

BINDURA UNIVERSITY OF SCIENCE EDUCATION

EMPOWERING COMMUNITY-DRIVEN CONNECTIVITY IN MUROMBEDZI THROUGH INNOVATIVE INFRASTRUCTURE DEVELOPEMENT AND COLLABORATIVE DIGITAL INITIATIVES

BY

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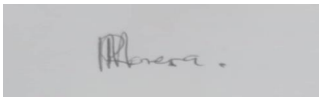
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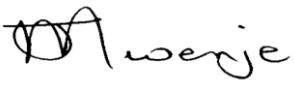
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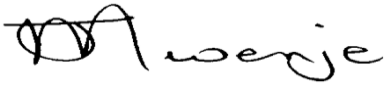
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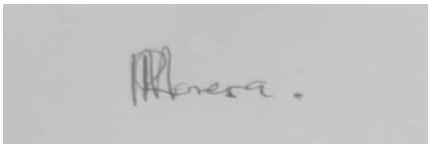
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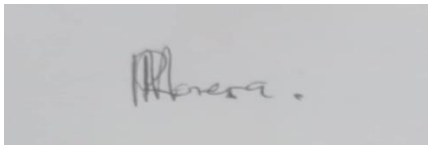
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DEDICATION

This Research project is dedicated to my mother, Pauline

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I thank God who has been the ultimate author and finisher of this research project and my brother Irvine for encouraging me to enroll for this program and the moral support he gave me. I also thank the special people who helped me financially, may God supply all your needs.

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ABSTRACT

The main objective of this study was to establish a community-driven digital ecosystem in Murombedzi, to harness local leadership, participation, and resources to address connectivity challenges. To achieve this systematically, Key connectivity challenges were identified first through the participation of a representative sample to ensure that the solutions would address real challenges being experienced and so be relevant. Secondly the solutions were co-created by the involvement of community members in the research, including local leadership, technology experts and local organizations. Thirdly, the critical components essential for the successful adoption of community driven digital initiatives were explored. Lastly the benefits to Murombedzi for adopting community driven initiatives were unveiled. To achieve the objectives, the study embraced a participative model. A mixed method approach was used. A sample of 371 participants was employed for the questionnaire which was used as the primary instrument. This was supported by in depth interviews with participants who had more knowledge on the subject under study. A response rate of 90% was achieved. The study found that slow internet speeds, interruptions in power supply and inadequate infrastructure were key connectivity challenges in Murombedzi. On finding solutions to the key challenges, digital literacy and skills development programs, community fundraising for digital Infrastructure, partnerships with different organizations like non-governmental organizations that promote digital inclusion initiatives, seeking government or donor funding to support community-led connectivity, were found to be suitable in addressing the connectivity challenges in Murombedzi. The study found community engagement, government support, continuous up grading and working together with policy makers and PORTRAZ to be critical components essential for the successful adoption of a community driven connectivity model in Murombedzi. Lastly the benefits of a community driven model found were that it would lead to sustainable digital connectivity, equitable rural digital inclusion, create jobs and increase employment prospects through digital skills and literacy programs and this would eventually lead to local development. In conclusion, actionable recommendations from a technology expert were given to guide the community objectively in their choice of digital connectivity initiatives to adopt.

Keywords: Digital Inclusion, Equitable Digital Inclusion, Collaboration, Digital Innovation, Sustainable digital connectivity

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List of Abbreviations

UN-Habitat	United Nations Human Settlement program
UN	United Nations
ITU	International Telecommunications Union
UCC	Uganda Communications Commission
ADII	Australian Index
GoZ	Government of Zimbabwe
PORTRAZ	Postal and Telecommunications Regulatory Authority of Zimbabwe
CIC	Community Information Center
AAI	Alliance for Affordable Internet
NTIA	National Telecommunications Infrastructure Alliance
SDGs	Sustainable Development Goals
ICT	Information and Communication Technologies
CBPR	Community Based Participatory Research Model
ERND	European Network for Rural Development
NGO	Non-Governmental Organization
LDC	Least Developed Countries

