the post covid-19 era. The global covid-19 pandemic forced many organisations to be creative and in some instances to completely rethink the work place as the pandemic left little time for preparation (Shirmohammeddi, 2022). Brannen (2020), agrees that the covid-19 pandemic restructured global trends and that organisations had to adopt other methods to ensure the continuity of their operations.

Hybrid and remote work have been established as a standard in one form or another in many organisations globally due to the covid-19 pandemic and, many organisations have adopted hybrid and remote working strategies as the 'new normal' way of working (Peggy, 2022). Research studies conducted by Owl Labs Inc., (2021), show that organisations globally (both public and private sector), have already adopted the remote work model and that organisations are more open and ready to allow employees to work remotely since the onset of the global covid-19 pandemic.

Remote work is known to have various and different forms and descriptions as per academic literature such as telework, hybrid work, virtual work and so forth; however, the underlining feature that all these forms and descriptions have in common is that, they share a mutual characteristic which is that, employees of organisations conduct work away from the traditional office setting with the use of Information and Communication Technology tools (ICT) which enables and assist employees to do their work. (Urbaniec *et al.*, 2022)

3.3   Aim of the study

The purpose of the study is to better understand how IT employees in public sector in Cape Town, particularly those who are seen as being previously disadvantaged, perceive digital inequality and its effects. In particular, this study examines income and geographic disparities as well as the causes of the digital divide and seeking what actions may be taken to ensuring that the residents of Cape Town are digitally ready. Eight people, six men and two women, who are now employed in the public sector in Cape Town and the surrounding areas, made up the research study sample. The Indian, Black and Coloured racial groupings were selected as the three demographic categories as there may be commonalities in their perspectives, experiences, and emotions.

Research show that White South Africans generate the most money and have access to the majority of professional job opportunities, notably in senior and top management roles. White South Africans also make the most money overall in the South African workforce, according to research. The majority of academic research on the subject are primarily statistic and numerical focused, and thus lack insight into people's individual experiences and feelings regarding socioeconomic inequality and how it aggravates digital inequality, which has a direct impact on remote employment opportunities. This investigation seeks solutions to close the digital gap.

3.4   Research problem questions

3.3.1 Are there any barriers to remote working in the public sector for IT professionals in Cape Town, South Africa?

3.3.2 Do ICT tools enable IT staff to remote work and how effective are these tools?

3.3.3 What is the relationship between inequality and remote work among IT professionals in the public sector in Cape Town?

3.3.4 What are the factors that influence the accessibility to remote employment opportunities in Cape Town?

3.5   Research objectives

- To gain a better understand how ICT tools enable remote work and the challenges they present to IT employees in the public sector in Cape Town.
- To gain insight into measures that could be used to address any inequalities or disadvantages on the availability of ICT tools.
- To understand the role of South Africa's history towards the country's digital inequality
- In order to examine whether there are any barriers based on geographic areas\location to remote work opportunities
- To determine the extent to which remote employment opportunities are accessible to various demographic groups, including underprivileged ones, and to identify the obstacles preventing equal access to remote employment

3.6 Significance of the study

The municipal organisation offers a variety of services to the Cape Town community, including transportation, public health, and safety, to name a few. By doing this research in a municipality, the research study may find ways to reduce digital gaps, enhance digital services, and enhance other municipal services. Better results for residents and more effective and efficient service delivery may result from this study. This findings and insights of this research study can aid other municipal organizations in improving their own digital practices

Additionally, this study is significant because it opens up a many potential research areas, including how factors like income, education, race or ethnicity, and geographic location, affect people's access in gaining remote work opportunities.

3.7 Conclusion

Chapter three provided a summary the global Covid-19 pandemic that led to the current remote work reality. The background of remote work was discussed together with the research problem, the aim of the study, its research objectives as well as outlining the significance of the study.

4 Methodology

4.1 Introduction

The objective of this section is to demonstrate the methodical procedures that were taken to examine how digital inequality affects remote workers from the perspectives of IT employees working in the Cape Town public sector. This chapter provides information about the participants who volunteered to partake in the study, and also discusses the methodology, research plan, and instruments used.

This chapter addresses on the data analysis process and the validity and the reliability of the research findings. The ethical considerations that were taken into account during the research study serve as the chapter's conclusion.

4.2   Qualitative Approach

For this study, a qualitative, phenomenological research methodology was chosen.

In subjects like the social sciences, qualitative research is frequently applied since it can be used to understand people's attitudes, behaviours, and experiences in depth. Qualitative studies serve as an excellent tool for both studying social relations and acquiring a thorough insight of people's views and experiences. One of the primary differences between qualitative and quantitative research is that qualitative research involves collecting and analysing non-numerical data in order to for emerging themes and patterns to be identified as the research progresses, thus the aim of qualitative research is to gain a better understanding of reasons, motives and opinions. (Flick, 2023).

Congruently, phenomenological studies allow the researcher to become the primary instrument of the study which enables the researcher to become immersed with the research data, thus, allowing the researcher to discover and highlight themes, trends and patterns which would be reviewed with participants of the study. Human experiences are intangible yet, these experiences create social phenomenon that influence human activities; therefore, these phenomena should be investigated and researched (Miles and Huberman, 2014)

As stated, quantitative research rely more on numerical data to produce statistical information. Quantitative research is seen to be more objective and less susceptible to bias than qualitative research, as it involves the use of objective measures to collect and analyse data, generally performing statistical analysis on numerical data. The researcher opted for a qualitative research study as the digital inequality in remote work, phenomenon involves complex social and economic conditions, and thus a qualitative approach would provide deeper insight into how these conditions effect digital inequality in remote work (Flick, 2023).

Figure 4.2-1: Qualitative vs Quantitative
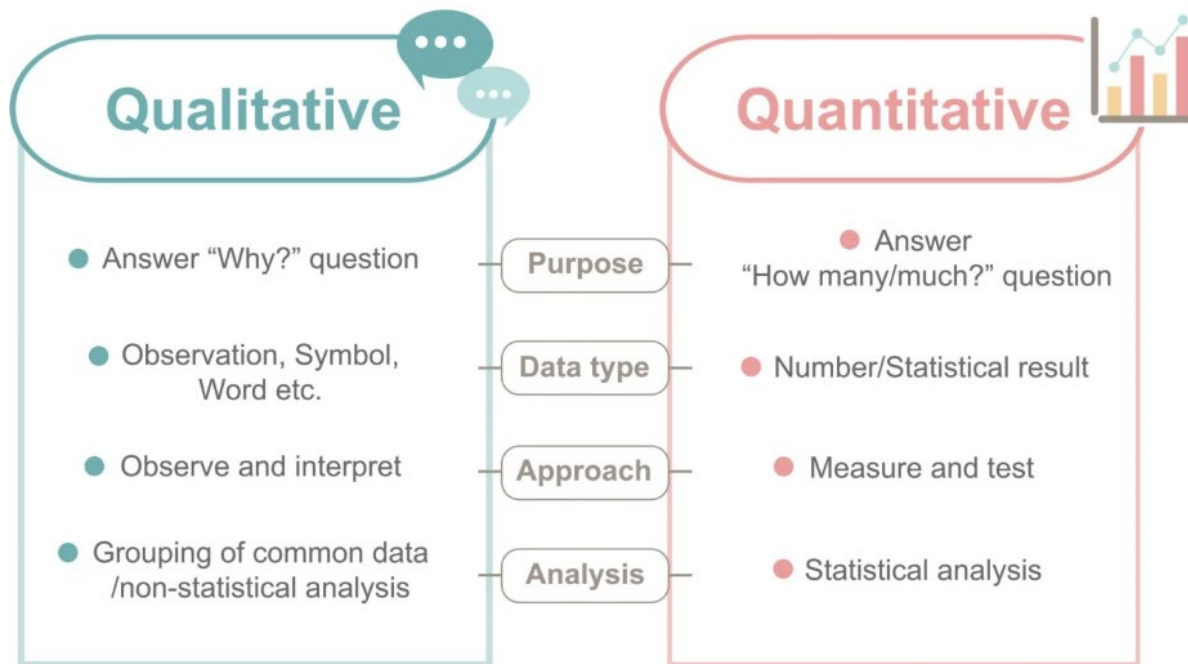
Source: *McLeod (2023)*

Phenomenological research studies focus on empirical realities, living and observable experiences, thus it attempts to uncover the essence of individual experience within a common group. Phenomenological research studies also try to unfold and uncover any the obscured or concealed or hidden meaning of these experiences, realities and observations. This makes the philosophy of this study phenomenological as it attempts to gain greater understanding of the individual's experiences and perceptions with in a mutual group. The reason for this chosen paradigm would be to receive various opinions as well as emotional, psychological and physical experiences regarding the topic on "Digital inequality and remote work" between different age groups, religions\cultures, gender and individuals from different socio-economic backgrounds. The research would also be descriptive in design as it seeks to understand events experienced by individuals or a group (Hemann 2014 and Flick, Von Kardoff and Steinke 2004).

