Digital divide in a rural area of the Eastern Cape: Exploring possible implications for remote workers and remote work seekers

Nonkululeko Matiwane (MTWNON007)

Supervisor: Michelle Kahn

A minor dissertation submitted in partial fulfilment of the requirements for the award of the degree of Master of Philosophy

2024

Declaration

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

Signature: Signed by candidate Date: 01/02/2025

Acknowledgements

I owe my deepest gratitude to my family.

My mom, brother, and sisters, especially Ntombie, who has been my unwavering rock, inspiration, and motivator. Her belief in me, even when I doubted myself, made this achievement possible.

I also want to extend my heartfelt thanks to my best friends, who provided me with much-needed support and comfort during the tough times of this journey.

Thank you to The Mastercard Foundation Programme for your generous funding, and to my supervisor, Michelle Kahn, whose encouragement kept me going, even when I felt like giving up. This milestone would not have been reached without your support.

To my children, you are my greatest achievement.

To God and my ancestors, I ask for your continued guidance and strength to fulfil all my dreams.

Lastly, to my late father, I hope I am making you proud.

Abstract

The Fourth Industrial Revolution (4IR) has reshaped how people work, communicate, shop, and bank. This shift has created opportunities, including remote work, which has become a more viable choice for many, especially since the COVID-19 pandemic forced the population to work from home. However, those living in rural South Africa, including areas like Peddie in the Eastern Cape, face barriers in ICT access, use, and opportunities gained.

This study investigated the digital divide in the semi-rural town of Peddie and surrounding rural areas, with a focus on its implication for remote work. Adopting a qualitative, constructivist approach, this study used a single case study design. Nine participants (six remote workers and three remote work seekers) were selected via convenience and snowball sampling. Data collection involved semi-structured interviews, and data was analysed thematically.

The findings of this study reveal how the first level of the digital divide, access to ICTs, remains a challenge in the rural area. The second level, framed in this study as digital literacy, is also a challenge, particularly for remote work seekers, despite basic access to ICTs. Finally, the third level of the digital divide, which focuses on the ability to leverage ICTs for opportunities, is more evident among remote work seekers because of access to and use of ICTs.

The study recommends expanding digital infrastructure, subsidising data, providing targeted digital literacy programs for rural communities, and fostering support groups for remote workers and seekers. Future research should explore the broader impacts of the digital divide on living standards in rural areas.

Table of Contents

List of Figures

List of Tables

List of Abbreviations and Acronyms

4IR	Fourth Industrial Revolution
AI	Artificial Intelligence
COVID-19	Coronavirus Disease of 2019
DCDT	Department of Communication and Digital Technologies
ICT	Information and Communication Technology
IoT	Internet of Things
SASAS	South African Social Attitudes Survey
MSEs	Micro and Small Enterprises

Chapter One: Introduction to the study

1.1 Introduction

In the digital age, Information and Communication Technology (ICT) is transforming how individuals and organisations access services, communicate, and engage with the global economy, subsequently enhancing livelihoods (Balogun et al., 2020:533; Amoateng & Biney, 2024:182; Elder et al., 2013:1). Yet, the integration of these technologies into society has been uneven, exposing disparities in access, usage and outcomes (Dixon, 2020:15). In South Africa, for example, a great number of individuals living in rural areas remain largely excluded from accessing ICTs (Matli and Ngoepe, 2019:129). The resulting gap between those with ICT access, the 'haves', and those without, the 'have nots', is known as the 'digital divide' (van Dijk, 2005:1). The digital divide is not, however, a singular issue but a multifaceted one, involving three levels: access to ICTs, use of ICTs, and the ability and extent to which one can transform the advantages gained from effective use of ICTs into outcomes that can enhance individuals' life opportunities (Ragnedda, 2019:28).

The Coronavirus disease of 2019 (COVID-19) which resulted in a pandemic highlighted the extent of the digital divide. Due to government-imposed lockdowns, millions of people worldwide shifted to remote work (De Klerk, Joubert, and Mosca, 2021:1). As work shifted online in 2020, the digital divide in rural areas became increasingly evident (Lai and Widmar, 2021:458). However, because of the experience of the pandemic, remote work became a viable possibility for those residing in cities for work opportunities but whose true home remain the rural areas, prompting some to relocate permanently back to rural areas. This shift allows them to stay close to family while saving on rent and commuting costs in the city.

This study investigated the digital divide in the semi-rural Eastern Cape town of Peddie and its surrounding rural areas with a focus on its implication for remote work. It forms part of a Master of Philosophy specialising in Digital Curation. The study examines access to ICTs, use of ICTs and the ability to leverage ICTs for one's benefit and therefore aligns with the field of Digital Curation which is concerned with the management and preservation of digital resources to ensure their equitable accessibility and usability while at the same time promoting social justice by addressing disparities in digital inclusion.

1.2 Background to the study

This section provides an overview of the study's key elements, including the digital divide, and remote work.

1.2.1 The digital divide

The digital divide initially referred to the gap between individuals who have physical access to digital devices and an internet connection and those who lack these resources, leaving them excluded from the opportunities they provide (Ragnedda, 2019:30). However, the phenomenon of the digital divide is now understood to exist on a continuum that spans entire populations, from individuals with no access to or ability to use ICTs to those who enjoy full access and easily engage with multiple digital applications daily (van Dijk, 2020:11). Additionally, disparities in access to ICT infrastructure can hinder individuals from effectively using ICTs to their advantage, either individually or collectively, subsequently impacting the social benefits they derive from ICTs (Dixon, 2020:17).

Initially, research on the digital divide focused on the distinction between individuals who had physical access to personal computers and the internet and those who lacked this access – the 'haves' and the 'have nots' (van Dijk, 2005:1) – which is now recognised as the first level of the digital divide (Helsper, 2021:29). Access to ICTs refers to the availability of telecommunication infrastructure and the necessary devices, such as desktop computers, laptops, or smartphones, that facilitate an internet connection (Balogun et al., 2020:533).

As access to ICTs grew, researchers such as Selwyn (2004:348) pointed out that access to ICTs should not be equated with usage of ICTs. Using ICTs requires digital literacy, and the gap between those who possess the necessary digital skills for effective use of ICTs and those who lack these skills represents the second level of the digital divide (van Dijk, 2020:16). Digital literacy encompasses the ability to efficiently use ICTs for communication, work, content creation, interaction, and sharing on digital platforms. These skills exist at varying levels, ranging from basic tasks such as powering a computer on and off to advanced competencies like software development (Nwongwugwu, 2022:193).

While some individuals are able to leverage their access and digital literacy skills to enhance their lives and achieve positive outcomes through ICTs, others find that access and digital literacy do not automatically translate into benefits, thus creating a gap between those who can derive favourable outcomes from ICTs and those who cannot, which represents the third level of the digital divide (Ragnedda, 2019:34).

1.2.2 Remote work

The rapid advancement of ICTs, coupled with the onset of the COVID-19 pandemic, profoundly disrupted traditional work structures (Griszbacher, 2023:20). This disruption accelerated the adoption of working from home practices – referred to as remote work in this study – fundamentally altering the concept of the conventional workplace (Capuano, 2023:171). For many organisations, remote work became a necessity during the pandemic to remain operational and to avoid staff layoffs (Criscuolo et al., 2021:4). For individuals with the capacity to do so regularly, remote work now offers a viable alternative to traditional employment, providing flexibility and autonomy to work from anywhere with an internet connection (Cook, 2023:271). This can take various forms, including fully remote work from home, a hybrid model that combines remote and office-based work, or digital nomadism, where individuals leverage ICTs to work while traveling the world.

This flexibility has been linked to positive outcomes, including increased productivity and enhanced well-being, as employees are more likely to reinvest the time saved from commuting into other activities (Mache, Servaty, and Harth, 2020:6). Flexible work arrangements have expanded in some sectors, though jobs such as retail and healthcare, still require on-site presence (Holland and Brewster, 2021:104).

Effective remote work depends on reliable ICT access, enabling seamless connectivity to workflows, colleagues, and professional networks while ensuring timely, informed decision-making (Balogun et al., 2020:1). ICT access varies across the world, with rural areas often experiencing slower internet speeds or limited connectivity (Lai and Widmar, 2021:459). In such areas, ICT infrastructure plays a role in shaping how individuals engage with ICTs, including in their remote work (Matli and Wamba, 2023:151). Access to ICTs also influences the extent to which individuals can seek employment opportunities (Davies, 2021:139).

In addition to individuals already engaged in remote work, there is a growing population actively seeking remote work opportunities. Remote work seeking refers to efforts by job seekers to find roles that allow location flexibility through the use of ICTs. Similar to remote workers, these individuals rely on digital connectivity and online platforms to access, apply for, and sustain employment opportunities. As highlighted earlier, effective participation in remote work is dependent on reliable ICT access (Balogun et al., 2020:1), and this dependency equally extends to the search for remote opportunities. In areas where connectivity is limited or infrastructure remains underdeveloped, such as rural areas, individuals face challenges not only in performing remote work but also in identifying and competing for such opportunities (Lai and Widmar, 2021:459; Matli and Wamba, 2023:151).

1.3 Study context

In many developing countries, a substantial share of the population lives in rural areas and frequently encounter barriers to progress and development (Balogun et al., 2020:534). Rural areas in South Africa are typically characterised by wide expanses of land with scattered and low-density settlements (Seadira and Heuva, 2021:73). During apartheid, telecommunications services were intentionally withheld from townships and certain rural areas as part of the apartheid policy of separate development, which aimed to relocate the indigenous African population to designated tribal homelands (Horwitz, 2001). Apartheid laws, therefore, contributed to the ICT challenges faced by some rural communities in South Africa (Skuse and Cousins, 2007:187). Even today, in metropolitan South Africa, ICTs are advanced and well-maintained, whereas in rural areas they are neither sufficiently provided nor properly maintained (Aruleba and Jere, 2022:3).

Ifeh (2013:1) notes that the low population density of rural areas makes them unattractive for ICT investments and capital expenditure by telecommunications providers. Similarly, Rey-Moreno et al. (2016:101) explain that providing ICT infrastructure in rural areas is neither profitable nor straightforward. Seadira and Heuva (2021:85) point to high data and bandwidth costs, along with the expense of broadband-compatible devices like smartphones and tablets, as some of the barriers to broadband development in rural areas of South Africa. Consequently, the digital divide remains a stark reality for South African citizens living in rural areas (Frans and Pather, 2021:1575).

The Eastern Cape, South Africa's fourth most populous province, is home to approximately 7.2 million people (Eastern Cape Rural Development Agency [ECRDA], 2022). Administratively, it consists of 37 local municipalities, 6 district municipalities, and 2 metropolitan municipalities (Eastern Cape Provincial Government, 2025). Within this landscape, Peddie is a semi-rural town located in the Ngqushwa Local Municipality, which forms part of the Amathole District Municipality (Figure 1). Ngqushwa accounts for about 10% of the Eastern Cape's geographical area, making it one of the smallest local municipalities in the province (Eastern Cape Rural Development Agency [ECRDA], 2022).

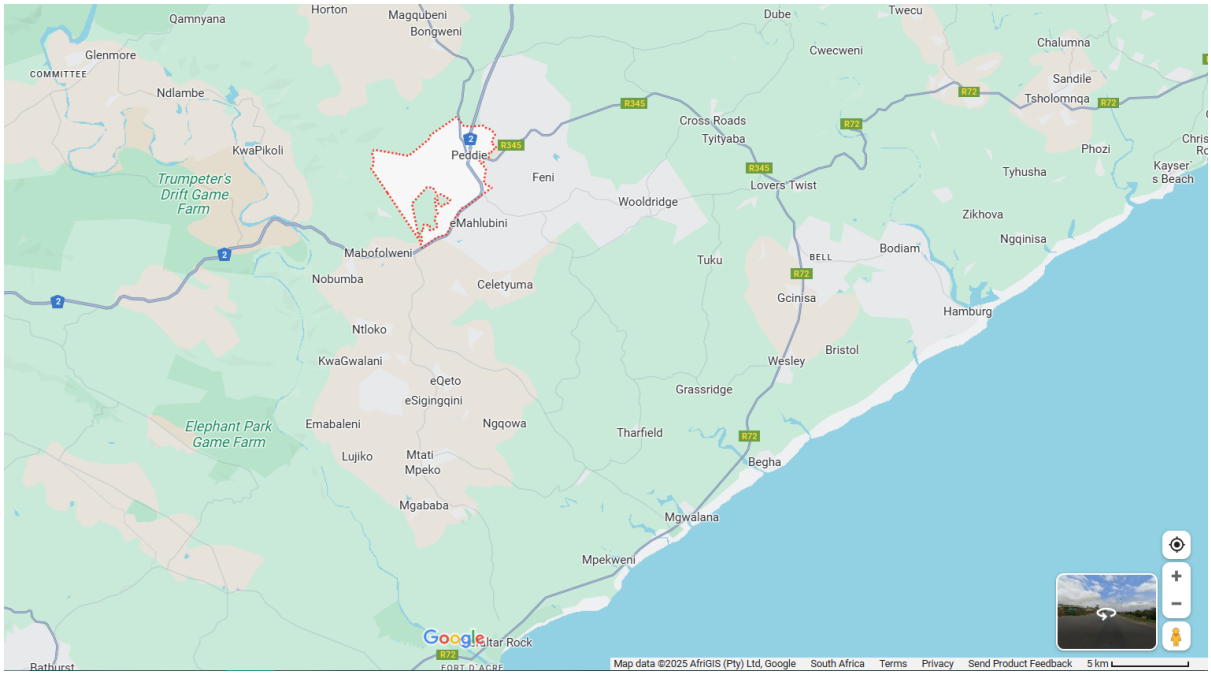

Figure 1: Map showing Peddie Town and surrounding rural areas (Google Maps, 2025)

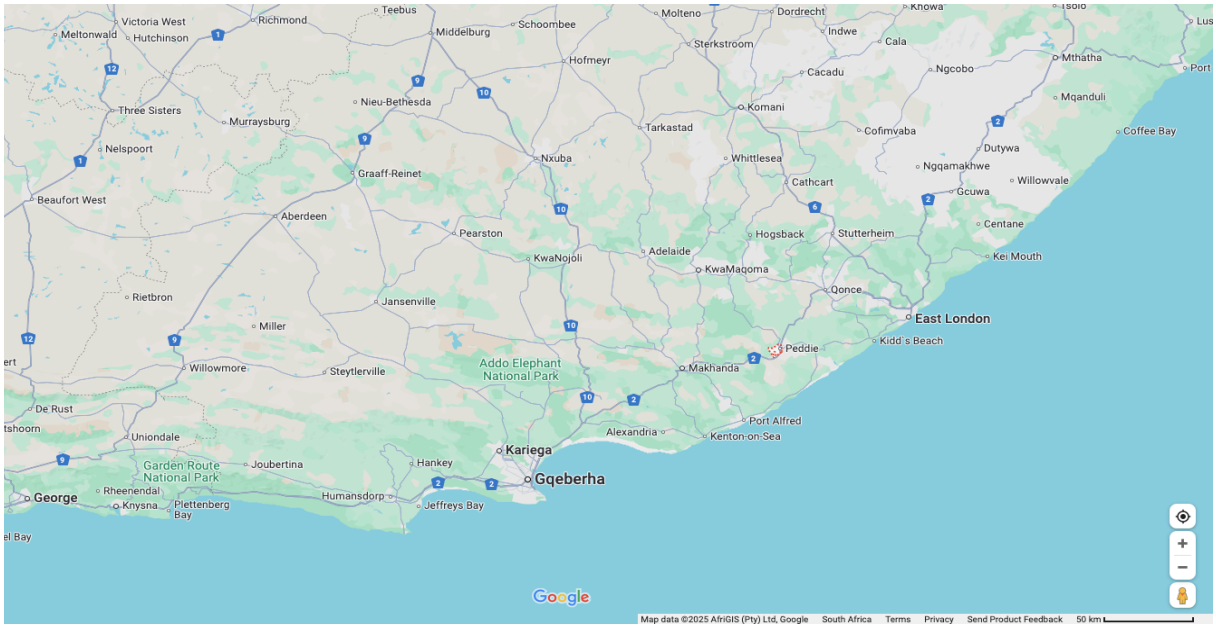

Figure 2: Peddie within South Africa (Google Maps, 2025)

The Eastern Cape stands out for its staggering unemployment rate, which sits at 41.0%, significantly higher than the national average of 32.1% (Quarterly Labour Force Survey [QLFS]:2023). The province is one of the poorest in South Africa, with 62.9% of households relying on social grants as their primary source of income rather than salaries (Statistics South Africa [Stats SA], 2022:59). While mobile broadband penetration has improved in South Africa, growing from 28.0% to 75.3% in 2022 (Stats SA, 2022:53), only 63.6% of households in the Eastern Cape have access to mobile broadband, and a mere 6.6% of households have fixed internet access. In the rural areas of the province, just 0.5% of households have fixed internet access compared to 15.6% in metropolitan areas and 3,8% in urban areas (Stats SA, 2022:54). While 55.9% of rural households in the Eastern Cape access the internet via mobile devices, this figure is still lower than the 69.5% and 69.7% reported for metropolitan and urban areas, respectively (Stats SA, 2022:55). Access to internet cafes or educational facilities is also limited in rural areas, at just 3.7%, compared to 12.4% in metropolitan areas and 6.4% in urban areas (Stats SA, 2022:55).

According to the Integrated Development Plan (IDP) for Ngqushwa Local Municipality (2023:140), "the bulk of economically active populations migrate to cities in search of jobs and better living conditions." As a result, the province has a high rate of out-migration. The municipality has limited social and economic infrastructure, with a staggering unemployment rate of 68% (Ngqushwa Municipality, 2023:88). Moreover, the municipality has a library that operates during the week (Nqgushwa Local Municipality, 2023) but there are no higher

education institutions or ICT centres within the municipality, and schools lack adequate infrastructure (Ngqushwa Municipality, 2023:88). Social infrastructure, such as healthcare and recreational facilities, is sparse and largely concentrated in the town of Peddie (Ngqushwa Municipality, 2023:88). Road infrastructure is underdeveloped, hindering access to services for the surrounding rural villages (Ngqushwa Municipality, 2023:88).

The migration patterns discussed in this chapter reveal the lack of local opportunities and set the context for the challenges faced by Ngqushwa municipality residents, particularly regarding the digital divide and remote work, while also highlighting the historical, social, and economic factors that continue to shape access to ICTs and digital inclusion in rural South Africa.

1.4 Research problem

The Fourth Industrial Revolution (4IR) is defined as entailing "profound shifts across all industries, marked by the emergence of new business models, the disruption of incumbents and the reshaping of production, consumption, transportation and delivery systems" (Schwab, 2017:7). These shifts have ushered in an era deeply immersed in technology, reshaping how individuals work, communicate, shop, and bank. ICTs have created a wealth of opportunities from enhanced access to information to remote work opportunities. While developing countries, including South Africa, often lag behind industrial revolutions, the advent of COVID-19 accelerated the global adoption of ICTs, making them essential for economic and social functions. Remote work, once limited to a few organisations, became a necessity to sustain businesses and livelihoods during the pandemic. Even post-pandemic, it remains a viable option. For those who previously migrated to urban areas for employment, it allows them to return to their rural homes, reduce living expenses, avoid long commutes, and achieve better work-life balances.

The problem that this study investigated is that remote work in rural areas presents significant challenges, primarily rooted in disparities in access to ICTs. These disparities extend beyond mere access to ICTs to include gaps in digital literacy and the ability to yield opportunities from ICTs.

While technology is often seen as a tool for empowerment, its benefits remain unevenly distributed. The increasing penetration and advancement of ICTs are transforming how and where people work, creating new career opportunities for rural residents. Yet, despite the

economic potential of ICTs, barriers affect remote workers in rural areas from fully benefiting from ICTs.

1.5 Study objective and research questions

Considering the research problem, the objective of this study was to investigate the extent of the digital divide in a rural area of the Eastern Cape of South Africa, focusing on its implications for remote workers and remote work seekers. The three levels of the digital divide, access, use, and opportunities (Ragnedda, 2019:35), were used as a framework to study this phenomenon. The following research questions were explored to achieve the research objective:

1. How does access to ICTs affect remote work in the rural Eastern Cape?
2. How does digital literacy affect remote work in the rural Eastern Cape?
3. To what extent are the social benefits of access to and use of ICTS being realised in the rural Eastern Cape, particularly as they relate to remote work?

The specific area of the Eastern Cape to be investigated in this study is semi-rural Peddie and the surrounding rural villages. By focusing on Peddie and its surrounding villages, this study explores the first, second, and third levels of the digital divide within a context shaped by historical legacies, geographic isolation, and systemic underdevelopment.

1.6 Significance of study

The study's exploration of the digital divide in a rural area of South Africa has both social and academic significance. By exploring the implications of the digital divide on remote work, this study aims to draw further attention to and create a deeper understanding of the digital divide in rural areas and its implications on remote work. It will contribute to the scholarship in this area and, by proposing recommendations and strategies, the research also seeks to play a role in informing policymakers and practitioners on effective interventions to promote digital inclusion, economic empowerment, and social equity in rural communities. Ultimately, the findings of this study have the potential to contribute to positive change and foster greater digital access and opportunity for underserved populations in South Africa.