CHAPTER 1

INTRODUCTION

1.0 Introduction

The main objective of this study was to establish a community-driven digital ecosystem in Murombedzi, to harness local leadership, participation, and resources to address connectivity challenges caused by notably, power disruptions, inadequate WiFi infrastructure and some other reasons that may not be apparent. The study aimed to empower the Murombedzi community to take charge of digital connectivity solutions starting from their existing infrastructure, to collaboratively design and implement sustainable strategies to enhance connectivity. The study sought to establish a self-sustaining model that is resilient to power outages and promotes digital inclusion and equitable access to digital infrastructure in Murombedzi. This chapter focused on the background of the study, stating the problem statement, objectives of the study and justification. Further the significance of the study, research assumptions, limitations, delimitations, the structure of the dissertation and the chapter summary followed.

1.1 Background of the study.

The Importance of digital inclusion

Perhaps the greatest lesson learned from the Covid 19 pandemic, when essential services like critical public health information and remote education moved exclusively online was that, internet connectivity can no longer be considered a luxury but a life line Broadband Commission for Sustainable Development (2021). According to the United Nations Human Settlement Program (UN-Habitat), Affordable internet connectivity coupled with internet enabled devices and digital literacy, are fundamental to communities to fully participate in the digital economy (UN-Habitat, 2021).

The global landscape of digital inclusion

The digital divide is a global occurrence, even persisting within well connected cities, mega cities and regional centers UN-Habitat (2021). In 2023, the International Telecommunications Union (ITU) reported that the urban-rural divide remains, with 81% of urban dwellers using the internet worldwide, 1.6 times as high as the percentage of internet users in rural areas (ITU, 2023). The same, reported cost continuing to be a major barrier to connectivity in low income economies, with the average price for entry-level mobile-broadband subscription amounting to 8.6 percent of average income, 22 times more than in high income countries at .4 percent. Mobile phone ownership is reported to be higher than internet usage, globally 78 percent of people10 years and above own a mobile phone in 2023, but in every region and every income group the percentage of individuals owning a mobile phone is said to be greater than the percentage of internet users ITU (2023).

ITU (2023) analysis in low income countries, revealed that fewer people are online and those connected are using less data, meaning they are not achieving the full potential of connectivity. Many underserved areas continue to experience limited connectivity, limiting their ability to function in an interconnected world. The United Nations has set a baseline for 'universal and meaningful data connectivity'. "Universal connectivity" means connectivity for all. "Meaningful connectivity" is a level of connectivity that allows users to have a safe, satisfying, enriching and productive online experience at an affordable cost, this according to the United Nations Round Table on Global Connectivity (ITU, 2022). The baseline aims to ensure all individuals and communities have access to reliable, affordable, and high-quality internet connectivity (ITU. 2022). A first requirement for basic connectivity is that infrastructure is in place and functioning, according to the 2021 Australian Index (AD11) (Thomas et al.; 2021).

Digital inclusion in Africa

Africa amongst other strategies is looking towards the idea of community-driven initiatives to solve the digital divide as evidenced by countries that have adopted policies that promote community driven digital initiatives. For example, Uganda's National ICT Policy focuses on extending ICT services to underserved and remote areas, Government of Uganda (2011). Community initiatives include The Uganda Communications commission which has programs like Rural Communications Development Fund to promote ICT infrastructure deployment in

rural and remote areas. Nigeria's National Information Technology Policy is focusing on promoting local content development and widespread digital access Federal Government of Nigeria (2012). The country has various community driven initiatives like the # startupNigeria program that supports local tech startups and the co-creation hub, a tech innovation center in Lagos. Kenya's vision 2030, rolled out in 2008, includes implementation of the ICT Master Plan, which aims to make Kenya a globally competitive ICT hub, Government of Kenya (2008). South Africa's National Integrated ICT Policy White paper aims to create a favorable environment for digital innovation and ICT growth, Department of Communications, South Africa (2016). Botswana's National ICT Policy framework aims to promote digital inclusion in underserved regions. Community initiatives include The Rural Telecommunications Project, dedicated to expanding ICT infrastructure and services to remote areas, Government of Botswana (2013)