Figure 4.2-2: The qualitative research study process
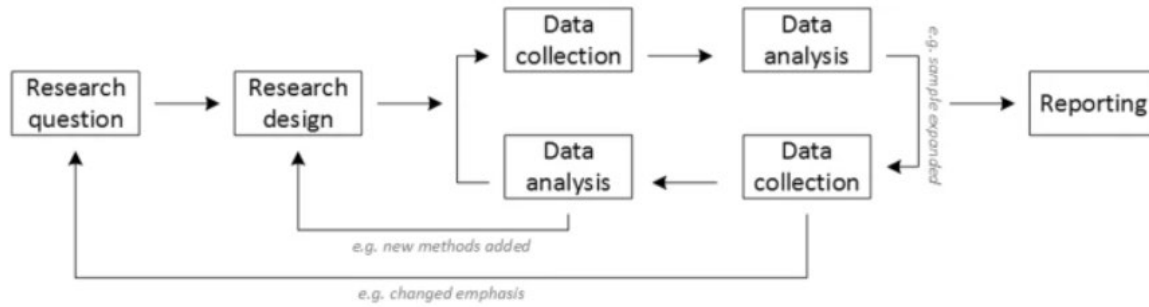
4.3   Research purpose

The topic on "Digital inequality and remote work" appear to be under researched making this study exploratory in nature. Explorative research provides valuable knowledge on under researched topics as it provides greater insight and uncovers new perspectives on a problem or a phenomenon, allowing data emerging from explorative research to add to existing knowledge. Thus, exploratory research does not attempt to provide conclusive results or answers as it intends to explore the research topic in depth, this may also lead to further research topics to be studied as new ideas and hypothesis are uncovered (Shukla, 2016).

Figure 4.3-1 Research designs
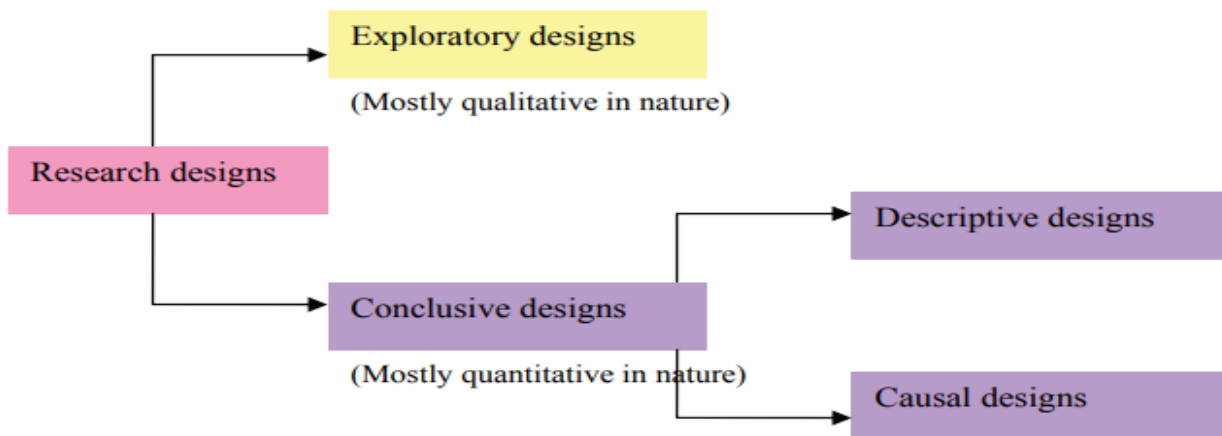
4.4 Research strategy

Case study research is a qualitative research method that provides an in-depth study, examination and investigation of a specific phenomenon, event, or situation, with the aim of gaining a better understanding of the phenomenon. Case study research is particularly effective in investigating complex social, economic, or organisational issues, and this research method is beneficial in circumstances where quantitative research methods are not enough or are inadequate to comprehensively assess, understand or answer research questions. (Remenyi, 2022).

Additionally, a case study strategy would be advantageous for this research study as it is directly linked to and examines real world experiences, as well as people's perceptions and feelings about it. This research study would fall into the instrumental case study category, as this type of case study allows for phenomenon to be investigated and existing knowledge on the topic to be refined, rather than based on individuals or groups, thus, this approach would provide deeper explanations as to how digital inequality impact remote workers in the South African public sector. The essence of the case study strategy is that it provides the researcher with a narrative and would give a description of an individual and group experiences (Cropely, 2015).

While case studies are effective at providing a deeper knowledge of a phenomenon, case study research methodologies are commonly used in their natural settings, to understand real world problems and phenomena, particularly in the fields of social science, law, and medicine. When examining social-based issues such poverty, injustice, prejudice, and the like, case study research have been proven to be effective at taking a comprehensive approach to real world problems (Hancock et. al., 2021).

Exploratory studies would allow case study research to understand a phenomenon through theory and hypothesis generation. The case study research approach is suitable for exploratory studies because it enables the research study to apply pattern matching techniques that would enable the research study to focus on complex and diverse issues, situations, and phenomena. This is made possible by the case study technique, which often selects a limited number of participants from a confined geographical location to examine and analyse present-day events through contextual analysis and their respective connections and relationships (Tellis, 1997).

This research study followed Yin's (1994) five step case study process as can be seen in the figure below.

Figure 4.4-1: Yin's (1994) five step case study process
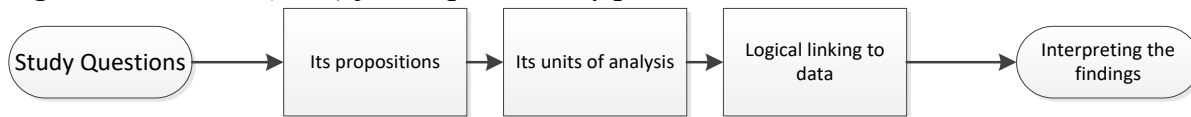
(Source: Yin, 1994)

The first phase in this case study research, as seen in Figure 4.4-1, was to choose, assess, and evaluate the research issue. This required finding a specific phenomenon, event, or circumstance that the researcher was interested in. The researcher had to make sure the issue was clear and concise in so as to enable an in-depth analysis as part of step one. After choosing a research question, the researcher would move on to step two, which involved identifying the case to be studied, which involved identifying and choosing specific people who would be representative of the phenomenon being studied as well as making ensuring that these cases were pertinent and appropriate for the research question (Rashid el. al., 2019).

The researcher would ensure that the information gained in step 3 was pertinent to the study topic and gave a strong understanding of the phenomenon under study. Following the data collection, the data would be analysed in order to identify patterns, trends and themes, and to interpret the findings, whilst ensuring the validity and reliability of the data. The case study research would conclude with the researcher presenting the study findings that would be pertinent to the research question (Rashid el. al., 2019).

4.5   Sampling

Unlike quantitative sampling, sampling in qualitative research depends on the nature of research that is being conducted and its intended purpose and is exclusively dependant on the researcher's preference (Shaheen et.al. 2019). Shaheen et.al. (2019), states that there are two methods of sampling used in qualitative research, Theoretical Sampling and Purposeful Sampling.

ICT applications and systems are seen as enablers of remote work, without ICT applications and systems, the digitization of business operations would not be possible and without ICT applications and systems remote work is not possible. Therefore it is a logical conclusion that ICT staff play a significant role in remote work, thus the participants selected for this research would be ICT staff as they support and manage the ICT applications and systems that make remote work possible. The public sector play a significant role in rolling out ICT infrastructure to business and citizens as government investments in

ICT infrastructure is critical to enable the public sector, business and society to take advantage of the global digital economy. This research study further focused on ICT staff in the public sector in order to understand both how IT staff support remote work, what barriers they experience and to what extend the public sector invests in ICT applications and systems to enable remote work (Ubanaic et. al., 2022)

This study would utilize non probability sampling\non random sampling because participants would not be randomly selected. The type of non-probability\non random sampling method to be used would be purposive sampling as this sampling method allows for a predetermined number of participants to be selected that have commonalities, similarities and participants meet specific criteria as well as to allow the researcher to focus on small and specific groups to base the study on. The type of purposive sampling technique that would be used is the maximum variation technique as this would allow the researcher to look at multiple perspectives and angles at a phenomenon in order to highlight common themes across the group. This research study would select ICT employees in a public sector organisation in Cape Town, South Africa. (Terrell, 2016)

Sampling size consisted of 8 Participants as per *Table 4.5-1* below.

Table4.5-1: Sample Participants

Participant	Race\Gender	Job Function	IT Role	Years of work
1	Coloured, Male	Section Head	IT Management	10 yrs. +
2	Black, Male	GIS Analyst	IT Operations	5-9 yrs.
3	Coloured, Female	Project Manager	IT Management	10 yrs. +
4	Coloured, Male	Database Operations	IT Operations	10 yrs. +
5	Coloured, Male	IT Infrastructure	IT Operations	1 - 4yrs
6	Coloured, Male	Software Developer	IT Services	5-9 yrs.
7				
8	Black, Female	Project Manager	IT Management	1 - 4yrs.