A review of the literature revealed a paucity of research focused specifically on the digital divide in Peddie or surrounds. While broader studies on rural South Africa exist, few examine

the experiences of remote workers in rural areas of the Eastern Cape. This study documents the experiences of one community, contributing to both academic knowledge and practical understanding of the digital divide but also drawing attention to one of the many overlooked rural areas in South Africa.

1.7 Overview of the methodology

This study adopted a qualitative research approach grounded in the constructivist paradigm, which seeks to explore how individuals construct their realities through lived experiences. A single case study design was chosen to enable an in-depth exploration of the semi-rural town of Peddie and its surrounding villages, providing a holistic understanding of participants' interactions with ICTs and the digital divide in their specific context. The study's population comprised remote work seekers and remote workers from Peddie and its surrounds.

Participants were selected using convenience and snowball sampling techniques, with a final sample of nine individuals. This sample included those already engaged in remote work, as well as individuals aspiring to work remotely, such as remote work seekers or those wishing to transition from urban jobs to remote work in the rural areas. Data collection was conducted via semi-structured, in-person interviews and analysed through a thematic analysis.

1.8 Delimitations of the study

This study was geographically delimited to Peddie, located in the Ngqushwa Local Municipality, which is part of the Amathole District, and its surrounding rural areas in the Eastern Cape, South Africa. I grew up in Peddie and returned there during the COVID-19 lockdown in 2020. During that time, I experienced the challenges of remote work firsthand, making me acutely aware of the barriers and opportunities posed by access to ICTs, as well as the importance of digital literacy in using ICTs effectively. That background has shaped my understanding of the digital divide as more than just a technical issue but a lived experience that has implications for the livelihoods of rural dwellers. The choice of this location therefore stems from both personal familiarity and the relevance of the digital divide in this context.

The scope of the study is further delimited to remote workers and remote work seekers. This population was chosen to align with the study's objective of exploring the implications of the digital divide on remote work in a rural context. By focusing on this specific group within a

defined geographical area, the study aims to provide an in-depth exploration of the unique challenges and opportunities faced by rural communities in leveraging ICTs to their advantage.

1.9 Structure of the report

Chapter 1 introduces the study, including its background and an overview of the critical concepts. It outlines the study's context, research problem, objectives, and research questions. Additionally, it discusses the significance of the study, presents a brief overview of the methodology, and identifies the study's delimitations.

Chapter 2 reviews the existing literature on the core concepts of the study. The literature on remote work is examined, tracing its evolution and how it has transformed over time, before the chapter reviews literature on the digital divide.

Chapter 3 details the research paradigm, approach, and design adopted for the study, along with the specific methods employed. It discusses the study population, sampling strategies, data collection, and data analysis techniques. Ethical considerations, as well as measures to ensure the validity and reliability of the research, are also addressed.

Chapter 4 presents the qualitative data collected from the study's participants. A thematic analysis framework is employed to guide the presentation, highlighting key themes that emerged from the data.

Chapter 5 discusses the main findings from Chapter 4, using the research questions outlined in Chapter 1 as a guide. The discussion interprets and contextualises the findings in light of the study's objectives. The chapter concludes with recommendations, and a study conclusion.

1.10 Chapter summary

This chapter introduced the study by providing background related to the key concepts of the study: the digital divide, and remote work. It identified the research problem, outlined the research objectives, and posed the research questions. Additionally, the chapter explained the significance of the study, provided an overview of the research methodology, outlined the study's delimitations, and concluded with an outline of the structure of the thesis.

Chapter Two: Literature Review

2.1 Introduction

The review is structured into four main sections. The first section provides a background to remote work through a discussion on the evolution of work. The rest of the chapter explores the digital divide focusing on its three dimensions; access, use, and opportunities. It draws on literature from 1995, when the concept of the 'digital divide' gained momentum, to recent studies as the phenomenon evolved. The sources used include seminal works from scholars like Castells (1996), van Dijk (2005) and Ragnedda (2019), who have made significant contributions to the discourse of the digital divide.

2.2 Evolution of work

From the first industrial revolution to the 4IR, through the COVID-19 pandemic that disrupted life as we know it, the world of work has changed. The following section explores the industrial revolutions, COVID-19 and its impact on working life, and remote work as a permanent part of the labour landscape.

2.2.1 Industrial revolutions

Globally, the evolution of work has been shaped by successive Industrial Revolutions (IR), described as periods "where technological transformations culminate in dramatic and tremendous changes in the socio-economic situation of people and countries" (Olaitan, Issah & Wayi, 2021:1). The First IR began in the 18th century, characterised by coal becoming the main energy source for socio-economic activities, while steam power revolutionised manufacturing (Mebratu, 2019:115). This period brought many changes that improved people's lives, with textile and steel industries serving as key sources of employment (Manamela and Ngomane, 2022:3). Historically, African economies, including South Africa have lagged behind those of more developed nations (Molopyane, 2021:220). Painting the picture Marwala (2022:5) explains how machines began replacing certain types of labour during the 1IR, and South Africa lagged behind global trends. For instance, "the first steam train arrived in South Africa... some 60 years after the world's first steam train was built" (Marwala, 2022:7).

The Second IR, which spanned the late 19th to early 20th century, was marked by advancements in electricity, mass production, and the division of labour, where work processes were broken into specialised tasks to increase efficiency and output (Olaitan, Issah & Wayi, 2021:1). This period also saw the convergence of electrical communication with oil-powered engines, electrifying factories and fuelling the rise of mass-produced goods, particularly automobiles (Mebratu, 2019:119).

The early 1950s marked the advent of the Third Industrial Revolution (3IR) also known as the digital revolution (Schwab, 2017:7). The 3IR was driven by advancements in electronics, information technology (IT), and automated production (Olaitan, Issah & Wayi, 2021:1). The revolutionary advancements and innovation in information theory and digital computing during this period were pivotal to the 3IR, enabling digital storage, processing, and transmission of information, transforming industries across the globe and drastically altering the work and social dynamics for billions of people by introducing automation, remote work, digital communication, and increasing productivity (Mebratu, 2019:118).

The internet became widely adopted in the 1990s and was heralded as the optimal platform for disseminating information and conducting commercial activities (Thomas & Wyatt, 2000:30). This period gave rise to what Castells (1996:21) describes as the network society, a social structure built on information networks powered by digital technologies. Castells (2002:207) described the internet age as heralding "the end of geography" and, notably, "the end of the workplace." He speculated that the internet age could fundamentally reshape urban dynamics, envisioning a future where individuals might abandon crowded cities, and instead use the internet to work from anywhere (Castells, 2002:224).

The 4IR, which began at the turn of the 21st century, builds upon the foundations laid by the digital revolution. Schwab (2017:1) states;

> We are at the beginning of a revolution that is fundamentally changing the way we live, work and relate to one another. In its scale, scope and complexity, what I consider to be the fourth industrial revolution is unlike anything humankind has experienced before.

These technologies form a web of interconnected systems and objects that communicate over the internet, fundamentally altering the landscape of work and industries (Malatji and Mabeba, 2022:136). Compared to earlier industrial revolutions, the technologies of 4IR are spreading

more rapidly and extensively, catalysing transformative changes across multiple sectors (Schwab, 2017:7). Kraemer-Mbula and Mazibuko-Makena (2021:4) state that in the 4IR technological advancements are the primary catalysts for transformative change, influencing every industry and aspect of society. Mabasa and Qobo (2022:258) assert that 4IR has now become an integral part of our daily lives, evident in the digital tools and technologies we use for work and leisure.

2.2.2 COVID-19 and remote work

From March to May 2020, the first wave of COVID-19 prompted a shift to remote work, a trend observed across the world, including South Africa (De Klerk, Joubert and Mosca, 2021:2). The pandemic forced organisations to transition from traditional workspaces to online platforms, requiring employees to work remotely regardless of their readiness (Botha and Coetzee, 2022:2). This transition occurred across various occupations, ranging from finance to teaching, with many workers in fields that had little prior experience with remote work, being shifted to home-based arrangements (Kramer and Kramer, 2020:2). While remote workers adjusted to a 'new normal,' essential workers, such as emergency services, remained on call as their jobs could not be performed remotely (Mishi & Anakpo, 2022:11; Holland & Brewster, 2021:105). Ultimately, the pandemic prompted individuals to reevaluate aspects of life once considered as a norm, including family, work, colleagues, travel, and daily responsibilities (Jagganath & Singh, 2022:110). Several studies investigated the forced changes, in South Africa included.

For example, in a study of academics in South Africa, Iwu et al. (2022) explore the experiences of those forced to transition to remote work due to government-imposed lockdowns aimed at curbing the spread of the virus. The study revealed a range of mixed emotions among study participants (Iwu et al., 2022:9). On the positive side, some initially experienced anxiety but later reported feeling happy and refreshed while working remotely, while others experienced the reverse. They appreciated the convenience and the new levels of energy that working remotely provided. However, others had difficulty adapting to the new environment, clinging to old ways of working. The lack of proper home office infrastructure was a challenge, as many academics lacked the resources needed to work effectively from home. Furthermore, feelings of loneliness and isolation emerged, as remote workers missed the interactions, they once had with colleagues in physical office spaces (Iwu et al., 2022:10).

In a similar study conducted in the midst of COVID-19, when lectures were solely conducted online, Fouche and Andrews (2021) researched the experiences of students and lectures in South Africa. They state that due to the urgency of having to suddenly transition to working remotely, lecturers were not prepared to teach online and lacked awareness of the difficulties that students faced in their homes while studying online (Fouche & Andrews, 2021:134). Students identified issues such as unreliable internet connections, unexpected power outages, and challenges in acquiring the required devices for online learning as obstacles that made the experience difficult (Fouche & Andrews, 2021:144).

Jagganath and Singh (2022) examined the experiences and mental well-being of women in South Africa, Australia, Europe, and India during the COVID-19 pandemic, particularly how they managed the challenges of remote work (Jagganath & Singh, 2022:115). For some, remote work was a blessing, as it removed the need to dress formally and commute, allowing them to spend more time with their families (Jagganath & Singh, 2022:116). However, for others, it proved challenging, as they faced numerous distractions in large households and experienced anxiety, fear, and stress while adjusting to a new way of life (Jagganath & Singh, 2022:122).

2.2.3 Remote work as a permanent part of the working landscape

The rise of remote work has brought up important questions about how work locations are changing and what this means for different regions, such as rural areas (Green and Riley, 2021:161). Farooq and Sultana (2022:309) note that before the pandemic, only a few organisations had adopted remote work, offering employees flexibility in where they worked and when. Smite et al. (2023:5) explore experiences of the emerging trend of remote work and found that most respondents wished to continue working remotely even after COVID-19 restrictions eased, with a majority preferring a hybrid arrangement that balances office and remote work.

Designed to accommodate the needs of workers in the accelerated ‘digital era’, organisations are increasingly shifting towards hybrid work structures (van den Broek et al., 2023:1), which Griszbacher (2023:20) asserts is the “future of work”. This model enables employees to divide their time between office and remote work, provided they have a reliable internet connection (Criscuolo et al., 2021:10). Another model of work is digital nomadism which has arisen from factors such as personal aspirations, tourism, globalisation, and advancements in ICTs. The concept of digital nomadism challenges traditional notions of work, home, and national

identity, as digital nomads can live and work from anywhere while travelling (Hannonen, 2021:7).

A survey developed and implemented by OECD Global Forum on Productivity shows that many managers and workers found remote work to be a positive experience, even during the pandemic's early days, and, consequently, they intend to continue doing so in the future (Cricuolo et al., 2020:5). The pandemic further eliminated the stigma tied to remote work, prompting both managers and employees to invest in and improve their use of ICTs (Criscuolo et al., 2021:5).

With restrictions eased, the pandemic has permanently altered workplace fundamentals, with many information workers expressing a preference to continue working from home (Smite et al., 2023:1). Schwab (2017:8) contends that the degree to which society adopts technological innovation determines a country's progress. South Africa lags in industrial revolution progress, facing interrupted power supply and an unequal spread of ICTs across the country (Marwala, 2022:8). Therefore, the emergence of 4IR and opportunities like remote work in a country with limited access to ICTs in some areas and high digital illiteracy is concerning, as these benefits will widen the digital divide (Olaitan, Issah, and Wayi, 2021:2).

2.3 The first level of the digital divide: Access

The first ICT device ever accessed was a stand-alone computer (Castells, 1996; Helpser 2021:29). As technology advanced, ICTs expanded to include a range of digital media and mobile devices, such as laptops, tablets, and smartphones (Ragnedda, 2019: 35; Van Dijk, 2020: 9). The digital divide was evidence by either having access to a device or not. Over time, the concept of access to ICTs has broadened to mean access to the internet and, in terms of the digital divide, the "inequality of access to the internet" (Castells, 2002: 248). Therefore, as the internet permeated society and became an important mode of communication, the discourse on access to ICTs evolved to incorporate not just devices, but connection to the internet, and subsequently access to applications such as social networks (Ragnedda, 2019:35; Djik, 2020:9). While some individuals have access to ICT devices and the internet, many others do not. This disparity in access spans developed and developing countries, as well as urban and rural areas (Parker, 2001:205; Selwyn, 2004:344).

As research on the digital divide has evolved to address its complexity, the gap in ICT access and all it encompasses is now referred to as the first level of the digital divide (Ragnedda, 2019; van Dijk, 2020:14; Sam, 2019:218). The first level digital divide is influenced by factors such as race, geographical location, age, ethnicity and employment status (Ragnedda, 2019:27; van Dijk, 2020:23).

This section explores the first level of the digital divide, drawing on literature from global, Africa and South Africa. It looks at its emergence in rural areas, examining the progress made, and its implications for remote work.

2.3.1 Understanding access to ICTs in South Africa

To understand the digital divide in South Africa, it is essential to consider the legacy of the apartheid system, particularly in the context of ICT access. Horwitz (2001) describes how the apartheid regime forced native Africans to reside in designated "homelands" (rural areas) far from urban centres. With the telecommunications sector primarily serving "whites and businesses" this segregation left many rural areas largely unwired and unconnected (Horwitz, 2001:36). Andrew and Petkov (2003) attest to the uneven distribution of telecommunication services in South Africa between urban and rural areas (2003:76). This historical segregation set the stage for existing socioeconomic disparities in access to ICTs between racial groups and between rural and urban areas. Further differences, such as those related to income and education, also emerge.

The South African Government Department of Communications, now known as the Department of Communication and Digital Technologies (DCDT), outlined the state of ICT access in its 2013 White Paper on South Africa's Broadband Policy (Department of Digital Communications and Digital Technologies [DCDT], 2013). The paper highlights that,

> An extensive long-distance fibre network exists in South Africa, to the extent that approximately 86% of the South African population is within 10km of access to fibre… [however] the cost to connect remote locations remains high (DCDT, 2013:27).

The inability of existing service providers to meet demand beyond major urban centres – and thus bridge the first level of the digital divide – is attributed to the spatial legacy of apartheid.

2.3.2 Attempts to bridge the first level of the digital divide

To address the legacy of apartheid in the telecommunications sector, the early years of democracy were marked by initiatives to expand telecommunications to rural areas. The Telecommunications Act (Act No. 103 of 1996) was enacted with the aim of fostering the delivery of diverse telecommunication services to promote economic growth and development in the newly democratic Republic and to achieve universal access to telecommunication services (Telecommunications Act, 1996: chap. 5). At the time, these efforts primarily focused on providing telephones, which, for many people in rural areas, represented their first access to ICTs.

In their study on access to ICTs in the impoverished village of Mount Frere in the Eastern Cape, Skuse and Cousins (2007) analysed telephone calls and government documents and surveys with poor households. They found that, as part of the government's post-apartheid mandate to achieve universal access, public phones were made available but that residents faced higher call charges than their urban counterparts and often had to walk long distances to access these public phones (Skuse and Cousins, 2007:193). Socioeconomic inequalities meant that poor households struggled to afford any form of ICT access, while those who could afford it, installed telephone lines in their homes, had cell phones, or could travel the distance to public telephones and afford to make calls, creating local divides between those who could access phones and those who could not (Skuse & Cousins, 2007:200).

Nearly two decades later, Skuse and Cousins' (2007) findings still apply to rural Eastern Cape, though in a different form, as shown in Buthelezi, Chatikobo, and Dalvit's (2021) study on digital inequalities in Dwesa, a rural community in the Eastern Cape. Using focus groups, interviews, and observations, the researchers examined how socio-economic status, age, and gender influence access, use, and benefits of ICTs, particularly mobile phones. Regarding access to ICTs, the study found that despite the general poverty in Dwesa, many community members own smartphones, which serve as their primary means of access (Buthelezi, Chatikobo, and Dalvit's (2021:456). A study by Oyedemi (2019:94) highlighted that the reason a considerable number of South Africans continue to rely predominantly on mobile devices is due to the relatively low cost of installing wireless infrastructure, as compared to the expensive costs of fixed-line telecommunications.

The costs of accessing ICTs remains an obstacle for people in the Eastern Cape. Oki and Lawrence (2022) conducted a study in Mdantsane township, Eastern Cape, to examine internet connectivity and affordability. A survey questionnaire was used to collect data from randomly selected respondents, including employed, unemployed individuals, and students. The findings revealed that respondents spend between R50 and R500 weekly on data, with 2% spending over R500 per week. Participants expressed concerns about the high cost of data, highlighting it as an obstacle to accessing ICTs, particularly for those who rely on government grants (Oki and Lawrence, 2022:116). Previously, Elder at el. (2013:30) observed that the cost of data is an obstacle, preventing the economically disadvantaged from accessing ICTs, nevertheless, this barrier has not deterred even lower income households from becoming connected. Buthelezi, Chatikobo and Dalvit (2021) highlighted a divide within the community they studied. While some individuals can afford airtime and voice call costs, others opt for more affordable alternatives, such as substituting voice calls with WhatsApp messages Buthelezi, Chatikobo and Dalvit (2021:462).

van Dijk (2020) identifies three key factors that influence access to ICTs: work, education, and geography. The author explains that individuals with office jobs are more likely to have early access to ICTs than low skilled and manual labours, while those with lower levels of education tend to lag in terms of access (van Dijk, 2020:52). Furthermore, a person's location, whether in an urban or rural area, or a wealthy or poor region, affects their access to resources (van Dijk, 2020:53). The author points to an important factor that is seen in the literature: even those with personal resources, such as funds to buy smartphones, computers, airtime, or data remain dependent on the economic and technological infrastructure of their country or area they live in (van Dijk, 2020:53). Variables such as reliable electricity, technical support, public access points, and the quality of education play a role in determining access to ICTs; in developing countries, these disparities continue to widen (Dijk, 2020).

2.3.3 Challenges to narrowing the digital divide

A study by Sithole et al. (2013), examining trends in access to ICT in rural compared to the urban area of South Africa using data from the South African Social Attitudes Survey (SASAS) for the period 2003 – 2009, found that there was a gradual increase in computer access in rural areas starting in 2006, however, this access remained 34% lower, at 6%, compared to urban areas. Ife (2013:1) attributes the lack of developmental issues, including broadband rollout to the low population density of many rural areas, and copper cable theft in rural areas as a

deterrent to investors. Additionally, Seadira and Heuva's (2022) study of the regulatory barriers perpetuating the digital divide in rural South Africa found that the lack of new market entrant service providers in rural areas contributes to the digital divide, with providers of fibre-to-the-home services primarily targeting affluent metropolitan areas.

Moreover, they found that in rural areas, a few dominant operators control the market, leaving residents with a few service providers to choose from (Seadira and Heuva, 2022:83). Noticing this challenge too, Elder et al. (2013:60) suggested breaking monopolies, as new entrants can help lower broadband prices and introduce innovative ways of conducting business. The findings from Seadira and Heuva's study (2022:90) highlight that the high costs associated with establishing broadband base stations and transporting broadband devices further limit ICT access in rural areas, thereby widening the digital divide in South Africa. Similarily, Mutsvairo and Ragnedda (2019:15) note that social and economic challenges, such as the exorbitant costs of broadband services, persist and continue to make them inaccessible to many African citizens.

In their 2022 systematic review, Aruleba and Jere (2022) sought to investigate the various digital challenges faced by rural communities in South Africa. The study revealed that the Eastern Cape is one of the most affected by digital divides, facing more substantial ICT challenges compared to other provinces (Aruleba & Jere, 2022:5). The researchers argue that historically, rural areas have been isolated, with inadequate access to ICT services and infrastructure in critical sectors such as education, health, and agriculture (Aruleba & Jere, 2022:3). Additionally, the lack of, and inefficient use of these services has trapped these communities in a cycle of deprivation, further deepening the digital divide in the country. The study highlights that the digital divide is not only a consequence of poverty and inequality but is also exacerbated by historical marginalisation, unemployment, and politics (Aruleba & Jere, 2022:10).

When determining how satisfied respondents are with the reliability of the internet connection, Oki and Lawrence (2022:116) found that only 24% of the respondents in their study in Mdantsane were satisfied with the reliability of the internet connection, and only 6% were satisfied with the internet speed in the township. The researchers attributed factors such as the environment as determinants of the quality of internet users experience, especially in rural areas. This is why researchers such as Sithole et al. (2013:77) posit that harsh conditions in rural areas play a role in accessing ICTs, including the neglect of ICT infrastructure in rural

areas and therefore suggest that ICT infrastructure deployed in these areas needs to be durable, and cost effective, requiring minimal and low cost.