Digital Inclusion in Zimbabwe

The Government of Zimbabwe (GoZ) has been commissioning Community Information Centers in many parts of the country in a bid to include the underserved. In another move, through the Zimbabwe Postal &Telecommunications Regulatory Authority (POTRAZ), GoZ has made a policy move still in early negotiation stages, towards promoting the development of community networks (CN)s Tengeh, Moyo, & Ogunela, **(**2023**)** to bridge the telecommunication gap through a Converged Licensing Framework (CLF), which allows the rollout of Next Generation Networks POTRAZ, (2015).

Digital Inclusion in Murombedzi

In 2014 the then President Robert Mugabe launched the Murombedzi Community Information center, The Herald (2014 August 26). This initiative was "in line with the World Summit on the Information society Geneva Declaration of 2003" said Mugabe. Ten years down the line, Murombedzi, Community Information Centre is now restricted by outdated infrastructure and unreliable connectivity, given the prevalence of power outages and the absence of adequate WiFi infrastructure. It is up to the community members to rethink the way digital empowerment is approached. Upgrading infrastructure or expanding access cannot continue to be the government's responsibility alone, but a culture of innovation placing communities at the forefront of their digital destinies as advocated by organizations such as, UN-Habitat, UNHCR,

and the World Bank must be cultivated. The key lies in fostering a community-driven ecosystem that addresses the challenges posed by power disruptions and limited connectivity. This community-led initiative approach is essential to ensure digital projects are sustainable and scalable. According to Gwaka, May, &Tucker. (2018), it rests upon Zimbabweans to look to the Community Networks (CNs) movement as an alternative to top down connectivity option.

This heralds an era of local empowerment. Community-driven initiatives can lay the ground work for the establishment of CNs. These initiatives serve to mobilize community members to address connectivity challenges or explore ways to improve access. They also build awareness and drive community empowerment. As the community gain confidence and tangible outcomes become evident, they move naturally towards more extensive connectivity solutions. The strength of this approach lies in the community leadership, harnessing the potential of grassroots initiatives in collaboration with other stakeholders in addressing connectivity challenges.

1.2 Statement of research problem

Globally, World Summit on the Information Society (WSIS) 2003 is the key document which stressed the importance of 'Community Information Centers' as a tool for achieving an inclusive information society. The G8 Summit 2008 followed marking a significant shift to "Digital Opportunity for All" with the leaders recognizing that digital technologies have the potential to transform economies and societies, creating new opportunities for growth, innovation and social inclusion. The G8 Hokkaido Toyako summit (2008) called for an increased collaboration and investment in digital infrastructure and initiatives, with a focus on sustainability, innovation, and inclusivity. The summit called for an increased collaboration stressing that, digital initiatives should be developed in partnership with a range of stakeholders, including governments, businesses, civil society organizations and communities. This will help to ensure that the initiatives are responsive to the needs of the people they are intended to serve and that they are designed to be sustainable. It also highlighted that Digital Infrastructure and initiatives should leverage the latest technologies and approaches to provide affordable, accessible, and reliable connectivity.

Previous Studies on digital initiatives in Zimbabwe by Sibanda et al., (2023) were on the impact of Community Information Centers in Zimbabwe on development. However, these have been found to be facing challenges in sustainability and community ownership recommending that the government and PORTRAZ must fully fund and adequately resource CICs with the latest ICTs infrastructure.

The research problem is that, despite the presence of a government-established community information center in Murombedzi, persistent digital connectivity challenges continue to afflict the community due to power outages and the absence of adequate WIFI infrastructure amongst other causes. In response to this the proposed study seeks to develop a community driven ecosystem that empowers and mobilizes local residents to take the lead in enhancing digital connectivity. This ecosystem aims to complement the existing infrastructure, including the Community Information Center (CIC), by integrating community-driven solutions to address the connectivity issues. The problem in Murombedzi revolves around capitalizing on community leadership and grass root participation to overcome connectivity barriers, resulting in a sustainable and inclusive digital connectivity in Murombedzi.