Participants have diverse skill sets, work in in the same industry, and within the sample pool there exist different educational backgrounds, economic backgrounds a mixture of junior, intermediate and senior

staff as well as different staff functions in ICT, namely, IT Management, IT Operations and IT Services. Purposeful sampling in this research study would add validity and credibility to the study as the selection of participants who work in the same industry and sector would ensure that the research findings are more accurate and representative of the population as a whole. By selecting ICT staff with different backgrounds, at various levels and diverse functions the researchers would be allowed to take advantage of the maximum variation technique as participants; although, working in the same sector, possess different characteristics (Shaheen et. al., 2019).

4.6   Data collection

This study would make use of interviews to collect data, as this qualitative research data collection technique is very effective in gaining deeper understanding and meaning into human experiences. Semi structured interviews using both open and closed ended questions would give participants the freedom to express themselves as to what they believe is relevant and pertinent to the subject or topic. This would further allow the researcher to gain an understanding into any underlying narratives on the subject or topic by allowing participants to tell their life experiences (Terrell, 2016). Semi structured interviews would further enable the researcher and participant to shape a dialogue on themes and subjects as the interview progressed by allowing the researcher to ask questions in no particular order and to ask follow up questions or explore unexpected topics based on participants responses. (Barrett & Twycross, 2018). See appendix A for semi structured interview schedule.

Additionally to the semi structured interviews the focus group interview technique was also used as it allowed the researcher to observe the group dynamics and to explore sensitive or controversial topics where people may not feel comfortable discussing their views in a one-on-one interview. The focus group interview technique would allow the researcher to evaluate each participant's knowledge and experience on topics, and not only their opinions on them. Participants were encouraged to discuss and comment on each other's opinions on topics. The focus group interview used unstructured interview questions which the allowed the researcher and participant the opportunity to explore topics as the interview progressed (Barrett & Twycross, 2018). The Focus group interview consisted of six males and one females from the Cape Town geographic area.

The focused group interview would further allow the researcher to gather data from multiple participants in a quick and effective manner. The focus group interview was used primarily to generate ideas, concepts and information and, resulting from the focus group interview the researcher was able to modify the

semi-structured interview questions where needed. This research study used both the focus group interview and the one-on-one semi-structured interviews with all of the participants who took part in the focus group interview in order to achieve data accuracy and reduce researcher bias (Barrett & Twycross, 2018).

As opposed to surveys, the interview method would provide the researcher with the flexibility to ask open ended questions and probe deeper into the experiences of each research participant. Interviews would also allow the researcher to observe each participant's body language and this may provide further insight into their experiences and perceptions they may hold. The researcher also preferred the interview method over surveys as interviews would give the researcher the opportunity to build a rapport with the participants of the study which may lead to uncovering any hidden emotions that participants may harboured. (Rabionet 2011).

The semi-structured interview scheduled consisted of both open and closed ended questions (See Appendix A for the interview schedule). Figure 4.6-1: Rabionet (2011) six steps interview process highlights the semi structured interview processed followed as defined by (Rabionet 2011).

Figure 4.6-1: Rabionet (2011) six steps interview process
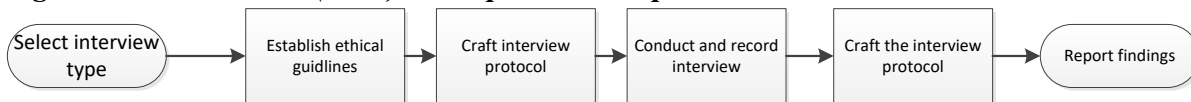
(Source: Rabionet, 2011)

Case study questions focus on the "why" and "how" of examining causation and effect since these elements enable a case study to concentrate on its research objective. Case study questions examine the relationships between the events, perspectives, and experiences that were the focus of the literature review. The interview schedule, which included seventeen questions, was developed to elicit thoughts and concepts from the research objectives in order to obtain insight into the issues raised by the literature review on "digital inequality" and "remote work" in Cape Town, South Africa. The interview questions addressed historical experiences, socioeconomic background, and perceptions and experiences linked to digital inequality and remote work in Cape Town, South Africa, among other topics pertinent to the research aims. (Tellis, 1997). Questionnaire design was developed using the process depicted in *Figure 4.6-2*.

Figure 4.6-2: Questionnaire design for qualitative research

Ensure questionnaire ask the right questions → Questions are suitable for the audience → Audience understand the questions → Flow of questions is adequate → Audience is wiling to answer questions → Answers are recorded correclty
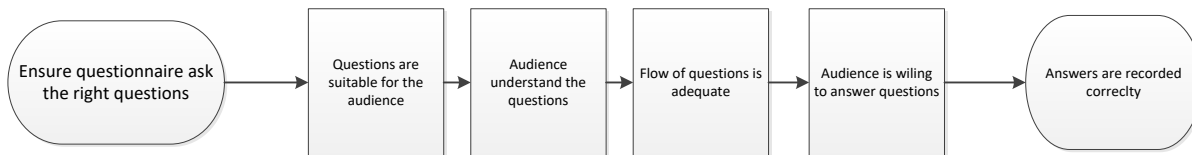
(Source: Permani, 2014)

4.7   Data analysis

Content Analysis would be used to analyse data collected as this technique would not only give the researcher deeper insight into subjects and topics, but it would also allow the researcher to the presence of themes, words and concepts and would further give the researcher the ability to establish any relationships that may exist between these. The advantage of using content analysis is that it would allow the researcher to capture information that is both apparent and the underlying\ hidden narratives, allowing the researcher to highlight themes that are not present in the text (Terrell 2016).

Figure 4.7-1. Steps in content analysis

Techniques for case study analysis	Explanation
Chronologies	Narratives of the events that took place, organised by date
Coding	Sorting data according to concepts and themes
Clustering	Categorising cases according to common characteristics
Matrices	Explaining the interrelationship between identified factors
Decision tree modelling	Grounding a description of real-world decisions and actions coherently by using multiple cases
Pattern matching	Comparison between a predicted and an empirically based pattern

Source: Ghauri 2004

As can be seen in figure 4.7-1 above, the researcher's first task was to write down the information the researcher had gathered from the focus groups and semi-structured interviews. Following transcription of the data, each response was examined and reduced to retain the essential elements of the phrase. Condensed data was coded after it had been fully processed. The method of coding involves highlighting and extracting from the text specific phrases or keywords that accurately represent the condensed unit

and using them as labels. Following the coding of all transcripts, related codes were compiled into subcategories, which were then connected to form categories. The questions "who, what, and where" are answered by categories and subcategories. A central theme was revealed from the resulting categories, and it was based on the narrative or underlying meanings and interpretations. Themes and concepts provide an explanation for "why, how, in what manner, or by what means?" (Brysiewicz and Erlingsson, 2017 and Ghauri, 2004). See Appendix B for example of Coded transcript

4.8   Trustworthiness

Because matrices are not quantified in qualitative research, validity and reliability cannot be assessed as they can in quantitative research studies; however, Stahl & King (2020), state that assuring the credibility, transferability, dependability, and confirmability of the study findings is necessary for the researcher to achieve trustworthiness in qualitative research.

Credibility

In qualitative research, triangulation involves the use of several different techniques or data sources to guarantee the accuracy and dependability of study results. To provide a more thorough understanding of the research phenomenon, it entails merging various data collection techniques or procedures, such as interviews, observations, and document analysis. The primary benefit of Triangulation is that it can create a more comprehensive, all-inclusive, and contextual representation of the phenomenon being studied. Thus, this multi method approach would enable the researcher to validate the data obtained from numerous sources and from a variety of perspectives rather than only one source of data resulting in the data being more credible. (Guari, 2004 and Stahl & King, 2020).

In order to attain data source Triangulation the researcher interviewed each participant individually after the focus group interview and after the data analysis was complete (coding, category and subcategory development, and theme formation), to ensure that data accurately reflected each participant's beliefs and experiences. In addition, after the study's results were finalized, each participant received a copy of the findings and discussions via email for feedback purposes. This gave participants an additional opportunity to express or disclose opinions, feelings, and beliefs they might have withheld in the focus group interview or may not have felt comfortable discussing during the one-on-one semi-structured interview, as well as an additional effort to ensure data consistency and avoid researcher bias (Carter et. al., 2014).

Transferability

By using purposive sampling the researcher study is able to determine how the study findings can be applied to other populations, the research study clearly defines the study population. Thus, this research study is transferable because its findings can be applied to people or groups in a comparable setting and be used as a benchmark for other research (Stahl and King (2020). Anney, (2014) further states that Transferability in qualitative research is not a formula; rather, it is a concept that needs to be examined to determine whether it can be used to a different setting or context. This research study utilised content analysis and research was conducted in a systematic approach, thus, other researchers, may replicate this study.

Dependability

Reality and perception are prone to change in phenomenological research involving social challenges and interaction, but dependability ensures that if the study were to be replicated in the future with the same instruments, techniques, and conditions, the results and conclusions would be the similar. Dependability involves participants evaluating the study's conclusions, interpretation, and recommendations to ensure that they are all supported by the data collected from study participants (Stahl and King, 2020).