The nature of the first level of the digital divide in rural areas is deeply rooted in a complex history, shaped by historical legacies and persistent socio-economic disparities. Helpser (2021:19) summarises these key issues, stating that high data costs and weak connectivity are key impediments to device ownership, access, and connectivity, which contribute to the limited penetration of internet and broadband infrastructure.

Matli and Wamba (2023) explored how uneven ICT infrastructure impacts remote work, particularly in rural South Africa. Their study highlighted the barriers created by unequal access to ICTs, with some employers assisting by providing devices and covering internet costs, acknowledging the high cost of data in South Africa (Matli & Wamba, 2023:155). However, they found that ICTs are not uniformly distributed, widening the digital divide in terms of access, speed, and connectivity quality. Remote workers in rural areas faced frequent network disruptions, hindering effective remote work, in contrast to urban workers who benefitted from reliable, high-speed internet (Matli & Wamba, 2023:155). While some rural workers were grateful for any access, the poor quality and inconsistency of their connections significantly impacted productivity (Matli & Wamba, 2023:155).

2.4 The second level of the digital divide: Use

Warschauer (2003) highlighted his observations about the digital divide across a range of contexts, from developing to developed countries and from rural to urban areas. Warschauer (2003:6) wrote that simply providing access to devices like computers and to internet connections did not necessarily lead to their effective use. Due to limited digital skills, individuals often used their digital devices only for recreational activities like playing video games for example (Warschauer, 2003:2).

Despite the provision of ICTs, different kind of gaps persists in users' ability to effectively use ICTs (Ragnedda, 2019:31). Warschauer (2003:6) argues that factors such as education, literacy, and institutional structures are important for fostering meaningful use of ICTs. Based on these observations, he asserts that the belief that the digital divide is simply about having access or not is fundamentally incorrect (Warschauer (2003:6). Selwyn (2004) made similar claims to Warschauer (2003) saying that this binary perspective suggests that the divide could

be “easily closed” by simply providing those without access with resources, but access to ICTs does not necessarily translate into meaningful use of ICTs (Selwyn, 2004:345). Additionally, van Dijk (2020:17) found that despite expanded access to ICTs, many people remained disengaged from their use.

The gap in ICT use marks a shift in the digital divide research, where, following the rapid adoption of the internet in developed and developing countries, the focus shifted to the importance of digital literacy (Van Dijk 2020:17). Policymakers and researchers recognised that new internet users needed digital literacy to use the internet effectively. Moving beyond the first level of the digital divide, a second level divide emerged, focusing on disparities in the use of ICTs and the gap between those who have digital literacy skills and those who do not (Helsper, 2021:31). In South Africa, there is evidence that the gap is more pronounced in rural areas, where digital literacy is lower compared to those in urban areas (Langa, Conradie & Roberts, 2006:131).

2.4.1 Why the second level of the digital divide gap persists

Dixon (2020) studied ICT use in a multi-grade school in rural Limpopo, where libraries and electronic resources like tablets are rare (Dixon, 2020:15). The school received a donated library with 30 Wi-Fi-enabled tablets, along with ongoing virtual and on-site training for teachers and learners. Initially, teachers viewed themselves as digitally illiterate but became more confident in their digital literacy skills as they used ICTs more (Dixon, 2020:23). The students acquired instrumental and informational digital literacy skills through the school initiative but faced barriers to applying and advancing their digital literacy because of the limited number of computer classes per week, absence of staff to facilitate use outside school hours and restricted Wi-Fi (Dixon, 2020:30).

The study of Sithole et al. (2013:74), examining ICT access trends in South Africa’s rural areas, which concurs with Warschauer (2003:46), that, digital literacy intersects with opportunities to attend school, the distribution of resources within the education system, and teaching methods and curricula that cater more effectively to certain social groups.

In a recent study, Frans and Pather (2022) conducted research at a public access ICT centre in the rural community of Barkly West, Northern Cape, to explore the factors that influence the adoption of ICTs. Their findings revealed that prior exposure to ICTs is linked to use.

Individuals with minimal exposure to computers experienced difficulties in using computers and therefore used them less (Frans and Pather, 2022:1584). Lack of confidence in their abilities to use ICTs deterred the community from making use of these centres (Frans and Pather, 2022:1586). Merely providing access to ICTs is insufficient without addressing the deeper issue of digital literacy, asserts Ragnedda (2019:31).

Oyedemi (2019) uses South Africa as a case study to explore how university students engage with the internet through mobile devices and how this impacts their digital experiences, usage habits, and digital literacy. The study found that many South African youths primarily access ICTs through mobile devices, largely due to limited exposure to other devices. This reliance limits their digital experiences, as mobile phones are primarily designed for quick, on-the-go use rather than more comprehensive tasks typically associated with personal computers, the cost of mobile internet further causing a strain and limiting use of ICTs (Oyedemi, 2019:96). The study also notes that young people with access to household internet tend to have stronger digital literacy skills than those who rely on public or mobile internet access (Oyedemi, 2019:95). Limited bandwidth and weak connectivity in public settings further contribute to unequal digital literacy (Oyedemi, 2019:94). Geographic disparities influence the distribution of digital literacy, with students in cities far more likely to use the internet daily, thereby enhancing their digital literacy (Oyedemi, 2019:96). In contrast, the study found that only 42% of students in rural areas and 29% in semi-rural areas use the internet, compared to the 70% of students who use the internet in cities (Oyedemi, 2019:97). Similarly, a study conducted in Nigeria by Ogbo et al. (2021:128), which categorises and analyses predictors of the second level digital divide found that individuals relying on mobile phones for internet access engage less in personal development activities compared to those using computers, laptops, or tablets.

When investigating the digital divide in South Africa, Fuchs and Horak (2008:110) observed that despite investments in ICTs to address the first level of the divide, these efforts did not correlate with increased usage, especially in black South Africans, widening the second level digital divide. Similarly, Langa, Conradie and Roberts (2006), using attitudinal data from SASAS, found that those who adopt and use ICTs are generally individuals with higher socio-economic statuses. Their education, and social status equip them with the necessary financial means and information to use ICTs effectively and embrace new ICTs (Langa, Conradie and Roberts, 2006:136). Strong linkages between literacy, income and wealth on both individual and societal levels were also found by Warschauer (2003:41). Low internet usage in rural areas

can be attributed to the high costs associated with staying connected, such as monthly subscriptions from internet service providers (Sithole et al., 2013:74). For some, the cost of using ICTs exceeded their monthly budgets, while more affluent individuals were more willing to bear the expenses of using ICTs (Buthelezi, Chatikobo and Dalvit, 2021:462).

Ojo (2022) argues that many rural community members may lack awareness of the importance of acquiring digital literacy and that there is a need for online information about the practical uses of the internet (such as for education, health, and employment) to help communities not only understand the value of the internet but also be keen to use it to explore the numerous opportunities it presents. This means that developing countries should not only focus ICT infrastructure development but provide comprehensive training programs that educate disadvantaged and disconnected populations about the benefits of digital tools (Chetty et al., 2018:14).

2.4.2 The second level of the digital divide and remote work

The transformation of the world of work, accelerated by the onset of COVID-19, has seen many services and activities shift to virtual platforms, reflecting the rapid evolution of work in the 4IR, where adoption of technology is inevitable in many sectors (Marwala, 2022:193). Digital literacy enables individuals to adapt to the demands of the modern digital economy. A study by Chetty et al. (2018) reveals that digital literacy not only facilitates participation in social networks, knowledge sharing, and access to digital content but also supports the use of online services. Furthermore, it equips individuals with diverse professional and technological skills, creating new employment opportunities in an increasingly digital world (Chetty et al., 2018:6).

Nwogwugwu (2022) highlights that, in Africa and other developing countries, where job markets are increasingly overcrowded, digital literacy provides a competitive advantage. These skills are demonstrated through an individual's ability to search for, locate, use, create, and disseminate information digitally (Nwogwugwu, 2022:193). In an era of rapid digitalisation, knowledge alone is becoming insufficient without complementary digital literacy (Nwogwugwu, 2022:194). Furthermore, digital literacy serves as an enabler of collaboration, improved access to resources, and effective engagement with organisations and individuals, ultimately enhancing workplace productivity (Nwogwugwu, 2022). The importance of integrating ICTs into everyday life was already recognised nearly two decades ago by van Dijk

(2005:71), who argued that digital empowerment equips individuals with the tools necessary to navigate an increasingly digital society, thereby enabling them to work and earn a sustainable income.

More recently, Folorunso and Momoh (2022) have reinforced this perspective by emphasising digital literacy as a crucial tool for employment. Their research suggested that a lack of digital literacy among job seekers contributed to rising unemployment, as many individuals rely solely on formal qualifications without acquiring the digital competencies often absent from traditional education systems (Folorunso & Momoh, 2022:204). Proficiency in ICT usage has become a prerequisite for employment and career advancement in many organisations, making digital literacy essential for professional growth (Folorunso & Momoh, 2022:204).

To address unemployment, the researchers advocate for the integration of digital literacy across various levels of education and through on-the-job training programs. They further argue that fostering digital literacy competencies can enhance workplace productivity and drive organisational success (Folorunso & Momoh, 2022:212).

2.5 The third level of the digital divide: Opportunities

While efforts to bridge the first and second levels of the digital divide remain ongoing, scholars such as Selwyn (2004) have pointed out the gaps in our understanding of the digital divide, raising crucial questions, such as, “Why do some individuals engage successfully with ICTs, whereas others do not?” This idea is echoed by Ragnedda (2019:34), who observed that some individuals struggle to convert access to and use of ICTs into meaningful benefits that enhance their life opportunities. Selwyn (2004:351) argued that a thorough examination of the digital divide must also address the disparities in opportunities that stem both directly and indirectly from ICT access and usage. While the first and second levels of the digital divide focus on disparities in access and usage, as outlined in existing literature, Ndulu, Ngwenya, and Setlalogile (2022:274) contend that access to ICTs should be seen as a foundational condition for digital inclusion, with usage and the opportunities it creates serving as the ultimate goals.

The third level of the digital divide pertains to individuals who, despite having access to ICTs and possessing adequate digital literacy, are unable to fully leverage these resources to their advantage. This phenomenon is explored by, among others, Van Deursen and Helsper

(2015:30) and Dixon (2020:18), who discuss how, even with similar access and use of ICTs, differences in the opportunities gained from ICT usage remain.

Van Deursen and Helsper (2015) conducted a study in the Netherlands aimed at developing a practical framework to measure the real-world benefits individuals gain from accessing and using the internet. Their findings revealed that the first and second levels of the digital divide contribute to the third level of the digital divide (van Deursen and Helsper, 2015:45).

2.5.1 Opportunities emerging from access and use of ICTs

van Dijk (2012:2) explained that our daily lives are no longer tethered to physical communication methods like post boxes or telephone wires. Rather, we rely heavily on the internet and social networks. This transition has brought forth vast opportunities (Castells, 2001:275). Ahead of its time, Warschauer (2003:28) argued that being part of the networked society is important not only for economic participation but also for engagement in various aspects of modern life, such as education, politics, community, culture, entertainment, and social relationships. While investigating the impact of 3G mobile internet technology across South Africa, Donati (2023:2) found that internet availability led to a 2% increase in voter turnout, attributing this effect to greater exposure to online information. While Donati's study focuses on political participation, it highlights the broader potential of digital ICTs to enhance engagement and exposure to diverse opportunities.

Ogbo et al. (2022:110) observed that, while access to ICTs is important, the real impact comes when individuals can use ICTs effectively to gain offline opportunities. These opportunities include finding jobs, accessing timely information, making connections, and participating in the economy. However, the ability to realise these outcomes is often limited by factors such as digital literacy and the availability of supportive infrastructure. Building on this, Ragnedda (2019:35) stressed that achieving these opportunities also requires effective governance structures and favourable economic conditions nationally. In the absence of these elements, many of the potential benefits offered by ICTs remain untapped.

Van Deursen and Helsper (2015:46) added that at the third level, economic opportunities include access to better pricing online and more favourable market opportunities; social benefits involve maintaining connections with family and friends, as well as forming new online friendships that may transition to offline relationships; institutional benefits emerge

from access to real-time public information, enabling individuals to engage with government services and resources, as well as access educational materials. Buthelezi, Chatikobo, and Dalvit (2021:464) found that platforms like Facebook Messenger and WhatsApp groups play a valuable role in the Dwesa community, particularly for communication and professional development, with courses and other resources frequently shared on WhatsApp (Buthelezi, Chatikobo, and Dalvit, 2021:265).

A study by Haji (2021) on e-commerce (the online trading of goods and services) in rural areas of BRICS countries revealed that e-commerce represents significant opportunities facilitated by ICTs and has become a key component of modern trade. The study highlights the potential benefits for individuals in rural areas but also identifies the digital divide as a major barrier to fully engaging in e-commerce (Haji, 2021:992). Additionally, the study emphasises that improving living standards in rural areas is crucial for realising these opportunities, as the ongoing lack of basic resources continues to hinder progress (Haji, 2021:991).

Gaglio, Kraemer-Mbula, and Lorenz (2022) examine the relationship between digitalisation, innovation, and productivity in South African manufacturing Micro and Small Enterprises (MSEs). The study's findings indicate that ICTs are beneficial to MSEs, however, these benefits are conditional on both access to and the effective use of ICTs and require increased investment to have a positive effect on productivity (2022:2).

Mhlanga, Denhere, and Moloi (2022) examined key digital transformation lessons from the COVID-19 pandemic for higher education institutions in South Africa, with a focus on the opportunities and challenges presented by ICTs. The study found that ICTs offer various opportunities to higher education, including support for educators such as digital resources or virtual classrooms and working from home, the potential for distance learning, and the integration of blended learning models, thereby creating new opportunities for education and learning (Mhlanga, Denhere, & Moloi, 2022:13). However, the digital divide, particularly in rural areas, emerged as a challenge: students in rural areas were unable to attend lessons due to limited access to and use of ICTs and reliable internet connectivity (Mhlanga, Denhere, and Moloi, 2022:10). Advancements in ICTs indicate the potential opportunities for digital transformation in higher education to bridge gaps and foster innovative learning environments, but equitable access and effective use of these ICTs must be ensured.

2.5.2 Why the third level persists

Castells (2001:247) cautioned that:

> The centrality of the internet in many areas of social, economic, and political activities is tantamount to marginality for those without, or with only limited, access to the internet, as well as for those unable to use it effectively.

Skuse and Cousins (2007) observed the third level of the digital divide but termed it as a mere inequality between disadvantaged individuals and rural elites. Their study found that, while efforts to bridge the first level of the digital divide were underway through opportunities for rural entrepreneurs to install stand-alone phones in homes or local spaza shops, generating both social and entrepreneurial opportunities, they primarily benefited rural elites who could afford the associated start-up costs (Skuse and Cousins, 2007:193). The reality of the digital divides is that if left unchecked, they worsen existing socioeconomic gaps. As observed by Aruleba and Jere (2022:3), the more disadvantaged a community is, the fewer opportunities it benefits from ICTs.

A study by Mhlana and Krauss (2017), conducted across government schools, including one in the Amathole municipality in the Eastern Cape, focused on high school students who had access to and used ICTs to assess their ICT experiences and attitudes toward use of ICTs and explored the impacts of ICTs in schools within rural areas of South Africa. The findings revealed that, while many students had access to ICTs, disparities in digital literacy and contextual factors, such as socio-economic challenges and inadequate infrastructure, limited their ability to leverage ICTs for educational and personal growth (Mhlana and Krauss, 2017:5). The study advocates for rural communities to harness ICTs to unlock meaningful opportunities and achieve greater equity in education commerce, culture, and socio-economic development (Mhlana & Krauss, 2017:1).

Scholars such as van Dijk (2020:9) argue that with the digital divide narrowing in developed countries, with widespread access to ICTs and near-saturation in usage, policymakers can increasingly focus on leveraging the opportunities yielded from ICTs. In contrast, rural areas in South Africa continue to grapple with the first two levels of the digital divide. The socio-economic factors that define these initial levels, such as income and education, influence the third level of the divide, restricting ICT-derived opportunities to a privileged few. Mishi and

Anakpo (2022), in their critical review of the digital divide in Africa and the impact of the COVID-19 crisis, emphasise that access to and use of ICTs in African countries remain concentrated among a small, privileged group. The pandemic exacerbated this divide by accelerating the shift to online platforms, leaving those unable to access or use ICTs with limited opportunities (Mishi and Anakpo, 2022:11).

Ogbo et al. (2022:131) found that individuals with higher education levels are more likely to experience positive outcomes from internet use, particularly in political engagement and commercial transactions. Similarly, van Deursen and Helsper (2015:46) found that highly educated individuals tend to derive greater opportunities from ICTs, particularly in economic, institutional, and educational domains.

Mangadi and Petersen's (2024) study investigated the factors influencing the acceptance and use of zero-rated job search application in South African, focusing on barriers such as connectivity, data costs, and digital literacy skills. The findings revealed that, while the data-free job search application offers benefits such as ease of use and efficiency in creating CVs and searching for jobs, critical issues persist, including technological and usability challenges where users expressed concerns about application crashes, connectivity issues, slow responsiveness, and intrusive ads, all of which affect the overall experience (Mangadi & Petersen, 2024:7). Therefore, while access to technology is vital, the quality and functionality of the tools remain a barrier, preventing users from fully leveraging ICTs for opportunities such as job searching. The challenges reflect broader socio-economic disparities, underlining the need to improve both access and the user experience to bridge the digital divide (Mangadi & Petersen, 2024:10).

2.5.3 Opportunities from ICTs and remote work in South Africa

ICTs have been recognised for their potential to bridge geographical gaps, giving individuals the opportunity to work and access services regardless of location (Castells, 2002:275). Frans & Pather (2022:1575) state that leveraging ICTs can unlock benefits and opportunities, especially important in rural areas that are faced with rampant poverty and unemployment. When effectively used, ICTs can drive rural development by facilitating remote work, online education, and participation in the digital economy (Balogun et al., 2020:533), which are important for poverty alleviation, employment and for the overall economy. Balogun et al. (2020:536) state however that despite technological advancements, challenges persist in

ensuring that rural communities can fully exploit opportunities through access and use of ICTs, which are key components in enhancing individuals' ability to capitalise on the opportunities provided by ICTs.

In their 2023 study, Matli and Wamba highlighted the significant benefits of modern ICT tools, which enable global connectivity, facilitate remote work, and offer improved work-life balance. As ICTs continue to thrive and internet access expands globally, ICTs present opportunities for individuals to work from home, enabling greater flexibility and access to remote work opportunities, if they can work and communicate effectively through a range of formal and informal communication channels. However, the literature also revealed a mixed sentiment towards remote work, as the benefits and drawbacks of these arrangements are not evenly distributed. Despite advancements in ICTs in developing countries, a significant concern remains that poorer communities still face inadequate ICT resources, limiting their access to opportunities such as remote work (Matli and Wamba, 2023:157).

2.6 Attempts to bridge the digital divide in South Africa

Ndulu, Ngwenya, and Setlhalogile (2022) highlight both the challenges and opportunities of the digital age for South Africa. While acknowledging the economic and social devastation caused by the COVID-19 pandemic, the authors argue that it has provided developing countries, particularly South Africa, with a unique opportunity to accelerate their digital transition plans (Ndulu, Ngwenya, and Setlhalogile, 2022:273). However, they underscore that the lack of infrastructure, network coverage, and digital literacy has hindered the ability of developing countries to transition effectively to digital platforms and fully capitalise on the opportunities they offer. Nevertheless, realising the digital age's opportunities for growth, job creation, and inclusion requires urgent action to bridge the digital divide (Ndulu, Ngwenya, and Setlhalogile, 2022:290).

The *National Digital and Future Skills Strategy*, published by the former Minister of Communication and Digital Technologies aims to promote digital inclusion. The strategy outlines a structured series of initiatives designed to enhance South Africans' capacities to address the challenges posed by the increasing adoption and deployment of ICTs across the economy and society. Recognising the impact of the digital revolution on work, education, research, and communities, the strategy envisions a South Africa where all individuals can leverage digital skills to improve their quality of life, access better education, and contribute to

higher economic growth (DCDT, 2020:2). The strategy stresses the effective use of ICTs to unlock benefits and opportunities for citizens and consumers (DCDT, 2020:14). The policy reiterates the necessity of bridging the digital divide to realise the transformative potential of ICTs. These opportunities include job creation, entrepreneurship, and self-employment, highlighting the importance of equipping individuals with the digital skills needed to thrive in a rapidly evolving digital economy (DCDT, 2020:17).

2.7 Chapter summary

After discussing the evolution of work from the 1IR to the 4IR and the emergence of remote work, the chapter focused on the digital divide's three levels, access, use, and opportunities, by analysing global, African and South African rural contexts to address the study's themes. The literature stresses the urgency of bridging the digital divide, particularly in the 4IR era accelerated by the COVID-19 pandemic, which shifted many aspects of life online. South Africa faces a myriad of challenges in bridging the digital divide, shaped by historical inequalities from apartheid that influenced the telecommunications sector. Addressing these barriers is critical for rural dwellers to participate in the digital era.

Chapter Three: Research Methodology

3.1 Introduction

The research methodology is a critical component of any academic study, outlining the processes and strategies used to investigate the research problem (Biggam, 2011:114). This study investigated the digital divide in a rural area of Eastern Cape, with a specific focus on its implications for remote work. This chapter presents the methodological framework employed in the study, detailing the philosophical underpinnings, research design, and methods of data collection and analysis. Furthermore, this chapter addresses the ethical considerations, limitations, and steps taken to ensure the validity and reliability of the study.