1.3 Objectives of the study

Main Objective

To establish a community-driven ecosystem in Murombedzi that harnesses local leadership, participation and resources to address connectivity challenges caused by power disruptions and the absence of adequate WIFI infrastructure

Specific Objectives

i. To identify the key connectivity challenges faced by residents in Murombedzi
ii. To explore community-Driven connectivity initiatives that can be leveraged to enhance digital connectivity in Murombedzi
iii. To identify the critical components essential for the successful adoption of this model within the community
iv. To articulate the benefits of community driven digital connectivity within Murombedzi community.

1.4 Research Questions

i. What are the key connectivity challenges faced by residents in Murombedzi?
ii. What Community-Driven connectivity solutions can be leveraged to address the connectivity challenges in Murombedzi?
iii. What are the critical components essential for the successful adoption of this model within the community?
iv. What are the benefits of community driven digital connectivity within the Murombedzi community?

1.5 Limitations

Limited resources such as experts, committed local authorities, funding and time, may impact the scope and implementation of the study. The first potential resource constraint was the need for relevant experts. To counter this, local community leaders, teachers and community members with deep knowledge of Murombedzi's context were involved as informants.

To mitigate the potential limitation of not having committed local authorities, research goals and potential benefits to local authorities were communicated clearly and they were engaged early in the research process first by asking for permission to carry out the research to demonstrate the study's value and gain their support. The local authorities were also involved in the data collection process to foster a sense of ownership and cooperation.

Finally to address funding and timing constraints focus was placed on a manageable set of key questions that could be addressed within the research's budget and timeline. Also cost effective research methods such as surveys and focus groups were chosen.

1.6 Justification

The study was justified by the need to understand and optimize the impact of community-driven digital connectivity initiatives in rural settings, given its transformative potential on economic, educational, and social outcomes. This is in line with United Nations Sustainable Development goal SDG 9c United Nations (2015) and Government of Zimbabwe (2018) vision. By investigating the effectiveness of digital infrastructure projects, innovation hubs, educational programs and governance frameworks, the research seeks to offer empirical evidence supporting the value and benefits of introducing community-driven digital connectivity initiatives within the Murombedzi community.

1.7 Purpose of the study

The study aims to raise awareness to the existence of community-driven digital connectivity initiatives that have been adopted by many governments, communities and organisations in many countries

1.8 Significance of the study

1.8.1 Practical relevancy

This study holds significant importance as it evaluates the possibility and potential impact of adopting community-driven digital initiatives in Murombedzi, by identifying key connectivity challenges the community is facing, unveiling critical components, and benefits of adopting this model within Murombedzi, the study seeks to provide actionable guidance and knowledge leading Murombedzi towards sustainable digital inclusion and grassroots empowerment.

1.8.2 Building the knowledge base

Currently there is limited research work, studies and academic literature focussing on community-driven digital inclusion, for example, community network development in Zimbabwe, leading to a gap in knowledge sharing, learning from successes and failures, and evidence-based decision making in this area. The study will contribute towards defining of frameworks and guidelines for establishing and sustaining community-led connectivity in Zimbabwe.

1.8.3 Policy implications

This study holds the potential to influence policy and broad discussions on rural digital connectivity, emphasizing the potential of community-driven digital inclusion initiatives to transform and shape the digital future of rural communities.

1.9 Delimitations

The study focused specifically on community-driven connectivity initiatives in Murombedzi, being home to one of the first Community Information Centers to be commissioned by the Government of Zimbabwe, serving as a pilot study for future research in other areas. Focusing on connectivity solutions community members themselves can introduce and sustain, no matter how small, to enhance connectivity.