This research study attained dependability by employing an audit record as far as possible of the data collection procedure and recoding the same data after 1 week to compare the coding and recoding to guarantee results are consistent. Additionally, Triangulation also helped to increase the study's dependability since more than one source and technique were employed during the investigation (Stahl and King, 2020 and Anney, 2014).

Confirmability

Triangulation and a data audit trail were used to make sure that the correct data, derived from participant responses, was used to form the categories and sub-categories that ultimately led to the overall theme. This reduced researcher bias and ensured that the findings and results of the study were not influenced or shaped by the researcher (Stahl and King, 2020 and Anney, 2014).

Additionally the researcher was self-reflective to their own bias and took cognisance of the researchers own feelings and assumptions, thus, the researcher documented all decisions related to the study that was made during the research process. Furthermore the researcher shared the study 'findings and discussion' with participants to confirm or challenge their conclusions as this process would help to ensure that the

data and analysis are grounded in the participants' experiences and perspectives and not that of the researchers (Stahl and King, 2020 and Anney, 2014).

4.9 Elimination of bias

Bias in research can be described as the process whereby the researcher becomes creative with the facts of the research study thus steering the research findings in the direction of achieving preconceived results and findings, rendering the research study inaccurate and unreliable. Because the researcher is inextricably linked to research participants and that this research study uses the qualitative approach the researcher was aware that the risk of researcher bias would be even greater, as qualitative studies often uses unstructured data that the researcher would become fully engrossed in, in terms of both data collection and analysis (Yale, & Kumar, 2016).

Yale and Kumar (2016) identifies selection, data collection and data analysis as the three key areas that are most at risk to researcher bias. All of the participants that were chosen for this research study is currently working in the IT industry within the public sector in Cape Town. All Participants hold tertiary educational levels, and perform different functions of IT. The researcher also provided a copy of the study results to each participants for comment.

Furthermore, the researcher also recorded all of the researcher's thoughts and emotions in a journal throughout the length of the investigation. Family and friends of the researcher undertook an objective examination to help with the investigation of the phenomena, to offer other viewpoints and interpretations, and to help the researcher understand why preference was given on the relevant evidences.

4.10 Ethical Considerations

Ethics play a key role in research because it protects the rights and wellbeing of study participants. The outcomes, findings, and conclusions of the study are significantly influenced by the ethical conduct of the research since unreliable findings and conclusions would the study unreliable. Therefore, protection of participants is crucial because qualitative research frequently explores sensitive themes, includes open-ended questions, and collects sensitive personal information. Participants may become vulnerable due to stress, anxiety, and other factors during interviews (Arifin, 2018).

The researcher was always aware that the primary aim of qualitative studies are to uncover the underlying narrative therefore research questions rely on peoples experiences and this may lead to participants being emotionally, psychologically and physically affected. All participants were informed both the focus group and one on one interviews that they do not need to answer question that may make them feel uncomfortable. Each participant was also informed that at any point during the study that should they want discontinue or want to stop participating in the study for any reason, they may do so (Arifin, 2018).

The researcher was always aware that the purpose of qualitative investigations is to elucidate the hidden meanings, and that frequently, research questions take on a personal nature and may have an adverse effect on participants' physical, emotional, and psychological well-being. The researcher made sure that participants were well-informed about the study, their rights, and any risks and rewards associated with taking part. At any point, participants were free to leave the research without suffering any repercussions. The researcher also explained to study participants that they might choose not to respond to any interview questions if they felt uncomfortable in any way (Arifin, 2018).

The researcher also explained the nature of the study to all participants beforehand and practiced informed consent implemented informed consent (see Appendix C), ensuring that all participants were mentally stable that they clearly understood the nature of the study. Both the focus group and one on one interviews were held in a neutral setting to ensure that each participant felt comfortable. Additionally, all participants' identity would be withheld due to confidentiality. There were 8 participants that participated in this research study and they would be referred to as participant 1, participant 2, and so on (Newman, et. al. 2021 and Kang & Hwang, 2021).

Figure 4.10-1: illustrates the five step process of ethical conduct highlights that this research study observed.

Figure 4.10-1: five step process of ethical conduct
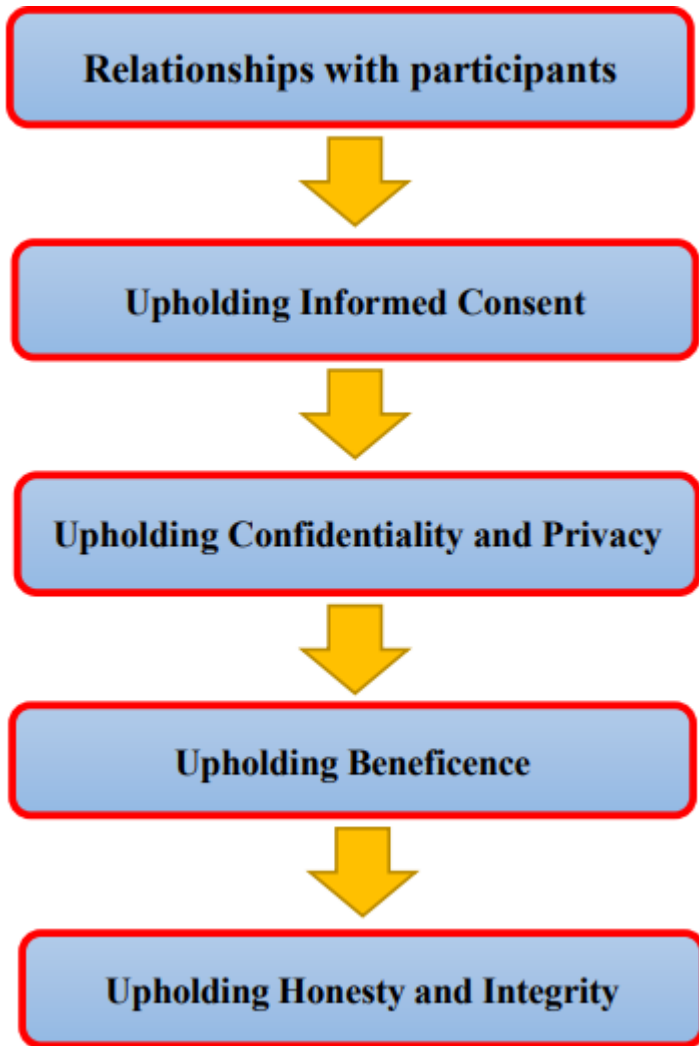
4.11 Conclusion

This chapter detailed the methodology of the study, including how the data was collected and analysed. Additionally, the sample population, the instruments, and the ethical guidelines that were followed during the study were also covered.

5 Chapter 5: Analysis

5.1 Introduction

This chapter delves into the categories and subcategories and analyses the main theme that this study is based on. Following that, there is a discussion that looks at the main theme, categories, and subcategories.

UNEQUAL SOUTH AFRICAN SOCIETY

Apartheid Legacy	Corruption	Digital Inequality	Remote Work
Racial Segregation	Load Shedding	Internet Cost	Work From Home
Spatial Segragation	Crime	Digital Literacy	Covid-19
Economic Segregation	Mismanagement of public funds	Digital Divide	ICT Technology
Political Segregation		Service Delivery	
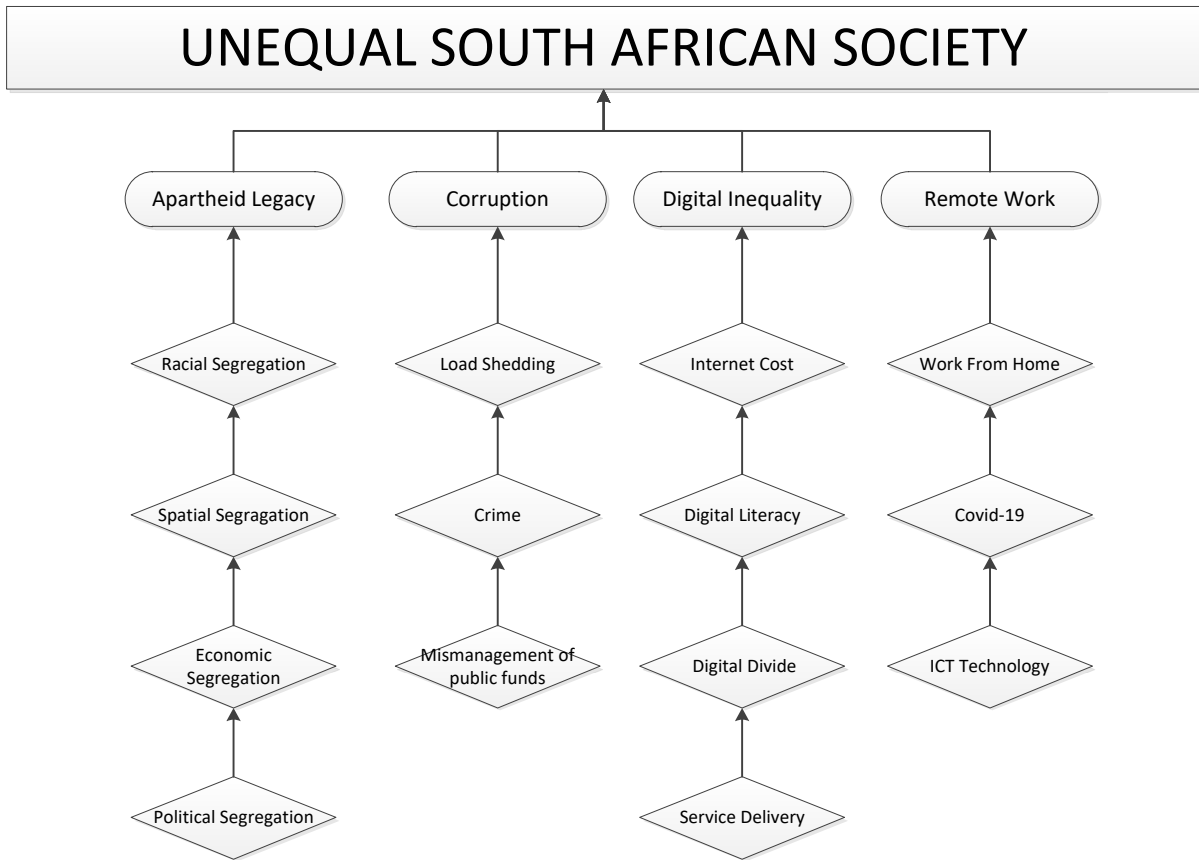
5.2 Summary of findings