3.2 Research paradigm

In Social Sciences, a paradigm refers to the perspectives a researcher relies on to structure their observations and thinking (Babbie, 2021:30). There are many types of paradigms, or as Creswell (2009:5) calls them, "worldviews". The major paradigms recognised by Connaway and Radford (2021:37) are the constructivist, interpretive, critical, positivist, and postpositivist paradigms that offer various ways of viewing reality. This study is grounded in the constructivist paradigm.

The constructivist paradigm posits that reality is not a fixed entity but is constructed through individuals' experiences and interpretations of the world around them (Connaway and Radford, 2021:38). In constructivism, the researcher focuses on gaining a deep understanding of a concept by exploring how individuals perceive and make sense of the world around them. The paradigm emphasises how people develop subjective interpretations of their experiences or attitudes toward certain objects or phenomena (Rahi, 2017:1). Social constructivism aligns with this research, as Creswell and Creswell (2018:5) explain, a social constructivist worldview holds that individuals strive to comprehend the world in which they live and work in. By embracing a constructivist approach in this study, the researcher recognises that each participant's experience of remote work, remote work seeking, and the digital divide is unique and shaped by their contexts.

Reflexivity is a key component of the constructivist approach (Leedy and Ormrod, 2019:23). It considers the researcher's positionality, how their background, social roles, and personal biases influence their perspective on the participants' roles in their social context. These factors

have shaped the researcher's experiences and life trajectory and continue to influence their relationships with the participants as well as their views on the research topic and environment. As a researcher, I acknowledge that my background, beliefs, and interactions with participants influenced the data collection and analysis processes.

3.3 Research approach

Due to the multifaceted nature of the digital divide, this study adopted a qualitative research approach, which is appropriate for exploring complex social phenomena. Qualitative research can enable the exploration of participants' lived experiences, in this case, capturing the nuances of how they engage with ICTs in rural areas. This approach is particularly valuable when addressing variables that cannot be easily measured, such as personal perceptions, cultural influences, or emotional responses. Additionally, it allows for the amplification of "silenced voices", ensuring that perspectives often overlooked in quantitative research are given a platform (Creswell and Poth, 2018:45). Quantitative approaches, which prioritise gathering largely numerical data from a large population to address the research problem, can overlook individual emotions, feelings, and the surrounding environmental context (Rahi, 2017:2).

Through a qualitative approach, this research wanted to uncover insights into how individuals navigate the digital divide in their unique contexts. The approach allowed for the collection of rich, detailed accounts that were valuable in understanding the challenges faced by remote workers in rural areas. While quantitative or mixed methods approaches could offer statistical generalisations about the digital divide, they would fail to capture the intricate and contextualised experiences of individuals in these rural areas. The qualitative approach, therefore, aligns with the constructivist paradigm and the research goals of unpacking how the digital divide affects remote workers.

3.4 Research design

A research design is a blueprint that structures a study by connecting research questions to data collection and analysis methods (Punch, 2014:114). Its primary function is to outline the procedures needed to address specific research questions, explore issues, or test hypotheses effectively (Connaway & Radford, 2021:56). The research design's core is its underlying logic, which guides the approach to answering research questions (Punch, 2014:11). There are six widely used qualitative research designs: case study, ethnographic, phenomenological,

grounded theory, narrative study, and content analysis (Leedy and Ormrod, 2019:234). The chosen design for this study was a case study.

Case study research is a qualitative design particularly suited for exploring complex or poorly understood situations (Creswell and Creswell, 2018:14). This design involves an in-depth investigation of real-life cases, using detailed data from various sources which can also include quantitative methods (Creswell & Poth, 2018:96). By examining a case thoroughly, researchers can gain a comprehensive understanding of the subject, which is especially valuable when exploring issues that require detailed contextual analysis. In some cases, multiple case studies are used to compare and contrast different cases, enhancing the ability to build theories, make generalisations, or propose new insights (Leedy & Ormrod, 2019:230; Biggam, 2011:118).

Babbie (2021:305) asserts that a case study is suitable for "an in-depth exploration of a single instance of some social phenomenon, such as a village". The case study design is thus well-suited for this research as it allows for an in-depth exploration of a specific bounded system, in this case, semi-rural Peddie and the surrounding rural villages. The case study allows for a broader and holistic examination that includes participants' experiences in remote working/seeking, and financial circumstances. A case study in Peddie and surrounds gives qualitative depth and contextual breadth to exploring how the digital divide affects remote workers in a rural area.

3.5 Research methods

Researchers must choose appropriate methods to gather information after a research design has been determined to answer research questions (Creswell and Poth, 2018:148). Research methods can include a range of techniques, such as locating secondary data, conducting observations, and using interviews or questionnaires to collect data (Biggam, 2011:146). In this study, data collection was conducted through semi-structured, face-to-face, individual interviews, often referred to as "conversation with a purpose" (Kara 2022:83). Punch (2014:144) asserts that interviews are the most widely used data collection method in qualitative research, able to provide in-depth insights into participants' experiences and perspectives.

There are both advantages and disadvantages to conducting interviews. Kara (2022:83) highlights several advantages, including the ability to compare data from different individuals,

the accurate recording of participants' responses and the cost-effectiveness of telephone and online interviews. However, some disadvantages include challenges in designing interview questions to elicit the desired information, the time-consuming or costly nature of transcribing interview data, and the potential influence of the interviewer's manner and input on the participants responses (Kara, 2022:83). To manage these challenges, I thoroughly reviewed the interview instrument with assistance from my supervisor and the ethics committee. Additionally, I opted for summarised transcriptions rather than verbatim ones to streamline the process.

3.6 Population and sampling

The population for this study was remote workers or remote work seekers based in the Peddie area. This population was considered ideal for exploring research questions as their lived experiences aligned to the study's focus. Hybrid remote workers were considered to be part of the population if they worked from home for at least 12 days out of a typical 21-day cycle. The exact number of the population is indeterminate.

The sampling methods used in this study were convenience sampling and snowball sampling, both of which are forms of nonprobability sampling. As defined by Babbie (2021:192), nonprobability sampling involves selecting participants based on availability or specific criteria rather than randomisation. These methods are particularly suitable for qualitative research.

Convenience sampling, as described by Biggam (2011:134), relies on the ease of access to participants. Babbie (2021:192) likens convenience sampling to a 'person-on-the-street' approach where researchers choose any participant on the street or based on availability.

I posted a call for participants on Facebook, targeting individuals who met the criteria of the population. This post was shared with my 1,230 Facebook friends many of whom are from the rural areas surrounding Peddie since I am from one of the surrounding rural areas. Additionally, a WhatsApp status update was broadcast to 76 contacts mostly from the area. Those who saw the posts were able in turn to distribute them to their friends and contacts.

Available remote workers and remote work seekers who were willing to share their experiences of the digital divide were thus sampled in a convenience method. WhatsApp garnered two individuals seeking remote work, while Facebook provided four remote workers who met the

study criteria. These initial participants were then asked to recommend additional participants within their network who also fitted the inclusion criteria (rural residents engaged in or seeking remote work). This snowball sampling technique resulted in three additional participants being recruited, bringing the total number of participants to nine.

The final sample size of nine participants was guided by the principle of data saturation, and deemed appropriate for a qualitative study, as it allowed for in-depth exploration of individual experiences while maintaining manageable data collection and analysis. The participants' diverse professional backgrounds enriched the study's findings by offering varied perspectives on remote work in rural areas.

3.7 Data collection

Potential participants who responded to social media posts voluntarily shared their contact details. The researcher phoned each participant verifying that they were a part of the study population and outlining the details of the study. During the call, I explained what would be expected from them in the research and how the interviews would be conducted. A semi-structured interview guide was used for remote work seekers (Appendix A) and one for remote workers (Appendix B) to maintain consistency across interviews with the respective groups, while still allowing participants the freedom to share their unique perspectives. The interviews were scheduled to take place in the participants' homes, providing a comfortable setting for open conversation, while also allowing me to see their working environment, both inside the home and the surrounding infrastructure. Participants were informed about the consent form (Appendix C), which they agreed to sign prior to the interview. With participants' consent, the interviews were recorded, and transcription was managed manually by the researcher. The decision to transcribe manually was made due to the transcription device's difficulty in accurately capturing South African accents.

3.8 Data analysis

According to Babbie (2021:384), qualitative data analysis involves evaluating data without using numbers, often through methods like content analysis. Creswell and Poth (2018:183) explain that data analysis involves outlining the procedures for examining different types of qualitative data with the goal of understanding the text. This process includes breaking down

the data into segments and thoroughly analysing it. Creswell and Creswell (2018:193) suggest a five-step approach to the data analysis process. The approach is as follows:

Step 1: Organise and prepare the data for analysis
Step 2: Read or look at all the data
Step 3: Start coding all the data
Step 4: Generate a description and themes
Step 5: Represent the description and themes

The thematic analysis approach guided the data analysis process, as it involves identifying, analysing, and reporting patterns or themes within the data (Connaway and Radford, 2021:306). During data analysis, trends and themes were identified by closely examining participants' responses, drawing parallels, recognising similarities and contradictions, and naming the emerging themes (as per Creswell and Poth, 2018:189). The analysis process began with open coding, an initial step in qualitative data analysis that involves classifying and labelling concepts within the data (Babbie, 2021:392). Following open coding, categories and themes were developed to encapsulate the essence of participants' experiences. To ensure rigor and enhance credibility, peer debriefing was used. This involved sharing the coded data and emerging themes with my supervisor, allowing for consistency checks and consideration of alternative interpretations. This approach reinforced the robustness and validity of the findings.

3.9 Validity and reliability

Reliability refers to the consistency of measurement methods, indicating that repeated observations of the same phenomenon would yield identical data (Babbie, 2021:148). At the core of reliable research – and particularly qualitative research which is usually not repeatable - is the concept of trust (Biggam, 2011:144). Validity, on the other hand, pertains to the extent to which an empirical measure accurately reflects the actual meaning of the concept being investigated (Babbie, 2021:151).

Validity of the study was enhanced by a thorough and multi-level scrutiny of the research instruments. These instruments were meticulously developed to align with the theoretical framework underpinning the study. This ensured that the questions asked were directly aligned with the research objectives and designed to capture the nuances of the phenomena under

investigation. The instruments underwent rigorous evaluation by myself, my supervisor, and the ethics review committee, ensuring that they were clear, unbiased, and ethically sound. Potential gaps or biases in the instruments were thus identified and addressed before data collection commenced.

The validity of the study was further reinforced by grounding the research instruments in the conceptual framework, ensuring coherence and alignment between the study's theoretical underpinnings and the questions posed to participants. This approach ensured that data collection methods were purposeful and directly contributed to answering the research questions.

Data were collected through semi-structured interviews, which offered both consistency across interviews and flexibility to capture participants' unique perspectives, further contributing to reliability. To enhance trustworthiness and validity, iterative feedback from my supervisor during the data collection and analysis phases played a role in refining the study's methodology and interpreting the findings. Reflexivity, involving an ongoing process of self-awareness about my role and potential influence on the research, was practiced throughout to maintain transparency. Although a pilot interview to test the research instruments could not be conducted due to time constraints, the rigorous design and review process compensated for this limitation.

3.10 Ethical considerations

Whenever research involves living beings, it is crucial for researchers to carefully consider the ethical implications of their proposed actions (Leedy and Ormrod, 2019:111). This consideration entails adhering to research ethics, which involves applying a set of moral principles when conducting studies on human beings (Biggam, 2011:249). Principles of ethical research are central to this research.

Bless, Higson-Smith and Sithole (2013:29) recognise non-maleficence, beneficence, autonomy, justice, fidelity, and respect for participants' rights and dignity as core ethical research principles. The establishment of these principles as codes of ethical conduct reflects a growing consensus among research communities on what is deemed appropriate or acceptable under various conditions (Punch, 2014:36). For this study, confidentiality has been maintained by anonymising participants' identities. Additionally, informed consent was obtained from all

participants before data collection began. Participants were fully informed about the study's purpose, their rights, including the right to withdraw, and how their data will be used.

The principle of non-maleficence, or do no harm, directs researchers to implement safety measures to protect both the participants and them (Biggam, 2011:251). During data collection, the researcher took all necessary precautions to ensure no harm came to the participants. This included conducting interviews in the comfort of the participants' homes, where all safety protocols were strictly followed. Additionally, the researcher took care to avoid putting themselves at risk while traveling to and from these locations. The interview instrument and consent form were reviewed by the UCT ethics committee to ensure all questions reflected honesty and no harm. Additionally, the ethical implications of researching a vulnerable population were carefully considered, particularly in relation to discussing experiences of marginalisation due to the digital divide. Permission to record, store, and share the data was asked from participants. The study received ethics clearance on 4 November 2024 (see Appendix D)

3.11 Study limitations

This study faced certain limitations.

Firstly, literature on the third level of the digital divide in South Africa remains scarce. Where the digital divide is discussed, it is often framed as broader socio-economic inequality rather than explicitly recognised as a distinct digital divide category. Most research on the digital divide in South Africa focuses on access and ICT usage, with limited attention to the opportunities derived from ICTs, particularly in the context of remote work in rural areas. While studies exist on the broader implications of digital exclusion, few addresses rural areas specifically, leaving a gap in understanding how the digital divide influences the ability to leverage ICTs for remote work.

Secondly, a qualitative approach was chosen to provide an in-depth exploration of this phenomenon. While it allowed for a detailed examination of participants' experiences, the interpretative nature of qualitative research introduces the potential for researcher subjectivity, particularly during data analysis and theme identification. Although reflexivity was employed to mitigate bias, the findings remain shaped by the researcher's perspective and interactions with participants.

Thirdly, research was limited to a small sample size of nine participants thus restricting the breadth of insights and may not fully capture the diversity of experiences among remote workers in the area. Findings cannot be generalised to all remote work seekers and remote workers, either inside or outside the context of Peddie and its rural surroundings.

Finally, the reliance on a single data collection method, semi-structured interviews. While interviews provided rich qualitative insights, they could not fully capture all aspects of the digital divide. Incorporating additional methods, such as surveys might have strengthened the study's ability to triangulate findings but would have detracted from the qualitative nature of the study.

3.12 Chapter summary

This chapter outlines the research methodology of the study. Within a constructive paradigm and using a qualitative approach, data was collected through face-to-face interviews and analysed using thematic analysis. Ethical approval was secured from the University of Cape Town Research Ethics Committee. Consent was obtained from all participants.

Chapter Four: Presentation of the Data

4.1 Introduction

This chapter presents data from interviews with remote workers and remote work seekers, using structured interview schedules to explore the three levels of the digital divide.

The interview schedule for remote workers (Appendix B) focused on understanding how their access to ICTs and their digital literacy influences their ability to work remotely. It examined their experiences with internet connectivity, data costs, and the reliability of ICT infrastructure. Additionally, it explored how these factors enable or limit opportunities for social engagement and professional networking.

The interview schedule for remote work seekers (Appendix A) aimed to uncover the obstacles they face when searching for job opportunities. It included questions, like those for remote workers, about internet access, device availability, data affordability, and digital literacy. The schedule also explored how their level of digital access compares to that of urban graduates and how the challenges of digital literacy impact their ability to apply for and secure remote employment.

In this chapter, participant demographics are followed by interview data organised by question, with sub-headings distinguishing responses from remote work seekers and remote workers. The data is grouped into key themes, highlighting similarities, differences, and the barriers and opportunities related to access and digital literacy.

4.2 Study participants

A total of nine individuals were interviewed, and anonymised as Participants A through I. Participants A, B, and C are seeking remote work, while Participants D, E, F, G, H, and I are remote workers.

Participant A lives in Mpeko Village, a quiet rural village where extended family ties play a central role in daily life. Their decision to remain in Mpeko is driven by a preference for the slower pace of rural life and the strong sense of belonging in their community.

Participant B shares a household with family members who provide emotional and financial support while they remain unemployed. Their choice to remain in Peddie allows them to save money, avoid expenses of the city life, and benefit from a safer environment than that of urban centres.

Participant C lives in Mpeko Village with their mother and two young sons. Living in a rural area allows them to rely on family support for childcare. The strong family bonds and cultural values of the village are a source of community.

Participant D resides primarily in their home village, but divides their time between Peddie and Johannesburg due to their hybrid work arrangement. Their decision to return to Peddie during the pandemic reflects a prioritisation of family support and cultural rootedness. Being able to work remotely from their village allows them to continue a high-level career while remaining present to their family.

Participant E established themself in their rural village after several years of city living. Their remote work arrangement has enabled them to reconnect with their cultural roots, raise their child in familiar environment, and enjoy the financial benefits of reduced living costs.

Participant F lives in Tuku village, balancing a demanding consulting career with family commitments. their professional work is highly technical, requiring reliable internet and significant analytical focus, yet their rural context offers the quiet and space they need for their type of work.

Participant G has created a lifestyle that blends rural living with global work opportunities. As a digital nomad, they use Peddie Town as a home base while traveling around the country and abroad when necessary.

Participant H returned to their family home after the loss of their mother during the pandemic. Their decision to stay was influenced by emotional needs, cost savings, and a desire for a supportive environment. Their social context is characterised by intergenerational living, reduced urban pressure, and the ability to maintain their academic career virtually. The rural setting has given them space to process grieve while remaining in their professional role.

Participant I works from their family home in Peddie, where they benefit from both financial savings and the emotional support of living with relatives. Their work as a Risk Analyst requires reliable internet connectivity, which they have been able to secure at home. Remote work has allowed them to maintain a professional career without having to migrate to a city, thereby strengthening their ties to their home community.

Table 1 shows the background information of the participants

Table 1: Demographic information

Participant	Location	Qualification	Field of work	Employment Status
A	Mpeko village	Bachelor's degree	Remote Work Seeker	Seeking employment since 2022
B	Mtati Village	Bachelor's degree. Honours Degree in progress	Remote Work Seeker	Unemployed since 2023
C	Mpeko Village	Bachelor's degree	Remote Work Seeker	Actively seeking employment since 2021
D	Mpeko Village	Honours degree	Financial Services	Fully remote since 2020; hybrid since 2022
E	Mtati Village	Bachelor's degree	Software Development	Fully remote since 2020
F	Tuku Village	Master's degree	Operations	Fully remote since 2020
G	Peddie Town	Bachelor's degree	Software Development	Hybrid, 2017. Digital Nomad, since 2020
H	Mtati Village	Master's degree	Education	Fully remote since 2020
I	Mpeko Village	Bachelor's degree	Financial Services	Fully remote since 2023

4.3 Access to ICTs and remote work

This section explored the first level of the digital divide, examining how ICT access affects remote work opportunities and challenges faced by remote work seekers and workers in rural areas.

4.3.1 How do you access the internet (device and costs)?

All participants were asked to describe how they access the internet, including the devices they use and the type of internet connectivity they rely on. They were also asked about the costs associated with their internet access.

Remote work seekers

Remote work seekers primarily rely on their smartphones to access ICTs. Although they possess laptops (that they all managed to buy through funding at university), they seldom use them due to the high cost of hotspotting (using a mobile phone's cellular data connection to provide internet access to other devices, such as laptops, or tablets). Also because of data costs, these participants make the most of their respective mobile network providers' special data offers, such as by scheduling a time to submit job applications and then buying a promotional package that gives users a limited amount of data for an hour at a cheaper rate. Participant C explained that "I use a rush hour bundle to hotspot my laptop specifically for job application[s]".

Social media bundles too provide cheaper access to social platforms, and weekend bundles offer more data for a limited time at a lower cost over the weekend. These strategies reflect how, even with limited resources, these participants find ways to access the internet to their advantage. **Data affordability** emerges as a key theme, which limits participants' ability to use the internet as they please.

Remote workers

Participants D, E, F, G, H, and I (remote workers, embracing remote, hybrid, and digital nomad working models) rely on different sources for connectivity, depending on location. For example, Participant E described using a combination of devices and networks to access and use the internet saying, "I use both my mobile device and laptop, plus I have a home Wi-Fi router" (Participant E).

Another participant combines resources: "I use my laptop, phone, and a pocket router, along with a 100GB plus 100GB night data package" (Participant G).

This multi-device and multi-package approach shows how remote workers juggle various tools and service plans to maintain consistent internet access. Participant I similarly navigates work-

provided and personal resources and said, “I access the internet through a work modem and buy phone data when it runs out”.

These examples show a broader theme of commitment, where remote workers skilfully navigate the challenges of inconsistent infrastructure by blending work-provided tools with personal investments. This resilience shows their **agility and commitment** to sustaining their professional roles, regardless of the limitations posed by their geographic and technological contexts.

4.3.2 Does access to ICTs affect your ability to search for jobs or apply for them?

It was important to ask remote work seekers how their access to ICTs affects their job search to understand whether it hinders their employment opportunities. This question provided insights into how access impacts activities such as browsing or applying for jobs online or attending virtual interviews.

Remote Work Seekers

Remote work seekers face numerous challenges when searching and applying for jobs online. Bad weather and power outages are significant issues that often result in poor network coverage. For some participants, the solution is to halt their job search to avoid the frustration caused by these disruptions. As Participant A stated, “I have not been applying for jobs [because] the network can be terrible and frustrating”.