1.10 Research Assumptions

The study assumed a certain level of infrastructure and accessibility to internet technologies within the Murombedzi community and the findings may not apply to other rural communities with differing levels of infrastructure.

Secondly the research assumed that the members of the Murombedzi community are open to engaging with and benefiting from the proposed digital inclusion initiatives, potentially overlooking potential cultural or social barriers to adoption.

An assumption was made also that it would be permissible legally, to translate into action the findings of this study.

The study may have a limited sample size, making it challenging to generalize findings to a larger population.

1.11 Definition of Key Terms

Digital Inclusion

'Equitable, meaningful, and safe access to use, lead, and design digital technologies, services and associated opportunities for everyone, everywhere" International Telecommunication Union (2022)

Equitable Digital Inclusion

Refers to digital inclusion that is fair according to the need, International Telecommunication Union (2022)

Collaboration

In this study it refers to digital initiatives to be developed in partnership with diverse stakeholders like governments, communities and businesses in order to address the needs of the people they are intended to serve G8 Hokkaido Toyako Summit (2008)

Digital Innovation

In this study it refers to digital Infrastructure that should be of the latest technologies aiming to provide affordable, accessible, and reliable connectivity G8 Hokkaido Toyako Summit (2008)

Sustainable digital connectivity

Longer operating life of digital equipment through predictive maintenance United Nations Environment Programme (2020), ensuring that they are financially viable, environmentally friendly, and socially inclusive G8 Hokkaido Toyako Summit (2008)

1.14 Dissertation Structure

The study's was introduced in Chapter one, with the background information necessitating the need for the research provided. From this background the statement of the research problem was articulated, followed by stating of the objectives and crafting of the research questions. Further reasons for carrying out the research were justified. A hypothesis was formed in expectancy of the outcome of the study. Research restrictions, assumptions and the dissertation's overall structure have been provided.

The review of relevant literature in Chapter 2 connects the subject under investigation to the writings of many other researchers and authors.

The research methodology described in Chapter 3 explains how the researcher approached the project. The research philosophy, research approach, research design, study population, sampling, sample sizes, data collection techniques, research instruments, data validity and reliability, data analysis, and presentation, as well as the observed research ethics, were all specifically examined.

In Chapter 4, which focused on data presentation and analysis, the researcher displayed the results of the data gathered. Data analysis was done specifically with the research aims in mind. To identify areas of agreement or disagreement between the research's conclusions and those of other experts, the researcher compared their findings.

Chapter 5 summarized the findings, provided answers to the research's goals and questions, made suggestions, and provided conclusions.

1.14 Chapter summary

The chapter examined the context of the research problem, the problem statement, the study's purpose, its objectives, and its questions, as well as its significance, delimitations, limitations, research assumptions, justification, purpose, and its structure.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter gave a critical literature review on the topic of rural digital inclusion, with the primary objective of understanding challenges and best practices related to rural community-driven connectivity initiatives, in line with the conceptual framework and objectives of this study. The chapter reviewed the theoretical literature on the subject area. It also uncovered other empirical knowledge on the related subject including case studies and success stories. The chapter further identified the gaps that need to be bridged through the research findings.

2.2 Purpose of the Literature Review

A literature review is a critical analysis and evaluation of existing literature in a particular field, topic, or subject area (Saunders, Lewis and Thornhill, 2019). The primary purpose of a literature review is to provide a comprehensive overview of the current state of knowledge on a particular topic, identify gaps in the existing literature, and highlight areas that require further research (Saunders, Lewis and Thornhill, 2019).

2.3 Theoretical frameworks

Theoretical frameworks provide a lens, according to Anele (2018), through which to understand and analyze community-driven connectivity approaches, digital inclusion, and community-driven initiatives in this study. Some key theoretical frameworks and conceptual models related to this

study, reviewed are, Community Empowerment Theory, Community Based Participatory Research Model, Digital Inclusion Theory and The United Nations Framework for Achieving Universal and Meaningful Data Connectivity. The theories were critically analyzed, with their relevance to the current study justified.