Primary Theme: Unequal South African society

South Africa is one of the world's most unequal nations, as the literature review has verified. Social and economic disparities are now chronic, and although being visible, progress has been slow, minimal, and insufficient. In the post-Apartheid South Africa, elitism, nepotism, and corruption have challenged the advancement of diversity and inclusion in all aspects of society, preventing those who are most vulnerable from having access to adequate levels of education, financial resources, and digital tools that allow growth. Thus, slow economic growth and a lack of investment in digital infrastructure by government have restricted the advancement and, had an adverse effect in the development of digital tools and technologies on the South African society. Consequentially, these factors would have a negative impact on remote work as South Africa is divided into a country of those who have which is the minority of the population and, those who do not have who make up the majority of the South African society.

The primary theme, categories and sub categories were derived from the literature review and the themes that were identified during the coding process.

Category 1: Apartheid legacy

The effect of Apartheid policies have had a significant impact on the nation, as even after three decades of democracy South African is still crippled by vast levels of inequality and unequal distribution of resources.

Sub category 1: Racial segregation

After nearly three decades of democracy South Africa remains divided along racial lines as most of the top earners and citizens who are able to take advantage of opportunities in the country are white. All of the Participants that participated in this study acknowledge the racial segregation is deep rooted in the South African society. Older participants that participated in this study highlighted that historically due to their race, they was subjected to discrimination, had limited opportunities and faced many challenges during the Apartheid regime.

Participant 8: "…*I also faced discrimination and inequality in terms of income and career advancement...*"

Participant 6*: "...I come from a background that faced many challenges and barriers due to the social and political situation in my country…" and "...my father was limited to opportunities, his potential financial success was limited…*"

When asked the question "Describe your background?" majority of participants responded by describing either their race or their racial background.

Participant 4: "*I am a coloured (mixed race) South African* "

 Participant 5: "*I am a black South African*"

Participant 7: "*I'm a 3rd generation Indian*"

Sub category 2: Spatial Segregation

One of the primary factors that had a significant impact on the people of South Africa was the Apartheid policies of spatial segregation. People's occupation, income, and wealth are all closely tied to their socioeconomic standing. As a result, households are dispersed throughout the country based on their

income or ability to purchase into neighbourhoods with various amenities, infrastructure, and housing types. This determines spatial results in post-Apartheid South Africa.

When asked about "race groups" in relation to "their access to ICT Tools", with the exception of Participant 7, all other Participants responded that they live in city suburbs and have adequate access to the internet and related infrastructure, most Participants also have Fibre-to-the-home and other numerous options available to connect to the internet. Similarly most Participants believed that race still plays an important role to having access to ICT Tools as well as the area and location where people live.

Participant 5: *"having access to Internet Fibre connectivity from my home. I also have access to free Wi-Fi access at public entities such as libraries, and shopping centres that are in close proximity to my home"*

ICT infrastructure to access internet connectivity was met with a positive response of all Participants with the exception of Participant 7 who was the only participant that admitted to not having internet access from home and instead the participant uses the tools provided by the participant's employer to connect and online services and to work remotely.

Participant 7: "*I currently reside in* ▮▮▮▮▮▮ ▮▮▮▮ *(Researchers note: sub economic area) Location. I use the* ▮▮▮▮▮▮▮▮▮▮ *(Researchers note: Participants Employer\Company\Organisation they work for) resources to access the internet for work (3G Dongle and laptop)"*

All participants in the focus group interviews and one-on-one interviews agreed that there is little to no ICT infrastructure in rural and township areas, that residents of these areas rarely have access to ICT tools, and that it is more expensive to stay online in these areas than it is for those who live in residential areas in cities.

Participant 1: "*People in suburbs have more access than people in rural areas and they are the majority, there are really no fibre lines, children don't grow up with laptops and PC's*"

Participant 3: "*I perceive that there is a significant disparity in access to ICT tools among different segments of the population, depending on their income level and location*", Participant 8.

"*…some of my colleagues and friends live in rural areas and townships, there is no fibre available there, and sometimes accessing the internet from such areas can be difficult…*"

Sub category 3: Economic Segregation

After nearly 3 decades the impact of economic segregation of Apartheid still persist and continues to shape the nations, when asked "How do u think your (economic) background impacted your exposure to ICT tools? " All Participants with the exception of participant 6, described that their economic background as one of struggle and that ICT Tools were seen as a luxury and not a necessity, and that they come from an economic background where ICT Tools were seen as unaffordable and such tools were only accessible once they started working.

Participant 3: "*Growing up computers were very expensive, so we couldn't afford one*"

Participant 8: "*My economic background had a negative impact on my exposure to ICT tools, as I did not have access to computers or the internet outside of my studies or work. This put me at a disadvantage compared to others who had more opportunities and resources to learn and practice using ICT tool*"

Participant 5: "*ICT tools was really not a consideration or option. Technology was too expensive and beyond my reach*"

Participant 8*: "Because of my economic background I was not able to buy myself ICT Tools until I started working"*

Sub category 4: Political segregation

During the Focus group interview the concept of political segregation was discussed and acknowledged by all participants. All participants agreed that non-white males and all females, including white females, were totally excluded from the political system, hence, only white males were allowed to vote.

Category 2: Corruption

Corruption is a constant feature in post-Apartheid South Africa with the government seemingly ineffective to stop or even curtail corruption with corruption hampering any real progress for South Africans.

Sub category 1: Load Shedding

Load shedding is a direct result of government mismanagement and all participants of the study agreed that Load shedding has a severely negative impact on both remote work and the delivery of ICT services when discussed in the focus group interview and when asked in the one on one interviews if "the gap between people who have access to ICT tools is widening or not?" Participant 3 responded:

"*Yes I do, especially with Load shedding, this is killing this country, people with money fit fancy solar solutions and buy inverters and UPS devices keeping then online all the time…*", Participant 3.

For remote workers internet connectivity is critical, there was acknowledgement and agreement among participants that the energy crisis in the country is worsening and that blackout times have been steadily increasing making work remotely very difficult.

Participant 5: "…*we have a deteriorating power situation in our country…things become difficult if there is a power outage for longer than 4 hours…*"

Participant 2: "*...load shedding is getting worse… Load shedding is a big deal, effecting people connecting to the internet…*"

Sub category 2: Crime

One of the notions that came strongly across during the focus group interview was the participant's perception of crime. All participants felt strongly that crime was inextricably link to corruption and all participants believed that crime impacts them in one way or the other. Because of crime remote work may not be possible as ICT infrastructure is at risk of falling to theft resulting in suburbs and communities without internet connectivity. The consequence of crime is therefore two fold, the first being that crime can prevent people from gaining access to online services therefore preventing working remotely, and the second being that as a result of crime, remote workers will incur additional expenses for their own account should the wish to work remotely.

Participant 2: "…*copper theft, which means no internet connectivity, which means we needed to load more data on our phones*"

Crime is one of the primary aggravators in achieving progress to minimize the digital divide as ICT investment, such as copper cables and ICT tools, are expensive, are likely to be targeted, and are high risk for theft.

Participant 8: "…*Corruption, Where private institution try to fill the gap with computer labs these will be mostly 'disappear in thin air…*"

Sub category 3: Mismanagement of public funds

There was an overwhelming feeling during the focus group interview that most participants held the perception that there is mismanagement of public sector spending and that public sector corruption has

a direct result on public service delivery. Additionally, there was a general feeling that government does very little to curb financial mismanagement.