Meanwhile, other participants adopt strategic approaches, such as browsing for jobs in batches during periods of good network coverage or checking applications only bi-weekly. Participant C shared: “I limit my time online to about 30 minutes when browsing for jobs because spending more time would use up all my data”.

For remote work seekers, **network coverage** is a key theme. Its unreliability leads to extended offline periods, making it difficult to submit timely applications and ultimately resulting in missed opportunities.

4.3.3 How long are you required to be online for your work? Does the cost of data affect the time spent online?

To understand how access affects remote workers’ productivity, they were asked about their required online hours and the impact of data costs.

Remote Workers

As already discussed, remote workers have more flexibility with their access to ICTs than the work seekers in this study, managing to stay online for longer periods despite the high cost of data. Issues that affect remote work seekers, like power outages and unreliable coverage, can affect work productivity of remote workers. One participant explained that "when something at work depends on me and there's a power cut, it impacts everyone's productivity" (Participant E).

Remote workers have more consistent access due to being able to afford data, and being required to be online at work, but they too must balance staying connected for work productivity with managing their data costs. Participant G who can code offline, goes online only when he must deploy his code and, "usually, I work at midnight to use my midnight data, this enables me to use my data efficiently" (Participant G).

Like remote work seekers, **network coverage** is a prevailing theme for remote workers too as they also face challenges in maintaining connectivity, resulting in a loss of productivity.

4.3.4 How Reliable is Your Access to ICTs?

This question explored the role of ICT access in facilitating or hindering remote work opportunities for both sets of participants.

Remote Work Seekers

Participant B shared the frustration of power outages saying, "Power cuts last up to three days or a week, your data expires, and there's nothing you can do about it".

To cope, the participant resorts to finding elevated areas for connection or by staying offline, though this is not always a sustainable solution. Participant C noted how bad weather disrupts connectivity: "When it's raining or very windy, the coverage drops to 3G, and I can only receive calls with a poor connection".

In response, they often "walk to higher ground just to get a stronger signal" (Participant C), highlighting the physical effort required to stay connected in rural areas.

The unreliability of ICTs often involves finding ways to manage prolonged power outages and unreliable network coverage. These improvisational strategies reflect the significant obstacles

that remote work seekers face, when infrastructure deficits force reliance on creative, low-cost but often inefficient solutions, especially for those with no income. **Adaptation strategies** is therefore a key theme, shifting the focus from access limitations to how participants actively mitigate ICTs access challenges.

Remote Workers

Remote workers who rely on stable connectivity to maintain productivity, described more resource-intensive adaptations in response to unreliable access. They can afford a router and supplement their data once it runs out, allowing them to access the internet more easily compared to the remote work seekers. As mentioned by Participant D, "electricity supply and network coverage are unpredictable".

To counter this unpredictability, participants "have multiple sim cards with different network providers" (Participant G), which allows them to overcome the challenge of inconsistent network coverage by switching between network providers depending on which network offers the strongest signal or most reliable service in their location at a given time and "drive to the nearest town if I have an important meeting" (Participant E).

Some remote workers have the luxury of having their employer bear the cost of them staying connected, accessing the internet through "a modem provided from work for a month; once the data runs out for the month, I purchase data on my phone and connect my laptop" (Participant I).

Financial flexibility emerges as a key theme among remote workers, offering them distinct advantages. For these participants, having a steady income provides them with an advantage in terms of consistent and uninterrupted online access.

4.3.5 Do you think your level of access to ICTs affects your employment opportunities differently compared to graduates in urban areas?

Participants were asked to assess whether their access to ICTs impacts their employment prospects differently from their counterparts in urban cities.

Remote Work Seekers

Not unexpectedly, responses revealed a distinction between rural and urban access to ICTs, focusing on the limitations imposed by geography and infrastructure.

The remote work seekers described how their location hampers their access to employment opportunities. For example, Participant A admitted that "living here is limiting my job opportunities" (Participant A).

The geographical isolation, in conjunction with limited resources and ICT access, compounds the challenges of seeking remote work. Participants further acknowledged the disparity between rural and urban job opportunities, with one participant noting a "lack of resources compared to [their] urban peers" (Participant C).

This geographical disadvantage in terms of access highlights how participants in this study feel excluded from certain employment prospects that urban graduates might access more easily due to their proximity to better infrastructure and more consistent connectivity. The lack of reliable internet and access to ICTs has a tangible impact on remote work seekers' ability to compete with urban counterparts. One participant highlighted that they often "miss job opportunities and application deadlines" (Participant B) due to connectivity disruptions.

These sentiments reflect a recurring theme that rural areas, while offering certain lifestyle benefits, present a **geographical disadvantage** in terms of accessing employment prospects. Rural remote work seekers are at a disadvantage, not just because of their location, but because their geographical isolation leads to difficulties in maintaining consistent and timely communication with recruiters, submitting applications, and keeping up with digital job markets.

4.3.6 What is your biggest challenge when it comes to ICT access?

Remote workers were asked to identify their biggest challenges related to ICT access to better understand the obstacles they face in effectively accessing ICTs for remote work in a rural area.

Remote Workers

One major challenge faced by remote workers is the reliance on electricity-dependent devices such as Wi-Fi routers and pocket routers and these devices become "useless" during power outages (Participant D).

Power cuts are a prevalent theme and a frequent issue in rural areas, leaving workers disconnected and unable to maintain productivity. These outages not only disrupt work but also expose the dependency on infrastructure that is often poorly maintained, creating significant

barriers to staying connected and productive. In response to power cuts and poor infrastructure, remote workers often incur additional costs by relying on mobile data or traveling to find more stable connections, as mentioned previously. Reliance on electrical devices highlights how remote workers in rural areas need consistent infrastructure such as electricity, internet, and connectivity to thrive in their work, yet they are their biggest challenges.

4.3.7 Can you describe any new opportunities that have either emerged or been lost because of your access to ICTs?

To understand how access to ICTs has influenced their opportunities, whether for job seekers or remote workers, all participants were asked to identify opportunities that have emerged or disappeared due to ICT access. The aim was to understand to what extent ICTs has either enabled or hindered their ability to secure employment or participate in work-related activities.

Remote Work Seekers

Remote work seekers in this study face genuine setbacks due to the unreliability of their access to ICTs. One participant reflected on losing a job opportunity after an online interview was disrupted by poor connectivity and "for the job, they needed a reliable, high-speed connection and backup power, which I lack" (Participant B).

While others have not missed specific opportunities, they acknowledge the limitations posed by inadequate ICT access. One participant remarked that having better ICT resources would grant them access to "better opportunities" (Participant A) since reliable internet and technology are crucial for accessing a wider range of remote work opportunities.

In rural areas, where connectivity and infrastructure are often inadequate, better resources can significantly expand one's ability to attend online interviews, communicate effectively with employers, and meet deadlines. **Missed opportunities** is a key theme among remote workers. Access to ICTs bring about unfavourable conditions leaving remote work seekers less competitive in the job market and hindering both job application processes and professional growth. Participants expressed frustration at the inability to compete with individuals from better-connected areas.

Remote Workers

Remote workers in this study present varying perspectives on the opportunities that have emerged or disappeared due to ICT access. One participant who worked purely remotely for

two years from the start of the COVID-19 pandemic highlighted the flexibility and productivity improvements afforded by remote work, saying how, “I now prefer a hybrid working environment” (Participant D).

This shift in variety of remote work for Participant D reflects how remote work can allow for a better work-life balance and productivity, enabling this participant to secure a new role that accommodates a hybrid working arrangement.

On the other hand, another participant shared how they missed a job opportunity because they could not meet the strict connectivity requirements for a virtual transcription job saying, “I couldn’t accept the job because the platform [they use for production of work] requires you to listen to audio, transcribe, edit, and submit directly on their site and stay online for the whole process” (Participant H).

Their experience highlights how the limitations of connectivity can directly hinder the ability to take advantage of online job opportunities, underscoring the challenges that participants face when dealing with poor internet service in rural areas. While some participants have not necessarily lost opportunities, they acknowledged missing important meetings due to connectivity issues, which “resulted in setbacks in securing new opportunities” (Participant I).

This acknowledgment emphasises how even minor disruptions can negatively affect professional growth and relationships, preventing workers from fully engaging in remote work environments. These responses highlight a theme of **unequal opportunities**. Access to ICTs plays a dual role for remote workers. On one hand, it can open doors to new opportunities, but, on the other hand, taking full advantage of these opportunities depends on consistent and reliable access to ICTs.

4.3.8 Does access to ICTs affect your ability to work remotely? If so, how?

This question aimed to explore how ICT access affects remote workers’ ability to perform work-related tasks.

Remote Workers

As has been shown, for remote workers, access to ICTs is often unpredictable, making it difficult to maintain consistent productivity. As a result, participants are often compelled to invest their own resources into ensuring they can continue working. Participant H explained

the unpredictability of power supply, noting, “sometimes there’s no loadshedding, but the municipality is fixing a fault, leaving us without power for two days.”

Such interruptions create significant obstacles to maintaining consistent work schedules. Similarly, Participant E shared how long-lasting power outages impact their ability to work. They described how they overcome this: “if the power is out for more than a day, I travel to the nearest town to work”.

This strategy requires time and financial resources, such as the cost of travel, to access more reliable connectivity. Participant G who lives in the semi-rural town (Peddie), as opposed to other participants who are in the surrounding rural area, shares that their connection is mostly “reliable”, placing him at an advantage among other participants, due to access to a somewhat better infrastructure.

The time taken by some remote workers to drive to the nearest town hinders productivity and the cost of fuel is an added expense that can be a burden. The responses from remote workers illustrate the significant costs, both in terms of time and financial resources, associated with maintaining ICT access in rural areas. A key theme identified for the remote workers in this study is the **economic strain** of staying connected as they attempt to deliver work related tasks. Although they do have the financial flexibility to stay connected and be available as required for work, they face a financial pressure and stress due to the added resources required to stay online.

4.3.9 Concluding remarks around access to ICTs for remote work opportunities

As shown in the data, the first level of the digital divide represents, for some of this study’s participants, a foundational barrier that prevents them from fully engaging in remote work opportunities and often necessitates additional resources to maintain productivity for those already engaged in remote work. The themes identified will be explored in greater detail in the next chapter.

4.4 Digital literacy implications for remote work and remote work opportunities

This section examines the second level of the digital divide, focusing on digital literacy, the skills and competencies necessary to effectively use ICTs. It probes how digital literacy can

affect participants' ability to pursue remote work opportunities or succeed in a remote work setting.

4.4.1 How confident are you in using digital devices? How would you describe your level of digital literacy?

Participants were asked to assess their level of digital literacy, as this is likely to influence their ability to use ICTs effectively.

Remote Work Seekers

The self-assessment of participants' digital literacy skills reveals variations in both proficiency and confidence. One participant, who holds an IT qualification but has not secured any jobs since graduation, described themselves as "digitally savvy" (Participant A).

Similarly, another participant with a social science background and six months of remote work experience noted that completing an IT-related short course "helped me develop essential digital skills" (Participant B).

However, the third work seeker with a social science qualification who has not held a job assessed their digital literacy skills as "basic, just enough to get by with some tasks, but I still have a lot to learn" (Participant C).

The participant with an IT-related qualification showed higher confidence in their digital literacy skills, while the others acknowledged limitations in their abilities. A key theme that emerges is the **digital literacy confidence.** Participants whose education background is in the IT field respond more confidently when asked about their digital literacy skills. Their educational background and training seemingly play a role in shaping their digital literacy skills and confidence. However, the data shows that confidence alone does not guarantee access to remote work opportunities, as seen with Participant A.

Remote Workers

The remote workers in this study all hold a bachelor's degree and some have an honours and a master's degree. They have diverse work experience. The remote workers have transitioned from office-based roles to remote, hybrid, or nomadic positions. Their digital literacy skills and experience have seemingly enhanced their adaptability and career mobility, and vice versa.

One participant with qualifications in IT stated, in terms of digital literacy skills, they are an "expert, as I am in the IT industry" (Participant D).

Another participant, who builds websites as a hobby, described themselves as "proficient" (Participant G).

Similarly, a participant who codes and creates website shared the sentiments, describing their digital literacy skills as "proficient, as my experience in software development relies heavily on online platforms and tools" (Participant F).

For a remote worker with no IT background, they have just enough digital literacy skills for their job saying, "I wouldn't call myself an expert, but I have just enough skills to excel at my job and enjoy navigating the online space to my benefit" (Participant H).

The same theme of **relationship between educational background and confidence** is evident among remote workers too. Like remote work seekers, remote workers attribute their proficiency and confidence in digital literacy to their educational background and including the nature of their work experience. Moreover, remote workers possess higher levels of digital literacy skills than those seeking remote work; the more technical their work is (in terms of coding, for example), the more confident remote seekers seem to be in their digital literacy skills.

4.4.2 Have you felt limited in your search for work due to a lack of digital literacy skills?

Remote work seekers were asked if they felt that a lack of digital literacy skills limited their ability to search for work and to assess their confidence in navigating online spaces.

Remote Work Seekers

To some extent, remote work seekers feel limited in their search for employment due to their digital literacy skills. Remote work seekers use online career websites to search for jobs, some have job applications on their phones, while others rely on government publications and job vacancies shared on social media platforms. One participant shared that they were discouraged from seeking work due to difficulties in securing a job so far. Previously, they shared how the first level of the digital divide prevents them from being online as frequently as they would like, stating, "I am not actively searching for vacancies at the moment, due to access issues, but not because of my skills" (Participant A).

Another participant admitted feeling restricted in their job search saying, “I don’t have a LinkedIn profile, and I’m not familiar with many career websites” (Participant C).

An emerging theme for remote work seekers is **limited use of ICTs**.

4.4.3 Have you felt limited in your work due to a lack of certain digital literacy skills?

Remote Workers

While most remote workers in the study did not feel constrained by their digital literacy skills, some participants who either started a new position recently, like Participant I who started working in 2023, or transitioned into new roles, like Participant D, had to teach themselves how to use new tools and adapt to common platforms in their new jobs. One participant noted a lack of productivity at the start of their new job because they were unfamiliar with the platforms used, stating, “It took me a while to upskill, and meant I spent longer hours completing tasks” (Participant F).

Another participant, who shifted into a different sector, said, “I had challenges with work tools that are essential for coding and managing cloud-based applications” (Participant D).

Similarly, Participant I shared feeling somewhat limited in terms of their digital literacy skills, explaining, “yes, previously I used a different platform for data analysis but had to learn using a data analysis tool used across the organisation I work for”.

A key theme emerging is **flexibility**. Remote workers must not only adjust to their remote work environments but also to the specific digital tools and platforms required in their roles. Difficulty in adapting to these tools can result in reduced productivity and inefficiencies, even for those with strong digital literacy skills.

4.4.4 Have you ever found online job opportunities that you were unable to apply for due to digital literacy challenges?

Remote Work Seekers

As established before, remote work seekers have varying levels of digital literacy skills, which appear to influence their confidence when applying for remote work opportunities. Participants who expressed confidence in their digital literacy skills, such as Participants A and B, are

proactive in seeking remote roles. Participant A shared, “Only when they require lengthy experience, do I not apply, but for entry-level positions I confidently apply”.

In contrast, Participant C, who felt their skills were inadequate, approaches remote work applications cautiously: “I don’t apply for most virtual opportunities because they require technical skills, I don’t have”.

Again, the findings reveal a theme related to **confidence** and how its presence or absence in relation to digital literacy influences how remote work seekers approach remote work opportunities. Participants who are confident in their digital literacy skills actively pursue remote roles, while those who perceive their skills as inadequate are more hesitant.

4.4.5 Have you ever missed a remote work opportunity because of a lack of certain digital literacy?

This question was posed to remote workers to understand if they had ever missed a remote work opportunity due to a lack of digital literacy, shedding light on the personal challenges faced in adapting to the demands of the remote job market.

Remote Workers

Remote workers in this study have not missed out on work because of digital literacy. Instead, one participant shared that they have only missed “a few important meetings when I could not be online when required” (Participant F).

Remote workers attribute any missed opportunities to the first level of the digital divide. Their ability to effectively use digital tools ensures they can meet the demands of remote work, but the first level of the digital divide does pose a challenge, making digital literacy alone not enough to succeed in working remotely.

4.4.6 Do you think that digital literacy has become essential for finding work in your field? Why or why not?

Remote work seekers were asked if digital literacy is essential in their fields, to understand its role in improving their employability and navigating an increasingly digital job market.

Remote Work Seekers

Most remote worker seekers in this study find digital literacy skills essential not only within their respective fields of study but also to remain competitive in the job market. Supporting this, one participant shared that "being tech-savvy is essential for job seekers and graduates" (Participant A).

As the world becomes increasingly digitised, navigating digital tools has become necessary in many aspects of life. This sentiment is shared by another participant: "applying for jobs and even school is done online. One needs to be active on platforms like LinkedIn and other online resources". (Participant B).

Initially, digital literacy was not viewed as essential by this participant. However, after experiencing prolonged unemployment, their perspective shifted: "After being unemployed since I graduated, I realise I need to upskill or use social media to improve my employability. However, this requires data, which I can't afford. So, yes, digital skills are necessary to navigate a competitive economy with limited job opportunities" (Participant C).

Among remote work seekers there's a theme of the **necessity of digital literacy skills** in all aspects of life.

4.4.7 Can you describe the digital literacy skills you use regularly in your remote work?

Remote workers were asked to elaborate on the digital literacy skills they regularly employ in their remote work. The question aimed to uncover the specific competencies that enable them to perform tasks efficiently in a digital environment.

Remote Workers

Remote workers revealed their versatility in digital literacy in a wider range of digital tools, from being proficient in "communication, collaboration, productivity and AI tools" (Participant D), to "basic Microsoft Suite, and research platforms" (Participant H).

These remote workers have a wide range of digital literacy skills and are confident to take on digital tasks or "teach [themselves] how to use new tools" (Participant G).

Again, this suggests that educational and working background and exposure to digital tools through work directly influences the digital literacy and, consequently, job success of participants. The remote workers use a broad spectrum of digital tools, from basic applications

like Microsoft Office to more advanced tools like AI, indicating the varying levels of digital competence among these individuals. The responses highlight a key theme among remote workers of **versatility of digital literacy skills and self-efficacy**, as these participants can use digital tools and technologies effectively to achieve specific tasks.

4.4.8 Do you have access to resources or support for improving your digital skills? If so, what are they?

All participants were asked to describe the resources or support available to them for improving their digital literacy skills, either within their community or workplace. This question aimed to understand the extent of access to tools, training, or initiatives that could help participants enhance their digital competencies and overcome potential barriers in their professional development or job search efforts.

Remote Work Seekers

Remote work seekers reported having limited to no access to resources for improving their digital skills. Participant B highlighted the "lack of infrastructure" in their community, which could be understood as not only referring to physical infrastructure, such as reliable internet or computer access, but also the absence of community programs that provide structured opportunities for upskilling.

Participant C noted that while they had received digital literacy support while attending university, similar programs are "unavailable" in their community, leaving individuals without accessible avenues for improvement.

This reliance on external institutions, such as universities or specific community programs, underscores the role such initiatives play in fostering digital literacy. Without them, individuals like Participant B face compounded barriers to skills development since, "I cannot afford the data required for online classes to upskill myself."

These responses reflect a key theme of **community support gaps** on ongoing digital literacy skills development in rural communities.

Remote Workers

Remote workers generally have access to career development support within their organisations, although the type and availability of resources vary. These resources range from

free online courses with certifications to secondment opportunities (a temporary transfer to a different role to gain experience). However, remote workers also highlighted a lack of similar support within their communities with one participant noting, “I have access to resources at my work but not in my community” (Participant H).

Another participant, who benefited from free online courses outside their job, pointed out a crucial issue: “There’s a lack of awareness in my community about the resources available for skill development, such as free online learning platforms” (Participant E).

Participant I shared their experience of receiving a bursary at work to pursue higher education, along with opportunities for practical development: “My organisation offers secondment in areas where one would like to learn, and they provide Udemy [an online learning and teaching platform] licences too. I have received a bursary to study towards my honours”.

Some participants take a proactive approach to skills development, seeking out independent opportunities: “I use many online platforms to upskill, despite the lack of resources in my community” (Participant F).

While community support gaps are evident among remote workers too, another key theme is the **organisational support** in skills development, a big contrast between remote work seekers, where there is a distinct gap in resources and support systems between workplace environments and local communities.

4.4.9 Has digital literacy impacted your ability to sustain your remote work?

This question was asked to understand whether participants’ digital literacy skills have influenced their ability to maintain remote work, revealing any challenges or limitations they may face in managing their responsibilities in a digital work environment.

Remote Workers

Remote workers expressed confidence in their digital literacy skills, with none reporting any negative impact on their ability to sustain remote work. On the contrary, they highlighted how their digital literacy has positively supported their work. As one participant mentioned, “I communicate and collaborate with my team efficiently and effectively” (Participant I), while another emphasised the importance of having access to tools that enable them to “upskill” when necessary for their roles (Participant H).

A prevalent theme among these responses is the **empowering role of digital literacy** in sustaining remote work.

4.4.10 Concluding remarks around digital literacy implications for remote work

To conclude, the findings from data on the second level of the digital divide reveal the contrast between digital literacy skills of remote work seekers and of remote workers. The possession of digital literacy is important for remote work and sustaining it. However, the lack thereof can be detrimental leading to disappointment, a lack of confidence and self-doubt therefore limiting the job search of remote work seekers. The themes identified will be explored further in the next chapter.