2.3.1 Community Empowerment Theory

Rappaport, 1981, 1994 as cited by Zimmerman and Perkins, viewed empowerment as a process that connects individuals and communities with resources and opportunities to make positive changes in their lives and their communities Zimmermann and Perkins (1995). Theories of empowerment include both processes and outcomes, meaning actions, activities, or structures may be empowering, Barbara et al (2006) as cited by Zimmerman. Empowerment processes at the community level might include collective action to access government and other community resources Zimmermann and Perkins (1995). Furthermore Zimmermann (2012) suggested that community-level empowerment outcomes might include accessible community resources and evidence of the existence of organizational coalitions.

Community empowerment focuses on empowering communities to take control over their development, and resources (Suryadi et al; 2023), with Community members driving the efforts to improve their community and provide opportunities for citizen participation (Zimmerman, 2000). Iscoe 1974, as cited by Zimmerman (2000), an empowered community or citizens should have the skills, desire, and resources to engage in activities to improve community life. Adding to this Zimmerman, (2012) included well-connected organizations that empower and are empowered. Participation, control, and critical awareness are essential aspects of empowerment, ensuring that communities address local needs and concerns (Suryadi et al., 2023).

Reasons for adopting the theory in this study are that it focuses on enhancing individual and community capabilities, fostering self-reliance, decision-making, and autonomy (Suryadi et al., 2023). Communities need to be resourceful in addressing connectivity challenges to build resilient infrastructure. According to Manaf et al.; 2018 as cited by Suryadi et al (2023), Community Empowerment theory encourages village development, carried out by the village community themselves, in collaboration with local leadership, experts and funders, leading to more impactful interventions.

However, defining and measuring empowerment outcomes can be complex, as they are often context-specific. Another potential weakness of this theory is that achieving sustainable community empowerment requires long-term investments in capacity-building, which may pose challenges for communities.

2.3.2 Community-Based Participatory Research (CBPR) Model

CBPR is closely related to Community Empowerment Theory, as CBPR is a practical application of the principles of Community Empowerment Theory Duke (2020). CBPR involves collaboration between researchers and community members throughout the research process, emphasizing the co-creation of knowledge and solutions (Brush et al., 2021). There should be ongoing engagement Duke (2020), between researchers and community members. Israel et al., (2006) identified that partnerships should maintain effective relationships and member commitment, to sustain the knowledge and values generated through the engagement. The collaborative partnerships should be staffed, have ongoing funding, and programs to fully function. Israel et al., (2013) postulated that a CBPR partnership's ability to achieve its long-term outcomes is influenced by intermediate outcomes, which are shaped by the partnership's programs and interventions. Duke (2020) partnerships' effectiveness is influenced by group dynamics, which are trust, communication, leadership, and decision-making. However, studies suggest the need for more widespread testing of these dimensions and their association with CBPR partnership success (Israel et al., 2006; 2013).

The reasons for adopting this theory in the study on rural community-driven digital initiatives in Murombedzi were that CBPR places a strong emphasis on involving communities in all stages of research process, promoting collaboration and ownership. The joint participation of community leaders, technology experts and local authorities in this study is of paramount importance because it increases the likelihood that community members will support the study ensuring that research outcomes are culturally appropriate, community-driven, and actionable, leading to sustainable positive change.

Duke (2020) believes CBPR fosters trust between researchers and communities, enhancing data quality and participation. However, according to Brush et al (2021) the implementation of CBPR

can be resource-intensive due to the time and effort required for meaningful community engagement. Managing relationships between research teams and communities can be challenging, affecting decision-making and project outcomes (Brush et al., 2021). Furthermore, the outcomes from CBPR studies may be context-specific and not applicable to broader populations.

2.3.3 United Nations framework for achieving universal and meaningful data connectivity.

The UN Road Map for Meaningful Data Connectivity Framework (United Nations, 2021), focuses on promoting digital access, literacy and empowerment to bridge the digital divide. This framework is prescriptive in nature, its definition to what is meant by 'Universal" and "meaningful" data connectivity sets the pace for a total and all embracing approach to digital connectivity and participation.