Participant 6: *"...they stealing the money..."*

Participant 2: *"...there is nothing there that comes from government, everything comes from private sector..."*

Participant 3: *"...the government has no real intention of stopping corruption and this is causing public money not to be spent as it should..."*

Category 3: Digital inequality

All participants of this research study held the view digital inequality in the country as an empirical reality and participants expressed their concerns as most jobs available requiring digital skills.

Sub category 1: Internet Cost

During both the focus group and one on one interviews, all candidates unanimously agreed that the financial cost of internet is simply unaffordable to most people. When participants were asked about the affordability of internet services the unanimously response was that for many in people Cape Town and South Africa paying for internet services is reserved for the fortunate few as most people struggle and spend the money they have on basic essentials in order to survive:

Participant 1: *"...not everyone has money.."*

Participant 8: *"...Data connection costs are still very high in South Africa, which limits the usage of internet services for many people..."*

Participant 7: *"...some residents do have access to the internet, it just a matter of affordability..."*,
Participant 3: *"...poorer people don't have money to fork out for these things..."*
Participant 6: *"...I don't think everyone has access, not everyone can afford it..."*

Sub Category 2: Digital Literacy

Few of the participants in this study had early access to a personal computer (PC) and other ICT tools, with many of them only having true access to PCs and similar devices in high school and later.

Participant 2: "…*Growing up computers were very expensive, so we couldn't afford one, I remember we only got a computer when I was towards the end of high school.*"

 Four of the eight participants only had access to PC post High School with one participant describing the feeling of using a computer for the first time as an overwhelming.

Participant 5: "*My first exposure was at tertiary level*", Participants 5.

Participant 6: "*I was in 3rd year university when I saw a computer lab for the first time... it blew my mind…*"

Participant 7: "*My first exposure to ICT tools was at tertiary level*"

The participants who had access to PC's and other digital devices as children acknowledge that it come with family sacrifices.

Participant 4: "*my parents did the best they could. My grandfather and father ensured we had shared desktop computer at home*"

Participant 1 "*It was a struggle, my parents had to save up to buy a computer*"

Sub category 3: digital divide

In respect of the digital divide, all participants believed that the gap of those who have access to ICT tools and those who do note is widening. There is also a sense of ICT tools and access to internet related services as being a privileged and only accessible to those who are able to afford it. When asked if the digital divide is increasing all participants unanimously agreed that the digital gap between those who 'have' and those who 'do not have' is increasing.

Participant 1: "*Oh yes, definitely, the money and the gap gets bigger…*"

Participant 5*: "...the reality is that poverty is on the rise, and hence the ICT Gap is increasing…*"

Apart from affordability factors such as a lack of ICT infrastructure investment and digital tools and literacy skills, were also highlighted as factors that aggravate the digital divide

Participant 8:"…*barriers and challenges such as infrastructure gaps, skills shortages, and digital literacy levels...*"

 Participant 6: "…*people's fear of technology, and peoples' familiarity with ICT tools...*"

Sub category 4: Service delivery

Most Participants felt strongly that those who live in wealthy suburbs receive better public services in relation to digital infrastructure than those who reside in rural and low-income areas.

Participant 1: "…*people is suburbs have more access than people in rural areas...*"

Participant 3: "…*some of my colleagues and friends live in rural areas and townships, there is no fibre available there…*"

Participant 3 "…*many people who live in poor areas, informal settlements, and rural areas, which is mainly black and coloured people, will have more difficulties gaining access to the internet in those areas as compared to the affluent city suburbs where mainly white people live in*"

Participant 8 "*I perceive that there is a significant disparity in access to ICT tools among different segments of the population.*"

Category 4: Remote work

More and more organisations are adopting 'Remote work' strategies for various reasons, what is important to understand is that 'Remote work' is a reality in today's work force as more and more workers are only interested in opportunities that offer 'Remote work' flexibility.

Sub category 1: Work from home

All Participants that participated in this research study had an arrangement with their employer to work from home at least three days of the working week and working two days at the office. Furthermore, all participants stated that apart from the work-from-home arrangement there are additional flexibilities the participant and their employer have an understanding on such as working remotely for 4 days remotely based on operational needs and fully remote when ill.

"*So the formal arrangement is that we come in twice a week in the office and the remainder we work at home, but over and above that we are flexible, we can communicate to our manager if we want to do once a week… but the general rule is twice a week.*", Participant 2

However there was a general concern that due to the power crisis as 'Remote work policies; may be threatened as blackouts can become frequent and lengthy.

Candidate 3: "*management were concerned about the fact that people can become alienated from the workplace and the high levels of load shedding impacting staff*". Candidate 6 held similar views by claiming "*There is some resistance by management to fully allow remote work, to a certain extent they do want people to come to work physically…*"

Sub Category 2: Covid-19

During the focus group interview, the covid-19 pandemic was discussed in detail and all participant held the view that the global Covid-19 pandemic was the root cause that enabled the remote work concept not only in their respective public sector organisation in Cape Town, but also in both the public and private sector in South Africa as a whole.

Candidate 8: "*The COVID-19 pandemic was a catalyst for the organisation to roll out technologies to facilitate remote work, such as laptops, VPNs, and online platforms..*"

Candidate 4: "*Once COVID-19 was declared a pandemic, the organisation had no choice but to implement VPN as quickly as possible…*"

Candidate 5: "*I think that the COVID pandemic has forced the situation upon the* ▉ *'organisation' …*"

Sub category 3: ICT Technology

All participants acknowledged that the ICT technology and tools provided to them by their organisation was sufficient for them to perform their duties remotely; however, although sufficient a few participants felt that their organisations could provide better quality ICT tools.

"*I hate skype, it gives issues, the tools we used to communicate with to business is not effective, skype constantly gives issues, it's not adequate enough, it's not up to standard for an international company.*", Candidate 1.

All the participants that partook in this study stated that they needed to use their own funds to overcome load shedding in order to work remotely and that their employers did not help in any way to assist employees to overcome the load shedding problem they face.

Participant 2: "…*we have to fund our own backup power solutions, so there are recurring costs…*"
Participant 3: "…*with load shedding I had to buy my own UPS…*".
Candidate 6: "…*in terms of Load shedding they have not provided people to work from home…*"

Additionally, all participants of this research study said that they had to fund their own data\internet connectivity.

Participant 2: "…*currently we must pay for our own internet...*"

5.3   Discussion

Nearly three decades into democracy, South Africa's historical past of racial divisions still has a significant impact on the country. As confirmed by the literature review and published academic research, inequality is a global phenomenon, however, South Africa is the most unequal country in the world, where social and economic inequality remain persists. As per the literature review and the findings of this study, economic and social inequalities have now given rise to new, more modern-day issues, such as digital inequality, where access to the internet and related services is restricted to those who can afford it. Government participation remains critical in addressing inequalities. (World Bank, 2022).

There have been progress as Black South Africans report having acquired the most assets year on year, and this increase has consistently reduced asset inequality amongst the various racial groupings (Statistics South Africa, 2020). Contrary to Statistics South Africa (2020), The World Bank (2022), emphasizes that the historical financial and economical inequalities of Apartheid continue to shape the country and suggest there is little evidence that the wealth gap has been reduced in the country.

The findings of this study shows that one of the primary factors influencing the access to ICT tools and online services is financial and economic disparities among the population. Approximately 60% of the South African populations is dependent on social grants and drawing back to the literature review, there remains stark contrast in earning power among the different race groups in the country. A study carried out between 2011 and 2015 revealed that on average White workers earned an average salary of R 24 000 Coloured and Asians workers R 9000 whilst Black workers at 6500 almost three times lower than that of White workers. (Statistics South Africa, 2020)

The gap between those who have access to technology and those who do not is referred to as the "digital divide." The literature review pointed out that the digital divide in South Africa remains persistent and increasing. Although the digital divide is a global phenomenon in both developed and developing countries, a lack of infrastructure, socioeconomic factors, and poor digital literacy are all contributing to the divide in Cape Town and research indicate that these factors may be increasing the divide (Varallyai

et. al., 2015). The results of this study show that, despite government investments in ICT infrastructure, those investments have not been sufficient and have not reached people in rural and low-income areas who most need them.

Another key element raised by both the literature review and the study findings is the importance of geographic location and how it positively or negatively impacts the accessibility to ICT tools and online services. Since broadband and fibre-to-the-home are not readily available in rural and low-income areas of the country, remote workers may find their options for connecting to online services limited. In addition, the study findings highlighted that the cost of staying online rises significantly in comparison to high and middle class communities living in suburban areas of cities, maintaining the trend of inequality. Additionally, public institutions like libraries and schools in city locations may provide accessibility to the internet and online services, but due to their spatial dynamics, this is not the case in rural areas (Tigere & Netshitangani, 2022).

Even though there has been significant progress to ensuring that all South Africans have access to education, research shows that libraries and schools in sub economic areas, such as townships and rural areas, are still under resourced and underfunded,, and no significant investments have been made in ICT infrastructure. In summary, academic research and the study's findings highlight how social, geographic, and economic inequalities contribute to digital inequality (Tigere & Netshitangani, 2022).