4.5 Social benefit implications of ICTs

This section explores the third level of the digital divide, assessing the outcomes of having or not having access to ICTs and the ability or inability to use them in participants' personal and professional lives.

4.5.1 Do you think access to ICTs and/or knowing how to use them yield any social benefits/opportunities to you personally? Please elaborate.

All participants were asked whether access to ICTs and the ability to use them provided any personal benefits or opportunities. The aim was to understand how their access and use of ICTs impact their social and economic lives, including opportunities for communication, employment, and community engagement.

Remote work seekers

To some extent, remote work seekers perceive and have witnessed ICT access yielding many benefits socially, financially, economically, emotionally, and in many other forms, not just for themselves but also for others. One participant highlighted the advantages of global entertainment and shopping while living in a rural area saying, "Growing up in a rural area, I only had access to SABC 1, 2, 3, and eTV. Now, I can watch anything I want online or live streams despite the time difference. I also shop online and have access to limited edition items, which wasn't possible before the internet" (Participant A).

Another participant observed how social media and e-commerce enable others to thrive economically: "some people run successful online boutiques using social media for e-

commerce, managing their small businesses from home, and even shipping globally" (Participant B).

Despite having no remote work opportunities currently, ICTs have offered the third participant emotional support through online interactions. They said, "while I don't benefit career-wise, I do in other ways. Being an unemployed graduate has been tough, but online communities provide support and encouragement to keep going, even during challenging times. As an only child, it can get lonely. ICTs enable me to meet and connect with friends all over the world" (Participant C).

These positive experiences shape their overall perspective on the benefits of ICTs, even though they have not fully leveraged these technologies for work due to the challenges posed by the first and second levels of the digital divide, which in turn impact their economic outcomes. The participants' responses reveal a theme of **social connection** and staying current.

Remote Workers

ICTs have expanded remote workers' professional and personal horizons. Uniformly, the remote workers in this study have experienced positive outcomes in their careers, with varying degrees of success such as securing international work opportunities, and new job opportunities with greater flexibility and higher salaries. Positive outcomes can be attributed to their ability to access and use ICTs to seize opportunities in both personal and professional spheres, while the failure to have access to or the skills to use digital literacy tools as seen in previous discussions widens the third level digital divide as the world becomes "increasingly digitised with technology in everything that we do" (Participant D).

Having sufficient access to ICTs, along with digital literacy skills, has enabled one participant to gain international work experience: "I worked on a project with a team based in the U.S. My company refers to this as 'moonlighting," where you can work from anywhere in the world online, and the time zone difference doesn't matter as long as you can deliver" (Participant G).

Similarly, ICTs have facilitated collaboration and networking, even from great distances, through platforms like Teams and LinkedIn as "access to ICTs and knowing how to use them gives you access to information, networking, and collaboration" (Participant I).

Beyond professional success, ICTs have also contributed to emotional well-being of some remote workers by having access to online counselling sessions: “I also get access to online counselling, podcasts to explore different perspectives or find people who share my interests when my immediate circle doesn’t, which is great for my mental health” (Participant H).

A key theme emerging from these experiences is the **expansion of boundaries**. These boundaries enabled by ICTs include opportunities for international collaboration, flexible and well-paying jobs, networking across distances, and access to mental health and personal development resources.

4.5.2 Are you able to leverage ICTs for your success?

This question shifts from general ICT benefits to practical use, asking participants to share specific instances where ICTs directly impacted their education, employment, or personal growth, particularly in rural areas.

Remote work seekers

While success can mean different things to different people, the remote work seekers in this study grappling with unemployment believe they haven’t achieved any success through ICTs. Despite holding an IT-related undergraduate degree, one participant explained that challenges with ICT access have discouraged them from applying for jobs, responding, “not in the meantime” when asked if they leverage ICTs for personal success (Participant A).

Similarly, another participant, who lacks digital literacy skills and struggles with ICT access, shared that they have “not been able to use ICTs for their success” (Participant C).

In contrast, another participant, currently completing a secondary degree, has been able to use ICTs for personal development. They successfully completed a six-month paid learnership—a structured program combining theoretical training and practical work experience—and are now completing their honours degree online: “I wouldn’t be able to do that if it wasn’t for ICTs. Currently, I am completing my honours online too” (Participant B).

All remote work seekers have some level of ICT access. However, in terms of digital literacy, Participants A and B have IT-related backgrounds (Participant A holds a degree in IT, and Participant B completed a short course). Participant B also has some remote work experience

and is pursuing a second qualification. Participant C, in contrast, has minimal access, lacks digital literacy skills, and has not experienced any success from ICTs.

The varied impact of ICT access and digital literacy on personal and professional success among remote work seekers points an overarching theme of ICTs shaping remote workers aspirations. For example, Participant B uses ICTs for further education and career development, aligning their aspirations with achievable outcomes. In contrast, limited access and digital literacy hinder participants like Participants C, while Participant A's experience highlights that even an IT background is insufficient without practical application and experience. Therefore, ICTs influence both achievements and ambitions.

Remote workers

For individuals residing in rural areas where job opportunities are limited, migration to urban centres is often necessary to secure employment. However, the rise of remote work, made possible by ICTs, has enabled individuals to achieve success without having to leave their homes. Many attribute their success to ICTs, for example, saying, "I rely entirely on ICTs to fulfil my duties" (Participant D).

In addition to supporting a digital nomad career, Participant G leverages ICTs for continuous professional growth saying, "I watch educational videos on YouTube to upskill. I also research how to improve at work and frequently check current jobs market-related salary to ensure I'm being compensated fairly" (Participant G).

Meanwhile, Participant H, without an IT-related background, has successfully used ICTs for professional improvement and upskilling: "I'm not highly skilled in IT, but I have enough basic skills to use technology effectively. I leverage these skills to support my success" (Participant H).

For remote workers, a key theme is **privilege**. The remote workers in this study benefit from the financial means to overcome certain challenges in accessing ICTs and have support in improving their digital literacy skills. Combined with their work experience and educational background, this privilege has positioned them to achieve greater success with ICTs compared to remote work seekers.

4.5.3 Do you believe that improved ICTs (like faster internet or cheaper data) would significantly impact social benefits from ICTs?

All participants were asked to share how improved access to ICTs, such as faster internet or cheaper data, could enhance their benefits from ICTs.

Remote work seekers

Remote work seekers previously shared that reliable access to ICTs and limited digital literacy skills for some participants continue to be a challenge, having a direct implication on the opportunities they derive from ICTs. Access to ICTs appears foundational; without it, there is a domino effect that restricts remote work seekers from gaining opportunities from accessing and using ICTs. To address this, "subsidies or zero-rated websites for jobs" (Participant C) are suggested as potential solutions to yield opportunities from ICTs.

An emerging theme is **limited benefits**. Due to the first and second level of the digital divide, remote work seekers experience limitations in enjoying the full benefits of ICTs. Remote work seekers who face barriers to ICT access and use are consequently restricted from fully benefiting from its potential outcomes.

Remote Workers

Remote workers, who benefit from ICTs, reflected on how ICTs could positively impact others, much like they have afforded them great opportunities. However, they acknowledged that not everyone can reap these opportunities. As Participant D noted, "access to ICT is still a privilege for many poor South Africans. Without the necessary devices or data, people miss out on valuable opportunities".

Despite their own advantage, some remote workers still understand the limitations in others fully achieving their desired outcomes from ICTs. For instance, a participant who benefits from online podcasts and reading clubs aimed to create a similar platform but soon realised that "data costs prevent people in the community from joining and engaging" (Participant H).

Another participant, aware of his community's obstacles, shared that better ICT access could result in significant benefits, stating, "data costs and unreliable internet access hinder economic opportunities" (Participant E).

Participant I further highlighted that, “improved ICTs would help individuals take on remote work or pursue professional opportunities requiring consistent internet connectivity”.

Social responsiveness is a theme that appears among remote workers. Access to ICTs enables remote workers to achieve social, economic, and professional benefits, which they would like to see within their communities as well. Meanwhile, limited access acts as a barrier, restricting these opportunities, and ultimately affecting the positive impact of ICTs to their communities.

4.5.4 Do you think being digitally connected influences your ability to engage with social and professional networks that could enhance your remote work / employment opportunities?

Participants were asked how the first and second level of the digital divide impacted their ability to network and engage professionally, especially in remote work or job seeking.

Remote work seekers

Remote work seekers view being digitally connected as opening doors to valuable opportunities, especially through platforms like LinkedIn and Facebook. One participant explained how social media communities have proven to be a reliable space for discovering job opportunities, stating, “in my social media communities, vacancies are shared, and I’ve seen people get opportunities through LinkedIn too. It’s great for staying updated and for networking” (Participant A).

Similarly, another remote work seeker highlighted LinkedIn’s role in fostering meaningful professional relationships: “LinkedIn allows me to connect with like-minded individuals and those with similar career paths. It’s a space where I can learn and gain insights from others’ experiences” (Participant B).

In contrast, the third remote work seeker has a more limited approach to social media use: “I don’t have LinkedIn, I only use Facebook to join employment groups” (Participant C).

Participants A and B who have sufficient digital literacy, actively engage on LinkedIn and Facebook, and seem to have greater confidence in navigating online spaces and accessing career opportunities, while Participant C’s limited use of social media for professional networks leaves them at a disadvantage.

A key theme emerging is the **power of social networking platforms**. They are essential tools for professional connections and job opportunities.

Remote Workers

Online networking platforms are equally important to remote workers. They rely on these platforms to connect with recruiters, access career development courses, and engage with other professionals. One participant stated, "LinkedIn is vital for sharing opportunities and knowledge about new skillsets" (Participant D).

For Participant E, "LinkedIn and developer-specific platforms have connected me with professionals I have never met in person, leading to new job opportunities and a broader network".

Participant G and Participant I also shared how digital tools and platforms have been crucial to their professional growth. Participant G, for instance, noted that these tools "[enable] me to deliver work across time zones".

Additionally, these platforms support continuous learning. Participant I shared, "LinkedIn has helped me learn new skills for working from home, including project management techniques and technical skills through online courses".

The **power of social networking platforms** emerges as a key theme for remote workers as well.

4.5.5 Concluding remarks on social benefits of ICTS access and use

This section has explored the third level of the digital divide, focusing on how access to and the ability to use ICTs can yield benefits to participants' personal and professional lives. For both remote workers and remote work seekers, ICTs offer many benefits although degrees of realising these benefits vary. A privilege divide has also been evident, where remote workers who have conquered the foundational divide had a better advantage at gaining positive outcomes. Therefore, there is evidence of the unequal access to ICTs and use deepening the digital divide. Chapter 5 will further discuss the implications of these themes.

4.6 Concluding responses from participants

When asked if there was anything else to add regarding how access to ICTs, digital skills, and social benefits have impacted their remote work seeking or remote work endeavours participants had little to contribute beyond suggesting the importance of "making the most of the opportunities available online" (Participant F).

4.7 Chapter summary

This chapter presented the data collected from remote workers and remote work seekers in Peddie and surrounding villages. The data were drawn from qualitative responses analysed through thematic analysis and illustrated using participant quotations. The chapter began by introducing the participants, providing background information to contextualise their experiences and perspectives. The interview responses were structured around the three levels of the digital divide: Access, Use, and Opportunities.

The analysis identified key themes highlighting how access, digital literacy, and opportunities influenced participants' ability to engage in and seek remote work. Some themes were similar, while others were contradictory. These themes, summarized in Table 2, will be discussed further in the next chapter.

Table 2: Themes

Level of Digital Divide	Group of participants	Themes
ACCESS	Remote work seekers	Data affordability
		Network coverage
		Agility and commitment
		Geographical disadvantage
		Missed opportunities
	Remote workers	Agility and commitment
		Network coverage
		Financial flexibility
		Power cuts
		Unequal opportunities
		Economic strain
USE	Remote work seekers	Relationship between educational background and confidence
		Limited use of ICTs
		Confidence in digital literacy skills
		Necessity of digital literacy skills
		Community support gaps
	Remote work seekers	Relationship between educational background and confidence
		Flexibility
		Versatility of digital literacy skills and self-efficacy
		Organisational support
		Empowering role of digital literacy
BENEFITS	Remote work seekers	Social connection
		ICTs shaping remote workers aspirations
		Limited benefits
		Power of social networking platforms
	Remote work seekers	Expansion of boundaries
		Privilege
		Social responsiveness
		Power of social networking platforms

Chapter Five: Discussion of findings, recommendations, and conclusion

5.1 Introduction

Building on the data presented, as well as the insights from the literature reviewed, this chapter addresses the research questions in detail. It also provides recommendations and presents the concluding remarks.

This study set out to investigate the digital divide in a rural area of the Eastern Cape of South Africa, specifically semi-rural Peddie and the surrounding rural villages, focusing on its implications for remote work. The study aimed to answer three research questions. They will be addressed one by one.

5.2 How does access to ICTs affect remote work in rural Eastern Cape?

This section discusses the findings from thematic analysis involving the two groups in the study, remote work seekers and remote workers. Similar themes from chapter 4 are grouped together.

5.2.1 Affordability, financial flexibility and agility and commitment

All participants use multiple devices, including mobile phones and laptops, to access the internet. For both groups, the cell phone is the primary point of access, and they often use it to hotspot their laptops for internet connectivity. Similarly, Buthelezi, Chatikobo and Dalvit (2021) found that in rural communities, cell phones serve as primary means of access due to their affordability compared to computers and laptops.

Remote work seekers rely predominantly on mobile data purchased through network providers, often constrained by the affordability of data bundles and the availability of promotions. The DCDT (2013:3) outlined that mobile data costs in South Africa were a barrier to internet access, and this still seems to be the case. Similarly, in Oki and Lawrence (2022), participants in rural areas were unhappy about the high cost of data. Remote work seekers' limited financial resources hinder consistent online presence and browsing freedom.

In contrast, remote workers use a combination of mobile data, Wi-Fi, and pocket routers, leveraging their financial flexibility as well as their employer support to remain consistently

online. It is common for those who have the financial means to use that advantage to access ICTs, as Skuse and Cousins (2007) and Buthelezi, Chatikobo and Dalvit (2021) observed.

The financial flexibility allows remote workers to recover work productivity losses during connectivity interruptions. However, maintaining multiple devices and connectivity options comes at a cost, as explored further in themes that follow. Both remote workers and remote work seekers were found to be agile and committed in navigating access to ICTs. Remote work seekers, despite lacking financial flexibility, employ inventive strategies such as staying offline during network disruptions or seeking higher ground for better coverage. Both groups demonstrate resilience, refusing to be deterred by connectivity challenges, and remain dedicated to accessing ICTs, either for remote work or for seeking remote work.

5.2.2 Network coverage, economic strain, and power cuts

Participants identified unreliable network coverage and power cuts as barriers to accessing ICTs. Rural areas face power disruptions which can affect the network coverage, as well as electricity. Oki and Lawrence (2022:116) attest to the unreliability and quality of internet speed faced by respondents in their study, also based in the Eastern Cape. Sithole et al. (2013) commented on poor infrastructure in rural areas of South Africa, suggesting that rural areas must have durable and low maintenance ICT infrastructure.

Remote workers, again demonstrating agility and commitment, mitigate connectivity issues by using multiple SIM cards to optimise network access, investing in fuel or other resources such as the purchase of generators to power their devices during outages, resulting in some degree of economic strain, despite remote workers' relative financial advantage. While they can mitigate some challenges, and some get assistance from the employers, the associated costs often lead to trade-offs, such as working longer hours or sacrificing personal time to recover productivity and going to costly lengths to stay connected.

5.2.3 Geographical disadvantage

Participants universally noted that their rural setting exacerbates ICT access-related challenges, with implications for access to employment opportunities. Because of having less financial flexibility, remote work seekers are particularly disadvantaged by the lack of infrastructure development in rural areas. As Buthelezi, Chatikobo, and Dalvit (2021:458) observed in Dwesa, rural areas experience a digital divide, which mirrors the participants' experiences in this study. Although remote workers have secured jobs, they still experience limitations in

leveraging additional income streams, such as the case of Participant H who could not pursuing virtual opportunities due to unreliable ICT infrastructure in their locales. They often find themselves disadvantaged by the geographical location compared to their urban colleagues who benefit from uninterrupted connectivity and can surf the internet with few limitations. These findings are supported by van Dijk (2020:53) who described that geography, whether a rural or urban area, affects the resources a population has access to.

5.2.4 Missed and Unequal opportunities

Both groups highlighted the impact of ICT access on opportunities and how, at times, it can set them back from what they could achieve. For remote work seekers, one of the participants lost a job opportunity due to network disruptions during an interview which was enough for the interviewer to decide that they wouldn't be able to carry out their duties. Participants often miss opportunities because of being in a rural area. Remote work seekers often can't apply for jobs or attend virtual interviews, further worsening their employment struggles. Findings from Matli and Wamba (2023:155) support this theme, attributing missed opportunities to the exorbitant costs of mobile data in South Africa.

Remote workers on the other hand had varying experiences in terms of opportunities that have emerged or disappeared. While there were new opportunities that emerged (Participant D's new hybrid role) there were also lost opportunities (Participant H lost a job opportunities). This reflects how the first level of the digital divide manifests differently for remote workers despite being in the same rural area. While, in this case, opportunities are not equal among remote workers in this study, Matli and Wamba (2023) recognise that unequal opportunities create a divide between rural and urban remote workers that places remote workers in rural areas at a disadvantage than remote workers in metros who have access to efficient ICTs.

Access to ICTs has direct implications for both remote workers and remote work seekers in this study. While remote workers are variously better equipped and motivated to navigate access challenges due to financial flexibility and work commitments, they still face high costs and productivity losses when they are disconnected from the internet. Remote work seekers are similarly constrained by infrastructural barriers, but are at a greater disadvantage, because of financial barriers limiting opportunities to access remote work and forcing them to adjust their online activity according to accessibility. As highlighted by Aruleba and Jere (2022:10), rural areas historically face ICT challenges that perpetuate inequalities in employment, among other

things. The semi-rural town of Peddie, with its relatively better infrastructure, offers a slight advantage (as evidenced by Participant G who faces minimal access to ICT challenges and can stay connected without the hassle of travelling elsewhere), but the first level divide remains an obstacle to equitable remote work and its associated opportunities, despite all participants owning electronic communication and productivity devices.

5.3 How does digital literacy affect remote work in rural Eastern Cape?

This section discusses findings from the thematic analysis about how digital literacy skills impact remote work, productivity, and remote work opportunities.

5.3.1 Educational background and confidence

Educational background played a role in shaping digital confidence and competence related to the use of ICTs. Some remote work seekers reported a lack of confidence in navigating digital tools, despite holding degrees. Dixon's findings (2020:15), that teachers lacked confidence in their digital literacy skills until they received training and used ICTs regularly, may be relevant here where remote work seekers have not yet been exposed to ICTs to a wider extent. The loss of access to institutional resources, such as free internet and training platforms, after graduating compounded their lack of confidence in their digital literacy, as remote work seekers struggled to develop digital skills independently. This is in line with other studies claiming that institution structures play an important role in digital inclusion (Warschauer, 2003:46). In contrast, remote workers exhibited higher levels of digital confidence. Their educational backgrounds, and work experience provided a solid foundation for adapting to the evolving technological landscape.

5.3.2 Limited use of ICTs

Digital literacy plays a role in securing employment in the digital era. The remote work seekers have minimum to no digital literacy or practical work experience, hindering their employment opportunities. As literature suggests, limited access to ICTs results in limited use of ICTs, common among remote workers who have not successfully secured remote work and are still insecure in their access to ICTs. In the digital era, knowledge alone is not enough; complementary digital literacy skills are a necessity (Nwogwugwu, 2022:194). In contrast, remote workers revealed how advanced digital literacy enhanced their employability. Many credited their proficiency with various software and platforms as playing a role to adapting, securing and sustaining their remote positions. Folorunso & Momoh (2022:212) asserted that

mastering using ICTs can result in career development and promotion and has become a requirement for employment.

5.3.3 Flexibility, versatility of digital literacy skills and self-efficacy

Themes of flexibility, versatility, and self-efficacy among remote workers were common in the findings and seemingly necessary attributes for navigating the demands of remote work. Remote workers in this study displayed a wide range of digital literacy skills. This versatility is essential for remote work success, as remote workers are expected to adapt to a variety of platforms and tools. While remote workers felt confident in their digital literacy skills, transitioning into new roles could present initial challenges in adjusting to unfamiliar tools and platforms. This challenge points to the dynamic nature of digital literacy, where even experienced workers must continually upskill to meet the specific demands of their roles, which the remote workers in this study did. These experiences align with Helsper (2019) and van Deursen and van Dijk (2010), who argue that digital literacy is not just about access to technology, but also about the ability to effectively adapt and use these tools in diverse professional contexts.

This study has found the role of self-efficacy to be important, as remote workers are often required to learn and apply new technologies independently. Nwogwugwu (2022:191), who posits that the ability to use knowledge to one's advantage can serve as a powerful tool for success. The workers in this study exhibit strong self-efficacy, indicating that their educational and professional backgrounds, along with prior exposure to a broad array of digital tools have equipped them with the confidence to tackle new challenges and continue to refine their digital literacy. This flexibility and self-reliance in acquiring new digital literacy skills are crucial for success in remote work environments.