This Framework focuses on four key areas, firstly expansion of broadband infrastructure at a reduced cost and promotion of digital literacy. Secondly, the need to establish data protection laws which are strong and, empowering individuals with control over their personal data. Thirdly, data connectivity should contribute to environmental sustainability and long term economic growth. Fourthly, data connectivity should be governed in a transparent and accountable manner (United Nations, 2021).

Using the UN Framework makes sense because it is in line with global initiatives and sustainable development goals of universal access to information and communication technologies (ICTs), making it an exhaustive and recognized framework to guide digital inclusion efforts. United Nations (2021) emphasizes inclusivity, aiming to ensure that all individuals and communities have access to affordable, reliable, and secure digital connectivity. This resonates well intending to empower community-driven connectivity in Murombedzi.

Aligning with United Nations (2021), the study can advocate for policy coherence and international best practices in promoting digital connectivity. Customizing this framework will be necessary to translate global connectivity goals into actionable strategies that consider the Murombedzi community's infrastructure, digital literacy levels, and aspirations for digital empowerment.

The strengths of this framework are that it provides a comprehensive global strategy for enhancing data connectivity, encouraging collaboration, and promoting sustainable development. United Nations (2021) also advocates for policy development at national and international levels. It guides data governance, infrastructure development, and digital inclusion efforts. United Nations (2021) provides a blueprint for governments, businesses, and other stakeholders to work together, to create a data-driven world that is equitable, inclusive and sustainable.

On the contrary, adopting the UN framework recommendations may face implementation hardships due to complex regulations, funding issues, and technological limitations.

2.3.4 The Digital Inclusion Framework

Alalemu (2013) argues that citizens need to go beyond being mere "users and choosers" of technology; they should become "makers and shapers of the technologies available to them". The author suggests a hierarchical framework for progress in digital inclusion, similar to Maslow's hierarchy of needs, with technical infrastructure as the essential foundation for inclusion. This framework progresses through different levels, from providing access to infrastructure for internet connection, to empowering people to influence the design and shaping of digital technologies (Alalemu, 2013).

According to Alalemu (2013), grassroots engagement and leadership from the government and major corporations are essential for the successful delivery of digital inclusion. This engagement is crucial for empowering citizens to meet their digital needs through full engagement. The vision of digital inclusion needs to be clearly articulated, widely promoted to filter down through businesses, organizations, and individual citizens. Only then can citizens be considered truly "included" not merely as users of goods and services and passive targets of policies, strategies, and projects (Alalemu, 2013).

These theories are complementary because they each highlight the importance of community involvement, empowerment, and strategic frameworks for enhancing digital connectivity. Taking advantage of each theory's strengths can lead to comprehensive, community-driven strategies and meaningful data connectivity. However, the challenges of each theory need to be addressed, some at the policy level. Assessing the strengths and weaknesses of these frameworks, will help

stakeholders manage challenges and tailor strategies to enhance digital connectivity and community empowerment leading to sustainable development outcomes.

2.4 Empirical Literature

This section reviewed literature on community-led digital inclusion, including sample cases. Several publications were synthesized and summarized. The use of publications and reports in this study was informed by Whetten (1989) and the use of case studies by Yin (2018) Connections were drawn and patterns identified according to Cresswell and Poth (2018), leading to a comprehensive understanding of the body of knowledge and best practices, and in so doing inform research, policy and practice in community-driven initiatives.

2.4.1 Identifying connectivity challenges in Murombedzi: Insights from UNCHR 2022

Addressing Connectivity Issues is one of the Pillars of UNCHR's current strategic plans UNCHR (2022). Connectivity falls under the fourth pillar, Innovation and efficiency. UNCHR (2022) highlights the impact of connectivity in promoting empowerment, aiming to support better infrastructure so that the refugees can access information and knowledge, empowering them to make informed decisions about their lives and their communities. For example students can access educational resources online. UNHCR (2022) publication on Community-led Connectivity focuses on empowering communities in refugee settings through community-led digital connectivity initiatives. This empowerment will enable them to participate in public life like voicing their opinions on political issues or use online platforms like health, church platforms and Face Book. Connectivity can improve access to essential services like telemedicine.