Another, common factor drawn from the literature review that prevent people from taking advantage of digital tools and online services is their digital readiness. Individuals who are unable to navigate their digital environment risk being digitally excluded. Since education enables people to acquire the skills and information needed to correctly access, use, and leverage technology, educating individuals as early as possible is crucial in increasing digital readiness. Similarly, digital readiness also refers to the digital adaptability of an organisation. As more and more organisations are digitising and moving toward the digital economy, organisational digital readiness is essential to remain competitive and to attain competitive advantage (Cisco Systems Inc., 2020 and Pew Research Centre, 2022).

The findings of this study show that the majority of the participants first interaction to digital tools such as PCs or laptops was as young adults, in late secondary or tertiary level education or when they started working. This is significant because academic research illustrates the importance of digital literacy and the need for digital education to begin as soon as possible. Young children who are exposed to digital

tools at a young age are able to cope better in their digital environments as adults and, are would be more adaptable to technology and as it changes. (Cisco Systems Inc., 2020 and Pew Research Centre, 2022).

Gaining access to online services was one of the main challenges mentioned in the literature research and a recurrent theme in both the individual and focus group interviews. Research shows that load shedding, which is alleged to cost South Africa 60 billion Rand annually, has had a greater economic impact than lockdowns brought on by COVID-19. The findings of this study also pointed out that technology and related services are impacted by load shedding, thus many organisations and individuals (who can afford) have been forced to invest in backup and alternative power solutions. As a result, remote workers' who rely on ICT tools, such as internet routers, laptops, and the like, would need to spend extra money on equipment to keep these devices running during load shedding in order to continue to be productive as remote workers are unable to perform their duties when the supply of electricity is unreliable, unstable and inconsistent (Sucheran & Olanrewaju, 2021 and Baker and Phillips, 2018).

One of the key conclusions drawn from the study's findings is that remote workers are heavily dependent on technology to carry out their tasks, thus, it essential for remot workers to have access to high-quality digital tools. Based on the interviews, every participant felt that their productivity and work schedules would suffer if they didn't have access to dependable internet connections and online services. The South African government has recently declared a National State of Disaster due to the ongoing energy crisis, to prevent national power outages. Measures were put in place known as "load shedding," which is planned power outages or blackouts throughout the country, this has been implemented for more than decade (Sucheran & Olanrewaju, 2021). Consequentially, all participants of this study confirmed that they had to invest in alternate backup power solutions in order to work remotely from home during load shedding.

Additionally, the academic literature also indicates that load shedding has a detrimental impact on businesses and directly leads to a loss of revenue. Small, medium and large businesses are extremely dependant on electricity, and an inconsistent power supply would disrupt business production. Intermittent power disruptions also damage electrical equipment and appliances which would result in unforeseen maintenance, replacement costs and cause further financial losses. Furthermore, a reduction in productive working hours means that load shedding has a direct impact on job losses and business closures, which the country can ill afford due to the country's' high unemployment rate. Load shedding

can also be implemented and escalated at short notice not allowing business sufficient time to plan accordingly (Sucheran & Olanrewaju, 2021 and Baker & Phillips, 2018).

Academic literature highlights that although remote work is not a new concept, remote work has been rapidly accelerated by the global Covid-19 pandemic, as organisations were compelled to digitise in order to maintain operations. With the aid of ICT tools, remote work has become a reality as many organisations have adopted remote work strategies as a method to retain staff, reduce expenses and increase productivity. Research from the literature review shows that employees have grown accustomed to the flexibility and work-life balance that remote work affords, therefore organizations are expected to continue offering remote work choices, whether it be completely or partially, as remote work is expected to become more prevalent in the future. Remote work is mostly made possible by technology, particularly the internet. Online technologies make it simple for co-workers to collaborate and communicate no matter the distance or location (Gartner 2021).

All eight participants that participated in this study held the opinion that South Africa is a nation divided into those who have and who do not. Although there have been positive changes since the end of Apartheid, the research study found that significant inequalities among the Cape Town population still remain and persist, and it appears that these inequalities, particularly social and economic inequalities, are both stubborn and obstinate and these negatively impacts and aggregates digital inequality. Furthermore, evidence in the literature suggests that the digital gap is not being addressed in an effective and efficient manner, and based on the research participants' responses, it appears that all gaps in inequality, including the digital inequality, are only increasing. (Mariotti and Fourie, 2014).

5.4   Limitations

Qualitative studies seeks to understand the human experiences, there were only eight participants that partook in this study, therefore, the findings of this study cannot be generalized to be views held by most IT professionals working in the public sector in Cape Town. Another limitation was that all participants worked at the same public institute thus, the findings of this study cannot be generalized and applied to most public institutions in Cape Town (Mwita, 2022).

 Due to the lockdowns brought on by the Covid-19 pandemic, remote work is still a relatively new practice in the city and country. As a result, there was limited to very little recent academic literature on the topic of "Inequalities and its impact on remote work in Cape Town, South Africa" since studies on

this and related topics are still ongoing, studies such as this research study are always primarily focused on historical data (Mwita, 2022).

It was difficult for the researcher to reach participants because of the researchers' geographic location. For instance, if the research required one on one, face-to-face interviews and a focus groups, due to the researcher being located in Dublin, Ireland and the research participants in Cape Town, South Africa, the focus group interview had to be held online using Skype, therefore the researcher was not able to practice group observation. During the academic reading week of February 2023, the researcher travelled to Cape Town, South Africa, to conduct the one-on-one, face-to-face interviews, and self-funded the traveling cost (Mwita, 2022).

Another limitation to the research study was that the researcher only used the qualitative research method. The validity and dependability of the research findings might be restricted by exclusively adopting the qualitative research approach. Utilizing a single methodology may not fully reflect the complexity of the phenomenon because different methodologies have varying strengths and deficiencies. Using Quantitative research together with the qualitative approach would have provided more completeness as well as, greater depth and meaning to research findings (Mwita, 2022).

5.5   Conclusion

This chapter explained the limitations experienced by the researchers while as research study progressed. Additional, this chapter analysed the research findings after detailing the research study's outcomes and highlighted the categories and subcategories, which eventually lead to the central theme.

6   Chapter 6: Conclusion

One of the study's goals was to determine how current digital inequality in South Africa is affected by historical inequality brought about by post-apartheid legislation and to delve in the factors currently exacerbating the digital inequality phenomena. Historical practices and policies, continue to aggravate and perpetuate inequality across South African societies causing vast disparities across the nation.

Despite almost three decades of democracy, Apartheid laws and regulations continue to shape the nation to be one of the most unequal in the world.

The continuance of significant income disparities and the stubborn trend that the wage gap caused by the Apartheid policies is rising, generating ever-widening gaps between the upper, middle, and lower classes. A continuous pattern of rising earnings for skilled workers and stagnant earnings for unskilled labourers hinders those without skills from advancing economically. Due to the fact that digital tools and services are only accessible to those who can afford them, directly affects digital inequality in Cape Town.

Another goal of this research was to learn what could reduce digital inequality. Education was a key factor. Education is enables digital literacy, which enables individuals to use digital tools effectively, and giving people the knowledge on how to comfortably navigate their digital environments.

Additionally, this study tried to determine whether people's physical locations is an advantage or a disadvantage for opportunities to work remotely. The effects of Apartheid policies have left different parts of Cape Town and the country with unequal access to resources, opportunities, and services. People residing in sub economic areas, tend to have restricted and limited access to ICT tools and online services and resources. Additionally, the lack of ICT investments is a further disadvantage to remote work opportunities as technology infrastructure, internet services are either non-existent or too expensive

Consequentially, education, income and spatial location have had a direct impact on digital inequality and remote work opportunities.

The study's goals also included determining the degree to which different demographic groups in the county, especially underprivileged groups, can access remote work opportunities. Social economic inequalities creates barriers in respects of the availability and affordability of ICT tool and online related services. Lack of access to ICT tools and online services has a negative impact on people's digital lives and makes it difficult for them to understand their digital environments, which ultimately prevents them from utilizing the opportunities that digital tools and online services offer which includes remote work opportunities.

Lastly, this research study seeks out to understand how technology improves remote work and how it might also pose difficulties for those who operate remotely in the Cape Town public sector. Apart from digital literacy, lack of access to technology, and inadequate technology investments, which were all

discussed above, ICT tools, remote workers and organisations are dependent on a reliable power supply. Load shedding has had a significant impact on business and remote workers in Cape Town, South Africa. It disrupts power supply, affects work schedules, causes stress and fatigue, and has severe economic implications. To mitigate the impact of load shedding, organizations would need to implement contingency plans, such as providing generators, backup power supplies, incurring additional costs as this would ensure that organisations and remote workers are able to operate and work effectively, be productive and maintain a consistent work routine, despite the challenges presented by black outs.