5.3.4 Necessity of digital literacy

The findings show that digital literacy is a necessity for remote work seekers especially in an increasingly digitally driven job market. This notion is echoed by Nwogwugwu (2022), who stresses that digital literacy skills are becoming increasingly important in Africa, particularly within overcrowded job markets. Additionally, Frans and Pather (2022) further support the necessity of digital literacy, especially in rural areas, as they observed, without adequate digital literacy, rural communities face barriers to use ICT resources, which further perpetuates digital exclusion and limits opportunities for employment. The necessity of digital literacy is not just

a reflection of technological advancement but also of the economic imperative to remain competitive in the global workforce.

5.3.5 Community support gaps and Organisational support

Organisational support emerged as a key factor for remote workers, with many reporting that their organisations offered ample opportunities for ongoing skills development. These included free access to online courses, certifications, and workplace-driven learning programs, which kept them competitive in their fields. Many noted that such initiatives enhanced their technical competencies, productivity, and confidence. As Folorunso and Momoh's findings (2022:212) show, integrating on the job-training is not only beneficial for employees, but for organisational success too. Remote workers not only rely on organisational support, but their income also allows them to upskill independently. In Ogbo et al. (2021:128), individuals with higher incomes were found to use the internet frequently for personal development. This seems to be the case in this study too in relation to remote workers.

A community support gap was identified among remote work seekers. The lack of support within their communities leaves remote work seekers disadvantaged. Ngqushwa Local Municipality has a library that is open to communities from 8am to 4pm during the week, however due to infrastructural challenges in the municipality, the library lacks resources (Ngqushwa Municipality, 2023). In rural areas, there are no access to structured learning environments or affordable training programs after completing their education. Ojo (2022:179) identified inadequate infrastructure as a barrier to ICT access in developing countries and highlighted the community's role in facilitating the acquisition of digital literacy skills. Without guidance or institutional support, many found it challenging to identify and pursue relevant upskilling opportunities. Similarly, Warschauer (2004:42) stated that accruing digital literacy skills depend on various resources, including community support.

5.3.6 Empowering role of digital literacy

Digital literacy empowers remote workers, enhancing their ability to sustain their remote work. None of the participants reported a negative impact of their digital literacy skills on their ability to perform their roles. Instead, they highlighted how these skills positively supported their work, particularly in areas like effective communication, collaboration, and the ability to upskill when needed. This finding aligns with Nwogwugwu's assertation that digital literacy

skills are enablers of improved access to resources for individuals and for workplace productivity too (2022:194).

Digital literacy plays a significant role in shaping the experiences of remote workers and remote work seekers in the rural Eastern Cape, influencing their ability to secure and sustain employment. Remote workers, supported by their education, organisational resources, self-efficacy, flexibility and a range of skills, were better positioned to address challenges and upskill effectively. They benefited from workplace-driven initiatives, enabling continuous learning and adaptability to technological advancements. Conversely, remote work seekers faced limited upskilling resources and lacked institutional and community support, reducing their confidence and competitiveness in the digital job market.

5.4 Social benefit implications of ICTs

This section discusses findings from the thematic analysis on the opportunities remote workers and seekers gain from the adequate access to and use of ICTs.

5.4.1 Social connection, power of social network platforms and expansion of boundaries

Remote work seekers are aware of the opportunities created by ICTs. They reported observing individuals in their communities use platforms such as Facebook for entrepreneurial activities, including e-commerce. They also mentioned being able to shop online despite living in rural areas. Havi (2021:991) stated that e-commerce is a key component of modern trade, offering benefits to individuals in remote areas, which seems to be the case in this study. Social connection emerged as a theme among remote work seekers, who, despite not yet securing remote work opportunities, reported gaining social connections through ICTs. Even while unemployed and living in rural areas, they benefit from ICTs by connecting with others online and staying informed about global events through the internet. Buthelezi, Chatikobo, and Dalvit (2021:465) also found the active use of social networks in the rural area of Dwesa for employment and other information.

The power of social networking platforms is evident among both remote workers and remote work seekers. Platforms such as LinkedIn and Facebook are used by remote work seekers to discover new job opportunities and foster professional relationships. Remote workers also use

these platforms to connect with recruiters and participate in career development courses, as these platforms support continuous learning.

Expansion of boundaries is a benefit found among remote workers with one participant gaining an international work opportunity and many using online platforms for collaborative work. Some remote workers also noted improvements in their emotional well-being, as ICTs have enabled them to access counselling services beyond their locales. Ogbo et al. (2022:110) found that the true impact of ICTs lies in their ability to create offline opportunities, whether through participation in the global economy or making meaningful connections. There is evidence of this impact in this study, particularly among remote workers but potentially for remote work seekers too.

5.4.2 Privilege and limited benefits

The study finds that individuals who are privileged to access and use ICTs are better off, while those without this privilege risk being further left behind from the opportunities ICTs provide. This finding is supported by Skuse and Cousins (2007:193), who discovered that when telecommunications were introduced to rural communities through the provision of telephones, entrepreneurial opportunities arose. These opportunities included investing in telephones however, they predominantly benefited individuals who could afford the start-up costs, leaving those who could not afford them further marginalised.

The study further finds that for remote workers, adequate access to ICTs allows them to accrue benefits, as their education equips them to navigate the ever-changing digital landscape. Similarly, van Deursen and Helsper (2015:46) found that educated individuals tend to derive greater opportunities from ICTs, particularly in economic, institutional, and educational domains.

On the other hand, remote work seekers experience limited benefits from ICTs. These limited benefits stem from the first and second level digital divides, which hinder remote work seekers from fully leveraging ICTs to their advantage. Despite some individuals attaining degrees, they remain disadvantaged and unable to enjoy the full benefits of the digital era. This study finds that access alone is insufficient to reap the benefits of ICTs; digital literacy skills and effective use of these technologies are equally essential. One remote work seeker proposed zero-rated websites for job listings as a potential solution to bridging the third level digital divide.

Connectivity challenges and broader socio-economic issues such as education may however mean that these applications would still not being fully used.

5.4.3 ICTs shaping remote workers aspiration

The study finds that limited access to ICTs acts as a barrier to their use, and consequently, to gaining opportunities. As Ndulu, Ngwenya, and Setlalogile (2022:274) observe, access is foundational, determining whether individuals can use ICTs, how they use them, and the opportunities they derive from them. ICTs shape remote workers aspirations; those unable to access and use ICTs freely often limit their engagement with these technologies to entertainment and social connections – which often do not use much data. Limited digital literacy skills compound these challenges, further restricting their ability to derive benefits from ICTs.

Conversely, a participant enrolled at a university and receiving institutional support, including data subsidies, demonstrated how ICT access can facilitate opportunities, such as studying online and occasionally working remotely. However, even in this instance, the opportunities do not always translate to permanent remote work. Thus, while ICTs hold the potential to transform aspirations and facilitate remote work, this potential remains constrained by structural barriers.

5.4.4 Social responsiveness

Remote workers reflected on the positive impact ICTs have had on their own lives, including their careers, work-life balance, and daily activities. However, beyond personal benefits, there is a strong sense of social responsibility within this group. Remote workers expressed a desire to see others, particularly those in their communities, experience the same transformative opportunities that they have gained through ICTs. This sense of responsibility aligns with the DCDT (2024:14), which stresses the transformative power of ICTs in enhancing not only individual lives but also communities at large. The department's mandate reflects social responsiveness, stressing the importance of equitable access to ICTs for all South Africans.

5.5 Study recommendations

Considering the study findings, this study recommends the follow to assist in bridging the digital divide for successful remote work.

- Because of the digital divide, the South African governments and other stakeholders should invest heavily in expanding digital infrastructure into rural areas. Stable and affordable internet connectivity remains the cornerstone of digital inclusion.
- Providing subsidised data packages to low-income individuals can help them to overcome financial barriers which could, for example, allow remote work seekers to better use ICTs for applying for jobs or upskilling online.
- Targeted digital literacy programs should be developed for Peddie and surrounding rural areas to equip individuals with practical skills for navigating the digital world. These could be provided by institutions of higher learning, business organisations, government or NGO initiatives.
- Remote workers and those aspiring to pursue remote work should be encouraged to create social and professional support groups. These groups can serve as platforms for sharing knowledge, experiences, and job opportunities while fostering a sense of community and mutual support. These could perhaps be facilitated by community leaders.

These actions could involve collaboration between government departments such as the Department of Communications and Digital Technologies (DCDT) and local municipalities, the private sector (such as telecommunications companies) and international development agencies where appropriate.

5.6 Future studies

The findings of this study identify areas for future research.

- Examine the consequences of the digital divide on the standard of living, particularly how all levels of the digital divide interplay and affect employment, education, and social inclusion in the digital era.
- Examining the digital divide's impact on remote workers and seekers in other rural areas of South Africa, including a wider sample would provide a more comprehensive understanding of the phenomenon.
- Exploring the evolving nature of remote work in rural areas, as its adoption is still in the early stages. Given this dynamism, research should track how remote work practices develop over time.

5.7 Study conclusion

The findings of this study reveal that the first level of the digital divide in semi-rural Peddie and the surrounding rural areas is still present. The municipality faces limited ICT infrastructure and various challenges that make accessing ICTs difficult. This challenge disproportionately affects disadvantaged individuals who lack the financial freedom to overcome these obstacles.

The second level of the digital divide is often viewed as progressive in the literature. However, this study found that digital literacy might be stable but can only be effectively deployed if access to ICTs is available – which is not always the case. Remote workers are less impacted, as their education and work continuously upskill them, enabling them to drive their own self-development. However, the second level of the digital divide is widening for other groups, particularly as the country propels further into the 4IR. In this study, remote workers are adapting but disadvantaged remote work seekers are being left behind.

The study found that the third level of the digital divide hinges on both access to ICTs and their effective use. Remote workers have greater opportunities than disadvantaged remote work seekers. Despite facing challenges within the municipality, remote workers are still better off than those seeking remote work. A hierarchy within the municipality reinforces a divide, limiting opportunities even for those with education, ICT access, and digital literacy skills.

This study highlights the need for targeted interventions to bridge these gaps. Addressing these challenges could unlock new economic and social opportunities, foster greater inclusion in the digital economy, and eventually raise the standard of living for rural communities in the Eastern Cape, ultimately narrowing the digital divide.

References

Amoateng, A.Y. & Biney, E. 2024. *Youth in post-apartheid South Africa: a sociological perspective*. Oxford: Taylor & Francis Group.

Andrew, T.N. & Petkov, D. 2003. The need for a systems thinking approach to the planning of rural telecommunications infrastructure. *Telecommunications Policy*. 29(2003):75-93. DOI: 10.1016/S0308-5961(02)00095-2.

Aruleba, K. & Jere, N. 2022. Exploring digital transforming challenges in rural areas of South Africa through a systematic review of empirical studies. *Scientific African*. 16(2022):2-13. DOI: 10.1016/j.sciaf.2022.e01190.

Babbie, E. 2021. *The practice of social research*. 15th ed. Boston: Centage Learning.

Balogun, N.A., Ehikhamenor, F.A., Majebi, O.V., Oyekunle, A.R., Bello, W.O. & Afolayan, O. 2020. Exploring information and communication technology among rural dwellers in sub-Saharan African communities. *African Journal of Science, Technology, Innovation and Development*. 12(5):533–545. DOI: 10.1080/20421338.2019.1700668.

Beaunoyer, E., Dupere, S. & Guitton, M.J. 2020. Covid-19 and digital inequalities: Reciprocal impacts and mitigation strategies. *Computers in Human Behaviour*. Available: https://www.sciencedirect.com/science/article/pii/S0747563220301771?ref=pdf_download&fr=RR-2&rr=883da103281b06fb [2024, May 10].

Biggam, J. 2011. *Succeeding with Your Master's Dissertation: A Step-by-Step Handbook*. 2nd ed. England: Open University Press.

Bless, C., Higson-Smith, C. & Sithole, S. L. 2013. *Fundamentals of Social Research Methods: An African Perspective*. 5th ed. Cape Town: Juta.

Botha, D. & Coetzee, R. 2022. Covid-19 pandemic: perspectives on employee engagement, work from home and an employee wellness programme in a debt collection organisation in Gauteng, South Africa. *African Journal of Employee Relations*. 46(1):1-28. DOI:10.25159/2664-3731/9235.

Buthelezi, M., Chatikobo, T. & Dalvit, L.D. 2021. United in diversity? digital differences and inequalities within a South African rural community. *Information, Communication & Society*. 24(3):455-469. DOI: 10.1080/1369118X.2020.1864000.

Capuano, A. 2023. Platform work and the post-pandemic shift to remote work. *In Class and social background discrimination in the modern workplace*. 177–191. Bristol, UK: Bristol University Press. https://www.growmotely.com/report/ [2024, July 25].

Castells, M. 1996. *The rise of the network society*. Cambridge: Blackwell Publishers.

Castells, M. 2002. *The internet galaxy: reflections on the internet, business, and society*. Oxford: Oxford University Press.

Chetty, K., Aneja, U., Mishra, V., Gcora, N. & Josie, J. 2018. Bridging the digital divide: Measuring digital literacy. *Economics. The Open-access, open-assessment e-journal*. 12(23):2-16. DOI:10.5018/economics-ejournal.ja.2018-23.

Chiwara, J.R., Chinyamurindi, W.T.., & Mjoli, T.Q. 2017. Factors that influence the use of the internet for job-seeking purposes amongst a sample of final-year students in the Eastern Cape province of South Africa. *SA Journal of Human Resource Management.* 150(0):1-9. DOI:10.4102/sajhrm.v15i0.790.

Connaway, L.S. & Radford, M.L 2021. *Research methods in library and information science*. 7th ed. Santa Barbara, California: Libraries Unlimited.

Cook, D. 2023. What is a digital nomad? Definition and taxonomy in the era of mainstream remote work. *World Leisure Journal*. 65(2):256-275.

Creswell, J.W. & Creswell, J.D. 2018. *Research design: qualitative, quantitative and mixed methods approache*s. 5th ed. Los Angeles: Sage.

Creswell, J.W. & Poth, C.N. 2018. *qualitative inquiry and research design: Choosing among five approaches*. 4th ed. London: Sage.

Creswell, J.W. 2009. *Research design: qualitative, quantitative and mixed methods approache*s. California: Sage.

Criscuolo, C., Gal, P., Leidecker, L., Losma, F. & Nicoletti, G. 2021. The role of telework for productivity during and post-covid-19: Results from an OECD survey among managers and workers., *OECD Productivity Working Papers*. Paris: OECD Publishing.

Davies, A. 2021. Covid-19 and ICT-supported remote working: Opportunities for rural economies. *World.* 2(1):139-152. DOI:10.3390/world2010010.

De Klerk, J.J., Joubert, M. & Mosca, H.F. 2021. Is working from home the new workplace panacea? Lessons from the covid-19 pandemic for the future world of work. *SA Journal of Industrial Psychology*. 47(0):1-14. DOI:10.4102/sajip.v47i0.1883.

Dixon, K. 2020. Searching for mermaids: Access, capital, and the digital divide in a rural South African primary school. In *Stories from inequity to justice in literacy education. Confronting digital divides*. Morrel, E. & Rowsell, J. Eds. Routledge. 15–33.

Department of Communication and Digital Technologies. 2013. *White paper on South Africa's Broadband Policy*. Pretoria: Department of Communication and Digital Technologies. Available : https://www.dcdt.gov.za/images/documents/Broadband/gazette_version_1__bb_policy__4_dec_2.pdf [2024, December 10].

Department of Communication and Digital Technologies. 2020. *National Digital and Future Skills Strategy*. Pretoria. Department of Communication and Digital Technologies. Available : https://www.gov.za/sites/default/files/gcis_document/202009/43730gen513.pdf [2024, December 10].

Donati, S. Mobile internet *access and political outcomes: evidence from South Africa. Journal of Development Economics*. 1(1):1-31. DOI: 10.1016/j.jdeveco.2023.103073.

Eastern Cape Rural Development Agency (ECRDA). 2022. *Key statistics*. Available: https://ecrda.co.za/wp-content/uploads/2024/10/Eastern-Cape-CENSUS-2022-Key-Statistics.pdf [2024, November 10].

Eastern Cape Provincial Government. 2023. *Municipality*. Available at: https://ecprov.gov.za/municipality.aspx [2025, January 3].

Elder, L., Samarajiva, R., Gillwald, A. & Galperin, H. 2013. *Information lives of the poor: fighting poverty with technology*. Canada: International Development Research Centre.

Farooq, R. & Sultana, A. 2022. The potential impact of the covid-19 pandemic on work from home and employee productivity. *Measuring Business Excellence*. 26 (3):308-325. DOI:10.1108/MBE-12-2020-0173.

Folorunso, A. L. & Momoh, O. 2022. Underscoring the value of digital literacy as a tool for reducing unemployment and enhancing workplace productivity. In *Digital literacy, inclusivity, and sustainable development in Africa*. Asamoah-Hassan, H. Ed. London: Facet Publishing. 204-216.

Fouche, I. & Andrews, G. 2022. "Working from home is one major disaster": An analysis of student feedback at a South African university during the Covid-19 lockdown. *Education and Information Technologies*. 27(1):133–155.DOI:10.1007/s10639-02.

Frans, C. & Pather, C. 2022. Determinants of ICT adoption and uptake at a rural area public-access ICT centre: *A South African case study. African Journal of Science, Technology, Innovation and Development*. 14(6):1575-1590. DOI: 10.1080/20421338.2021.1975354.

Fuchs, C. & Horak, E. 2008. Africa and the digital divide. *Telematics and Informatics*. 25(2):99–116. DOI: 10.1016/j.tele.2006.06.004.

Gaglio, C., Mbula, E.K. & Lorenz, E. 2022. The effects of digital transformation on innovation and productivity: firm-level evidence of South African manufacturing micro and small enterprises. *Technological Forecasting and Social Change*. 182(2022):2-10. DOI: 10.1016/j.techfore.2022.121785.

Google Maps. 2025. *Peddie, South Africa*. Available: https://www.google.co.za/maps/@-33.2132713,27.0535869,13z?hl=en&entry=ttu&g_ep=EgoyMDI1MDIwNS4xIKXMDSoASAFQAw%3D%3D [2025, February 5].

Green, A.E. & Riley, R. 2021. Implications for places of remote working. In *Handbook of research on remote work and worker well-being in the post-COVID-19 era.* Wheatley, D., Hardill, I., & Buglass, S. Eds. Pennsylvania: IGI Global.

Griszbacher, N. 2023. Working from home vs. in-office post-Covid-19: The end of a seemingly never-ending debate?. *GILE Journal of Skills Development*. 3(2):20-25. DOI: 10.52398/gjsd.2023.v3.i2.pp20-25.

Haji, K. 2021. E-commerce development in rural areas and remote areas of BRICS countries. *Journal of Integrative Agriculture*. 20(4):979-997. DOI: 10.52398/gjsd.2023.v3.i2.pp20-25.

Hannonen, O. 2021. In search of a digital nomad: defining the phenomenon. *Information Technology & Tourism*. 22(3):335–353. DOI: 10.1007/s40558-020-00177-z.

Helpser, E.J. 2021. *The digital disconnect. The causes and consequences of digital inequalities*. United Kingdom: Sage.

Holland, P.J. & Brewster, C. 2021. Redesigning work as a response to the global pandemic: Possible pitfalls. In *Handbook of research on remote work and worker well-being in the post-COVID-19 Era.* Wheatley, D., Hardill, I., & Buglass, S. Eds. IGI Pennsylvania: Global. 104 -121.

Horwitz, R. B. 2001. *Communication and democratic reform in South Africa*. Cambridge: Cambridge University Press.

Ifeh, K. 2013. A case for packet-switched telecommunication infrastructure for low-density traffic rural areas. September. *Africon*. 1-6.

Iwu, C.G., Okeke-Uzodike, O.E., Anwana, E., Iwu, C.H. & Esambe, E.E. 2022. Experiences of academics working from home during covid-19: A qualitative view from selected South African universities. *Challenges*.13(1):1-18. DOI:10.3390/challe13010016.

Jagganath, G. & Singh, S. B. 2022. Work-life balance: Experiences of women during the covid-19 pandemic. African Journal of Gender, Society & Development. 11(3):109–124.

Kara, H. 2022. *Qualitative research for quantitative researchers*. London: Sage.

Kavase, K., Mbali, A., & Mukhuthu, Z. 2022. Has the social profile of the marginalised youth improved in the Eastern Cape? *Eastern Cape Socio Economic Consultative Council*. East London: Eastern Cape.

Kraemer-Mbula, E. & Mazibuko-Makena, Z. 2021. Introduction: framing the fourth industrial revolution in the context of Africa. In *Leap 4.0. African perspectives on the Fourth Industrial Revolution*. Mazibuko-Makena, Z. & Kraemer-Mbula, F. Eds. 1-32. DOI: 10.2307/jj.12406168.7.

Kramer, A. & Kramer, K. Z. 2020. The potential impact of the Covid-19 pandemic on occupational status, work from home, and occupational mobility. *Journal of Vocational Behaviour*. 19:1-4. DOI:10.1016/j.jvb.2020.103442.

Lai, J. & Widmar, N.O. 2021. Revisiting the digital divide in the Covid-Era. *Applied Economic Perspectives and Policy*. 43(1):458-464. DOI: 10.1002/aepp.13104.

Langa, Z., Conradie, P., & Roberts, B. 2006. Slipping through the Net: digital and other communication divides within South Africa. In *South African Social Attitudes*: *Changing Times, Diverse Voice*. Pillay, U., Roberts, B., & Rule. S. Eds. HSRC Press. 131-149.

Leedy, P.D. & Ormrod, J.E. 2019. *Practical research: planning and design*. 12th ed. Boston: Pearson.

Leonardi, P. M. 2021. Covid-19 and the new technologies of organising: digital exhaust, digital footprints, and artificial intelligence in the wake of remote work. *Journal of Management Studies*. 58(1):247–251. DOI:10.1111/joms.12648.

Mache, S., Servaty, R. & Harth, V. 2020. Flexible work arrangements in open workspaces and relations to occupational stress, need for recovery and psychological detachment from work. *Journal of Occupational Medicine and Toxicology*. 15(5):1–11. DOI: 10.1186/s12995-020-00258-z.

Makalima, C., Makasi, L., Gwala, Y., Baza, A. & Lwanga, M.A. 2023. Co-designing an integrated digital education portal for the Eastern Cape rural learners. *Proceeding on the Conference on Human Factors in Computing Systems Proceedings*. 23–28 April 2023. USA: ACM. 1–7. DOI: 10.1145/3544549.3583839.

Malatji, T.L. & Mabeba, S.J. 2022. The fourth industrial revolution (4IR) in the South African private sector: The initiative is right, but the timing is wrong. *African Journal of Development Studies*. 12(1):138-149. DOI: 10520/ejc-aa_affrika1_v12_n1_a7.

Maluleke, R. 2023. Quarterly labour force survey. Pretoria: Department of Statistics South Africa. Available: https://www.statssa.gov.za/publications/P0211/Presentation%20QLFS%20Q4%202023.pdf [2024, November 20].

Manamela, M.G. & Ngomane, T.S. 2022. The fourth industrial revolution and high unemployment rates in South Africa: A youth context. *Commonwealth Youth and Development*. 19(2):1-13. DOI: 10.25159/1727-7140//8482.

Mancinelli, F. 2020. Digital nomads: freedom, responsibility, and the neoliberal order. *Information Technology & Tourism.* 22(3):417-437. DOI:10.1007/s40558-020-00174-2.

Mapi, T.P., Dalvit, L. & Terzoli, A. 2008. Adoption of ICTs in a marginalised area of South Africa. *Africa Media Review*. 6(2):71–86. DOI:10.4102/sajip.v47i0.1883.

Marwala, T. 2022. *Closing the gap. The fourth industrial revolution in Africa*. South Africa: Pan Macmillan.

Matli, W. & Ngoepe, M. 2020. Capitalising on digital literacy skills for capacity development of people who are not in education, employment or training in South Africa. *African Journal of Science, Technology, Innovation and Development*. 12(2): 129–139. DOI: 10.1080/20421338.2019.1624008.

Matli, W. & Wamba, S.F. 2023. Work from anywhere: inequalities in technology infrastructure distribution for digit workers. *Digital Transformation and Society*. 2(2):149-162. DOI: 10.1108/DTS-08-2022-0042.

Mebratu, D. 2019. Inclusive and sustainable industrial development for Africa. In *Transformational infrastructure for development of a wellbeing economy in Africa*. Mebratu, D. & Swilling, M. Eds. South Africa: African Sun Media.115-146.

Mhlana, S. & Krauss, K. 2017. The impact of information and communication technology in education: gender issues. *Proceedings of the international conference on Infocom Technologies and Unmanned Systems (Trends and Future Directions)*". 18–20 December 2017.Amity University Dubai, Dubai: International Academic City. 657–661

Mhlanga, D., Denhere, V. & Moloi, T. 2022. covid-19 and key digital transformation lessons in higher education institutions in South Africa. *Education Science*. 12(464):11-17. DOI: 10.3390/%20educsci12070464.

Mishi, S. & Anakpo, G. B. 2022. Digital gap in global and African countries: inequalities of opportunities and covid-19 crisis impact. *In digital Literacy, Inclusivity, and Sustainable Development in Africa*. Asamoah-Hassan, H. Ed. London: Facet Publishing. 2-25.

Mkhize, T.R. 2021. Towards a digital resource mobilisation approach for digital inclusion during covid-19 and beyond: a case of a township school in South Africa. *Education Research for Social Change*. 10(2):18-32. DOI: 10.17159/2221-4070/2021/v10i2a2.

Molopyane, M. 2021. Impact of current technologies on jobs and mining and banking in South Africa. *In Leap 4.0 African perspectives on the Fourth Industrial Revolution*. Mazibuko-Makena, Z. & Kraemer-Mbula, F. Eds. 210-253.

Mangadi, T. & Petersen, F. 2024. Factors influencing the acceptance and use of a South African data-free job search application. *South African journal of Information Management*. 26(1):1-11. DOI: 10.4102/sajim. v26i1.1850.

Mutsvairo, B. & Ragnedda, M. 2019. *Mapping the digital divide in Africa: a mediated analysis*. Netherlands: Amsterdam University Press.

Ndulu, B., Ngwenya, X.N. & Setlhalogile, M. 2022. The digital divide in South Africa: insights from the COVID-19 experience and beyond. *In The future of the South African political economy post COVID-19*. Qobo, M., Soko, M. & Ngwenya, X.N. Eds. Switzerland: Palgrave Macmillan. 273-296.

Ngqushwa Local Municipality. 2023. *Our Services*. Available: https://ngqushwamun.gov.za/our-services/ [2025, January 3].

Nwogwugwu, N.O. 2022. Digital literacy, creativity, knowledge sharing and dissemination in the 21st century. In *Digital literacy, Inclusivity, and Sustainable Development in Africa*. Asamoah-Hassan, H. Ed. London: Facet Publishing. 191-201.

Ogbo, E., Brown, T., Gant, J. & Sicker, D. 2021. When being connected is not enough: an analysis of the second and third levels of the digital divide in a developing country. *Journal of Information Policy*. 11:104-146. DOI: 10.5325/jinfopoli.11.2021.0104.

Ojo, J.O. 2022. The role of communities in driving the acquisition of digital literacy skills in the 21st century. In *Digital literacy, Inclusivity, and Sustainable Development in Africa*. Asamoah-Hassan, H. Ed. London: Facet. 177-189.

Oki, O. & Lawrence, M. O. 2022. The cost-effectiveness of fibre optic technology deployment in rural area: a case study of Mdantsane. *RISUS - Journal on Innovation and Sustainability*. 13(2):111-123. DOI: 10.23925/2179-3565.2022v13i2p111-123.

Olaitan, O.O., Issah, M. & Wayi, N. 2021. A framework to test South Africa's readiness for the fourth industrial revolution. *South African Journal of Information Management.* 23(1):1-10. DOI. 10.4102/sajim.v23i1.1284.

Oyedemi, T. 2019. The partially digital. In *Mapping the digital divide in Africa: a mediated analysis*. Mutsvairo, B. & Ragnedda. M. Eds. Amsterdam: University press. 27-38.

Parker, J. S. 2001. Searching for the digital divide. *Information Development.*, 17(4):205-208. DOI:10.1177/026666601424099.

Punch, K.F. 2014. *Introduction to social research: quantitative & qualitative approaches*. Los Angeles: Sage.

Ragnedda, M. & Muschert, G. W. 2017. *Theorizing digital divides*. New York: Routledge.

Ragnedda, M. 2019. Conceptualising the digital divide. In *Mapping the digital divide in Africa: a mediated analysis*. Mutsvairo, B. & Ragnedda. M, Eds. Amsterdam: University press. 27-38.

Rahi, S. 2017. Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics & Management Sciences*. 6(2):1-5. DOI: 10.4172/2162-6359.1000403.

Rey-Moreno, C., Blignaut, R., Tucker, D. & May, J. 2016. An in-depth study of the ICT ecosystem in a South African rural community: unveiling expenditure and communication patterns. Information technology for development. *Information Technology for Development*. 22(1):101-120. DOI: 10.1080/02681102.2016.1155145.

Sam, S. 2019. Bridging the digital gap in Sub-Saharan Africa. In *Mapping the digital divide in Africa: A mediated analysis*. Mutsvairo, B. & Ragnedda. M, Eds. Amsterdam: University press. 215-256.

Schwab, K. 2017. *The Fourth Industrial Revolution*. Great Britain: Portfolio.

Seadira, B.D. & Heuva, W.E. 2021. Exclusion of South African rural communities from digital communication podia: a regulatory conundrum. *South African Journal for Communication Theory and Research*. 47(4):72-98. DOI: 10.1080/02500167.2022.2039736.

Selwyn, N. 2004. Reconsidering political and popular understandings of the digital divide. *New Media & Society*. London: Sage. 6(3):341–362. DOI: 10.1177/1461444804042519.

Sithole, M. M., Moses, C., Derek Davids, Y., Parker, S., Rumbelow, J., Molotja, N. & Labadarios, D.2013. Extent of access to information and communications technology by the rural population of South Africa. *African Journal of Science, Technology, Innovation and Development*. 5(1):71–84.

Skuse, A. & Cousins, T. 2007. Managing distance: rural poverty and the promise of communication in post-apartheid South Africa. *Journal of Asian and African Studies* .42(2):185–207. DOI: 10.1177/0021909607074867.

Smite, D., Moe, N.B., Hildrum, J., Conzalez-Huerta, J. & Mendez, D. 2023. Work-from-home is here to stay: post-pandemic work policies. *The Journal of Systems & Software*. 195(2023):1-2. DOI: 10.1016/j.jss.2022.111552%200164-1212.

Simbarashe, K. 2021. Covid-19 as a catalyst for digital transformation in higher education: insights for rural-based universities in South Africa. *African Renaissance*. 19(4):285-304. DOI: 10.31920/2516-5305/2021/18n4a14.

Stats SA (Statistics South Africa). 2022. *General Household Survey*. Pretoria: Department of Statistics South Africa. Available: https://www.statssa.gov.za/publications/P0318/P03182022.pdf [2024, March 1].

Telecommunications Act, Act No. 103 of 1996. 1996. Government gazette. 15 November. Available: https://www.gov.za/sites/default/files/gcis_document/201409/act103of1996s.pdf [2024, March 08].

Thomas, G. & Wyatt, S. 2000. Access is not the only problem; using and controlling the internet. In *Technology and In/equality; Questioning the information society*. Wyatt, S., Henwood, F., Miller, N. & Senker, P, Eds. London: Routledge.

Thompson, Y.B. 2018. Digital nomads: employment in the online gig economy. *Glocalism: Journal of Culture, Politics, and Innovation*. 2018(1):1-26. DOI: 10.12893/gjcpi.2018.1.11.

van Deursen, A. & van Dijk, J.2010. Internet skills and the digital divide. *New Media & Society*. 13(6):893-911. DOI:10.1177/146144481038677.

van Deursen, A.J.A.M. & Helsper, E.J. 2015. The third-level digital divide: who benefits most from being online? *Communication and Information Technologies Annual: Digital Distinctions and Inequalities (Studies in Media and Communications)*. 10(0):29-52. DOI:10.1108/S2050-206020150000010002.

van Dijk, J. A. G. M. 2006. Digital divide research, achievements and shortcomings. *Poetics*.34(4):221–235. DOI: 10.1016/j.poetic.2006.05.004.

van Dijk, J. 2005. *The deepening divide: inequality in the information society.* Thousand Oaks: Sage Publications.

van Dijk, J. 2012. *The network society*. 3rd ed. London; SAGE.

van Dijk, J. 2020. *The digital divide*. England: Polity.

Warschauer, M. 2003. *Technology and social inclusion: rethinking the digital divide*. Massachusetts, Cambridge: MIT Press.

Appendices

Appendix A: Interview instrument (Remote work seekers)

Name: Nonkululeko Matiwane (MTWNON007)

Degree: Master of Philosophy, Department of Knowledge and Information Stewardship
Supervisor: Michelle Kahn

The digital divide in a rural area of the Eastern Cape, with a focus on its implications for remote work.

INTERVIEW SCHEDULE

Introduction: Brief explanation of ICTs, Digital Literacy, and Social Benefits

In this study, 'Information and Communication Technologies' (ICTs) refer to the various digital tools and resources used to create, store, transmit, and manage information. This includes technologies such as computers, smartphones, the internet, and broadband infrastructure. 'Digital literacy' refers to the ability to effectively and critically use digital technologies for communication, information retrieval, problem-solving, and everyday tasks. This includes basic skills like using a computer or smartphone, navigating the internet, and using ICTs for remote work and digital nomadism. 'Opportunities' refers to the positive outcomes that individuals and communities experience as a result of gaining access to digital technologies and improving digital literacy. These benefits extend beyond economic opportunities and include enhanced social inclusion, improved access to information, better communication, and stronger social networks.

Interview questions for remote work seekers

1. **Participant's background**

1.1 How long have you been looking for remote work? / How long have you been unemployed?

1.2 Why do you want to work remotely from Peddie?

1.3 Have you sought job opportunities outside of Peddie?

2. **The effect of access to ICTs on remote work opportunities**

2.1 How do you access the internet (device and costs)?

2.2 Does access to ICTs affect your ability to search for jobs or apply for them? If so, how?

2.3 How reliable is your access to ICTs? (Is it affected by an interrupted power supply, for example?)

2.4 Do you think your level of access to ICTs affects your remote employment opportunities differently compared to graduates in urban areas? Please elaborate

2.5 Can you describe any job opportunities that have either emerged or been lost because of your access to ICTs?

3. **Digital literacy implications for remote work opportunities**

3.1 How confident are you in using digital devices? How would you describe your level of digital literacy?

3.2 Have you felt limited in your search for work due to a lack of digital literacy skills? Please give examples, if possible.

3.3 Have you ever found remote job opportunities that you were unable to apply for due to digital literacy challenges? Please elaborate

3.4 Do you have access to resources or support for improving your digital skills? If so, what are they? (For example, in the local community or place of employment)

3.5 Do you think that digital literacy has become essential for finding work in your field? Why or why not?

4. Social benefit implications of ICTs

4.1 Do you think access to ICTs and/or knowing how to use them yield any social benefits/opportunities to you personally? Please elaborate.

4.2 Are you able to leverage ICTs for your success? Please elaborate

4.3 Do you believe that improved ICTs (like faster internet or cheaper data) would significantly impact social benefits from ICTs? Please elaborate

4.4 Do you think being digitally connected influences your ability to engage with social and professional networks that could enhance your employment opportunities? Please elaborate

5. Concluding question

5.1 Is there anything else you would like me to know about how access to ICTs, digital skills and social benefits of access/skills have affected your search for remote work?

THANK YOU

Appendix B: Interview instrument (Remote workers)

Name: Nonkululeko Matiwane (MTWNON007)

Degree: Master of Philosophy, Department of Knowledge and Information Stewardship
Supervisor: Michelle Kahn

The digital divide in a rural area of the Eastern Cape, with a focus on its implications for remote work.

INTERVIEW SCHEDULE

Introduction: Brief explanation of ICTs, Digital Literacy, and Social Benefits

In this study, 'Information and Communication Technologies' (ICTs) refer to the various digital tools and resources used to create, store, transmit, and manage information. This includes technologies such as computers, smartphones, the internet, and broadband infrastructure. 'Digital literacy' refers to the ability to effectively and critically use digital technologies for communication, information retrieval, problem-solving, and everyday tasks. This includes basic skills like using a computer or smartphone, navigating the internet, and using ICTs for remote work and digital nomadism. 'Opportunities' refers to the positive outcomes that individuals and communities experience as a result of gaining access to digital technologies and improving digital literacy. These benefits extend beyond economic opportunities and include enhanced social inclusion, improved access to information, better communication, and stronger social networks.

Interview questions for remote workers

1. **Participant's background**

1.1 What type of work do you do?

1.2 How did you come to work remotely? Additional question: To what degree do you work remotely (part-time, full time)

1.3 Why did you choose to work remotely in Peddie?

1.4 How long have you worked remotely?

2. **The effect of access to ICTs on remote work**

2.1 How do you access the internet (device, and costs)?

2.2 How long are you required to be online for your work? Does the cost of data affect the time spent online?

2.3 Does access to ICTs affect your ability to work remotely? If so, how?

2.4 How reliable is your access to ICTs? (Is it affected by an interrupted power supply, for example?)

2.5 What is your biggest challenge when it comes to ICT access?

2.6 Can you describe any new opportunities that have either emerged or been lost because of your access to ICTs? Please elaborate.

3. **Digital literacy implications for remote work**

3.1 How confident are you in using digital devices? How would you describe your level of digital literacy?

3.2 Can you describe the digital literacy skills you use regularly in your remote work?

3.3 Have you felt limited in your work due to a lack of certain digital literacy skills? Please give examples, if possible.

3.4 Have you ever missed a remote work opportunity because of a lack of certain digital literacy? Please elaborate.

3.5 Do you have access to resources or support for improving your digital skills? If so, what are they? (For example, in the local community or place of employment)

3.6 Has digital literacy impacted your ability to sustain your remote work? Please elaborate.

4. Social benefit implications of ICTs

4.1 Do you think access to ICTs and/or knowing how to use them yield any social benefits/opportunities to you personally? Please elaborate.

4.2 Are you able to leverage ICTs for your success? Please elaborate.

4.3 Do you believe that improved ICTs (like faster internet or cheaper data) would significantly impact social benefits from ICTs? Please elaborate.

4.4 Do you think being digitally connected influences your ability to engage with social and professional networks that could enhance your remote work? Please elaborate.

5. Concluding question

5.1 Is there anything else you would like me to know about how access to ICTs, digital skills and social benefits of access/skills have affected your remote work?

THANK YOU

Appendix C: Interview consent form

Consent Form

THE DIGITAL DIVIDE IN A RURAL AREA OF THE EASTERN CAPE, WITH A FOCUS ON ITS IMPLICATIONS FOR REMOTE WORK AND DIGITAL NOMADISM

Name of researcher:

Nonkululeko Matiwane

Department:

Department of Knowledge Information and Stewardship

Telephone:

078 081 0668

Email:

Mtwnon007@myuct.ac.za

Study supervisor:

Michelle Kahn (michelle.kahn@uct.ac.za)

About the study:

Nonkululeko Matiwane, a master's student in the Department of Knowledge & Information Stewardship at the University of Cape Town, invites you to participate in a research study. The objective of the study is to investigate the implications of the digital divide on remote work and digital nomadism in Peddie and surrounding villages.

I would like to interview you as someone engaged in remote work / hoping to be engaged in remote work / hoping to become a digital nomad. Interviews will take place at your home (if convenient) and will take approximately 1 hour. If permitted, the interview will be recorded, and the audio recording will be used to transcribe the interview for analysis of the data. Your participation is voluntarily. You are allowed to withdraw from the study anytime during the course of this interview with no negative consequences.

Your name and identifying details will not be recorded in the interview transcript. Your anonymity is guaranteed in the write-up of the study, and confidentiality will be protected. The audio recording of the interview will be stored securely, and access will be restricted to the supervisor and researcher for transcription and data analysis purposes only.

Risks: There are minimal risks involved in participating in the study.

Benefits: Although there are no direct benefits from contributing to the study, participating in this study adds to a better understanding of the digital divide in the Eastern Cape

Incentive: Participants will be given a R299 data voucher as an incentive for participating in this study.

By signing this consent form, you are agreeing to the following.

- I agree to participate in this research project.
- I have read this consent form and the information it contains and had the opportunity to ask questions about it.
- I agree to my responses being used for education and research on condition my privacy is respected and that I will not be personally identifiable in the research.
- I understand that I am under no obligation to take part in this project.
- I understand that I have the right to withdraw from this project at any stage.
- I understand that the completed research, with my anonymity preserved, will be openly available in the university's institutional repository
- I agree/disagree (delete as applicable) to be recorded in this interview

Signature of Participant: _____

Name of Participant: _____

Signature of researcher: _____

Date: _____

Appendix D: Ethics approval

Department of Knowledge & Information Stewardship
University of Cape Town
Upper Campus

Private Bag X1, RONDEBOSCH, 7701 South Africa
Level 5 Hlanganani, Chancellor Oppenheimer Library
Tel: +27 (0) 21 650 4546
E-mail: dkis@uct.ac.za
Website: www.dkis.uct.ac.za

Date: 4 November 2024
Ref: UCT DKIS2024-11-01
Ethics clearance valid for 12 months from date of issue

Nonkululeko Matiwane (MTWNON007)
Department of Knowledge and Information Stewardship
Chancellor Oppenheimer Library
University of Cape Town

Ethics approval for Master's research

Dear Nonkululeko Matiwane

I am pleased to inform you that ethical clearance has been granted by the Ethics Review Committee of the Department of Knowledge and Information Stewardship (DKIS), on behalf of the Humanities Faculty of the University of Cape Town, for you to proceed with collecting data for your Master's study entitled: *The digital divide in a rural area of the Eastern Cape, with a focus on its implications for remote work and digital nomadism.*

As a next step, please ensure that you obtain approval from any other relevant ethics committees to collect data at your data collection sites, as necessary.

We wish you well with your data collection and the completion of your research.

Yours faithfully,

Ms Ingrid Young
Chair: Department (DKIS) Research Ethics Committee