Remote workers too, incur additional expenditure to overcome the challenges of load shedding and in some cases even these additional measure are not sufficient as load shedding may damage equipment and blackouts are also seen as a security risk as it increases criminal acts such as cable theft of ICT infrastructure, house breakings and so forth. Thus, the impacts of load shedding on business and remote workers are detrimental as a stable power source is critical to be operational and productive in the digital economy.

Recommendations

The global trend of remote work is increasing as it offers many other benefits to both employer and employee. However, although technology removes physical border barriers and allows effective collaboration among working teams, it is important to note that in a city such as Cape Town, IT professionals working remotely in the public sector may face barriers and challenges to effectively work remotely. The recommendations provided below are based on the study's findings regarding how businesses and employees may balance the challenges of remote work.

One of the questions of this study was to highlight how do ICT tools enable remote work and the study findings pointed the following recommendations:

- Technology (Internet costs): Internet costs are high and the findings of this study show that all remote workers had to self-fund their own internet connectivity. Public sector organisations should consider subsidizing remote workers on the internet monthly cost, as internet connectivity is critical for remote workers to be online and connected to the organisation.
- Technology (Software): Public sector organisations in the Cape Town are should invest in quality software tools used for collaboration as these tools play a critical role in team communication and

sharing data and information. Software Tools that do not allow effectively communication and data sharing lead to unproductive inefficient remote teams

- Technology (Education): Public sector organisation in the region should do an assessment on remote workers digital literacy to ensure they are competent at using software tools. Using software tools correctly is vital in order to be effective and efficient when working remotely. Employees may need additional training on the proper use of software tools.

This study also tried to understand if people's areas they reside in allow them to work remotely in an effective and efficient manner, the study findings led to the following recommendations:

- Technology (Internet availability): Public sector organisations in Cape Town should do an assessment of which employees live in areas where digital infrastructure is not available and provide them with digital hardware and software tools, such as a laptop and a mobile internet dongle, that would allow them to work remotely without recurring expenses on the employee's side as the long term data costs would become too expensive and unsustainable.

Another research question of this study was to determine what factors prevent IT workers in Cape Town, South Africa, from working remotely. The study's findings emphasized the following recommendations:

- Black out\Load shedding: Load shedding disrupts remote workers form being productive. Load Shedding prevents remote workers from being online and connected to their organisations. Remote workers have to self-fund alternative energy sources in order to work remotely, stay online and connect to their organisations during black outs. Public sector organisations in Cape Town should subsidize remote workers in respects of backup energy tools to ensure they remain online and maintain the levels of productivity as required by the organisation.

Personal Statement

I am much more educated a great deal about current day digital inequalities\challenges and barriers facing ICT professionals in Cape Town's public sector. As someone who was born during the Apartheid era, I never really experienced Apartheid, therefore it was a very emotional experience when I discovered that South Africa's ongoing problems are being further exacerbated by apartheid policies. Furthermore, the main subjects of this study exposed the central themes of inequality in education, lack of infrastructural

investment, corruption, racial discrimination, and social and economic inequalities. I was unaware of how deep rooted the policies of the Apartheid was and to what level, I was particularly moved as I learnt that as a result of Apartheid policies these inequality gaps keep increasing in post-Apartheid South Africa

.

Consistent and stable internet and online services is critical for remote workers in order for them to operate effectively and efficiently, my observation of participants during both the focus group and one on one interviews, gave me the opportunity to see the seriousness of digital inequality and remote working. Apart from access to internet and related services a lack of infrastructure investment in low income areas makes it difficult to for people living in those areas to gain access to remote work opportunities as digital infrastructure such as fibre-to-the-home do not exist and data costs to work remotely is expensive. Another point raised was that when areas undergo "blackouts" known as load shedding, not everyone can recharge digital tools and devices, use backup energy or uninterrupted power supplies (UPS) as these alternate energy sources are expensive. Therefore I am truly grateful that in my personal capacity I have access to these digital tools and services, and alternate energy sources as majority of the people living in Cape Town and South Africa do not have access to these.

ICT professionals are the employees who make remote work possible   as they implement and maintain systems that make remote work possible. It was interesting to learn that ICT employees too, face barriers and challenges working remotely. The problem of digital inequality is spread across the entire population spectrum of Cape Town and South Africa as a whole. The digital gaps that exist today in Cape Town and South Africa holistically requires the intervention and involvement form both the public and private sectors as the global trend toward a digitizing in an empirical realty and the people, public and private organisations of Cape Town need to ready to take advantage of the digital economy.

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Appendix A: Semi structured interview schedule

Background Questions:

1. What is your IT Occupation? (IT Management, software developer infrastructure development etc.)

2. Describe your background? (Are you previously disadvantaged?)

Interview Questions:

3. Describe your arrangements you have with your employer in respect of remote work? [RO1]

4. Describe your first exposure to ICT tools, was it in primary, secondary or at tertiary level education? [RO2]

5. Do you feel the public entity your work for adequately provide ICT, systems and applications to enable remote work? (This includes hardware and software) [RO1 and RO2]

6. How do u think your (economic) background impacted your exposure to ICT tools? [RO3]

7. Describe your current living environment (in terms of informal settlement, rural, city) and which ITC tools are available to you to connect to the internet [RO2]

8. Do you think some people have more access to ICT tools such as mobile phones, access to the internet and so forth, and explain why you hold this opinion? [RO3]

9. Do you feel the public administration in Cape Town has invested adequately in delivering Internet access to residents of the city? [RO2]

10. Cape Town is ranked highly for remote workers (both locally and internationally), what are your thoughts on this? [RO2]

11. Do you think different race groups in Cape Town have different levels of access to ICT tools and explain why you hold this opinion? [RO2 and RO3]

12. The ICT investment your organisation made in terms of enabling remote work, how effective has it been to achieve this? [RO1]

13. Describe how efficient the ICT tools are that was made available to you by your organisation? [RO1]

14. Do you feel that the gap between people who have access to ICT tools is widening or not? [RO3]

15. Do feel there are any external ICT systems and applications that impact you as a remote worker? [RO1]

16. Compared to you IT colleagues with different economic backgrounds, how do you view your current accessibility to ICT tools compared that of theirs? [RO3]

17. What factors do you think influences the digital divide in SA [RO1,2,3]

18. 15. Do feel there are any other external non ICT systems and applications that impact you as a remote worker? [RO1]

Appendix B: Coded transcript

3) So the formal arrangement is that we come in twice a week in the office and the remainder we work at home, but over and above that we are flexible, we can communicate to our manager if we want to do once a week if we not feeling well, but the general rule is twice a week.

4) I was introduced to a PC at quite young, at primary school, I was introduced to the concept of internet at high school where I sent my first email, we had dialup internet (at home) in high school, but late high school

5) No, I don't think so, it's a yes and no, we given a laptop, but that is only the third of what we require, currently we must pay for our own internet, and load shedding is putting a different spin on it, we have to fund our own backup power solutions, so there are recurring costs

6) I would say it was based on what our parents could afford, so obviously I could have been introduced to computers earlier and had access to the internet connectivity earlier

7) I live in the suburb of a capital city, there is various infrastructure for inter connectivity, there is cellular reception, copper based solutions like adsl and fiber

8) Definitely, just in terms of having fibre in your area is important, as fibre rolled out, affluent areas got it first, there was also copper theft, which means no internet connectivity, which means we needed to load more data on our phones

9) Definitely not, because, there is nothing there that comes from government, everything comes from private sector, I can say public facilities provide internet access, but you have to go there

10) I think it's a good thig if they keeping their same jobs internally, on top of that they come with foreign currency, which is a win, and they not taking up our jobs. Its positive all round

11) Definitely, because, its just based on historically, how the different race groups were put in their own areas, this is still existent, if you compare a township to an affluent area, there is no fiber in townships, you only have wireless internet which is expensive

12) They made no investment, I don't see any, these are the same tools we had when we were working in office, we had VPN before, so there was no investment

13) So, that has been effective to a certain extent, besides the laptop, skype but this is not enough, we had to meet them half way for it to be effective

14) I think so because, there is an issue, load shedding is getting worse, this is a big factor. You can have a PC in your home, but you need the power. It's getting worse, to counter LS you need additional tools such as solar.

15) Load shedding is a big deal effecting ppl connecting to the internet, there is also theft in the areas which impacts the adsl lines and even phones, this can take months to fix

Appendix C -1: Informed Consent

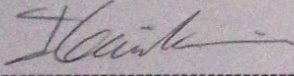### Consent to take part in research

- I... MOGAMMAD GAMILDIEN .... voluntarily agree to participate in this research study.

- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.

- I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.

- I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.

- I understand that participation involves...[outline briefly in simple terms what participation in your research will involve].

Appendix C -2: Informed Consent

Names, degrees, affiliations and contact details of researchers (and academic supervisors when relevant).
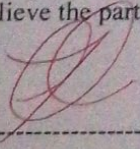
Signature of research participant

------------------------------------   6/02/23

Signature of participant   Date

Signature of researcher

I believe the participant is giving informed consent to participate in this study

------------------------------------   16/02/23

Signature of researcher   Date