This report was commissioned by UNHCR Innovation Service as part of the Digital Access, Inclusion and Participation thrust of UNCHR (2022) Innovation strategy. It aims to further examine frameworks for extending access to connectivity to refugees and their hosting communities.

UNCHR (2022) aims to facilitate self reliance and to find ways to utilize the skills and capacities of the refugees and hosting communities. This paper emphasizes the importance of community-driven efforts to enhance access to information and interaction among refugees. UNCHR (2022) highlighted the impact of connectivity in promoting community empowerment, and social inclusion in refugee contexts. The publication was authored by the Association for Progressive Communications (APC) commissioned by UNCHR. It focuses on empowering communities in refugee settings with connectivity and digital access (UNHCR, 2022).

This paper was authored by the (APC) in collaboration with Host nations and refugee communities to co-create solutions and assess the effectiveness of connectivity initiatives (Eduado et al., 2022).

UNCHR (2022) was chosen to be a part of the studies to be evaluated because it had goals and variables similar to those of the current study. Its approach to digital inclusion involves Community-driven initiatives to enhance communication, access to information, and interaction. The key aspects addressed are connectivity challenges, encouraging community engagement, and promoting digital literacy (UNCHR, 2022).

2.4. 2 Exploring community-driven connectivity initiatives: Lessons from ERND 2023 Smart Village Briefs

The European Network for Rural Development (ENRD) is the structure that brings together all the stakeholders aiming to achieve improved rural development results in the European Union. Smart Village Briefs is one of the tools developed by the European Network for Rural Development. The purpose of ENRD (2023) is to assist managing authorities and rural stakeholders implementing digital initiatives. To encourage them to engage with, and prioritize the needs and concerns of the rural communities, as they improve digital infrastructure and increase digital usage. The ENRD initiative on Smart Villages and Rural Digital Transformation aims to promote the use of digital technologies for sustainable development in rural areas ENRD, (2023). Focusing on implementing innovative solutions to improve quality of life, and foster economic growth (ENRD, 2023).

Successful examples of rural digital transformation projects are displayed by ENRD (2023) to promote rural development. Case studies were used in the brief to examine specific examples of successful international rural digital projects and to extricate best practices and lessons learned

ENRD (2023) highlight support frameworks, like the provision of rural connectivity funds and technical support for Smart Villages, how they help rural communities to engage in a process of digital transformation, whatever their starting point, and become digital innovators as well as creators of value, be it economic, social or environmental, United Nations Development Program (2020).

ENRD (2023) briefing was chosen because of its focus on developing smart villages and emphasis on digital technologies for rural progress. The briefing, promotes the implementation of innovative solutions for sustainable rural development and digital transformation. As Smart Villages Strategies are, by definition, driven by rural communities themselves, this brief identifies some of the key stages and steps that local actors can take with a focus on connectivity. According to, ERND (2023), firstly, a vision and goals are established with a focus on improving connectivity which should be a collaborative process. Secondly a plan is developed on how to achieve the digital connectivity vision and goals. Then engage the community in all aspects of the smart village strategy, ensuring villagers have access to and can benefit from digital connectivity.

ERND (2023) provides links to key sources of information and inspiring examples. Key aspects of this briefing are, integration of technology in various sectors, enhancing local services, and improving quality of life.

2.4.3 Enabling a supportive environment for community-driven initiatives. Insights from World Economic Forum (2021)

World Economic Forum (2021) is a policy analysis, studying national policies, regulations, and initiatives that support community-owned internet infrastructure. The report was on bridging Africa's digital divide, The Rise of Community internet, addressing the digital inclusion

challenges in Africa through community-driven approaches World Economic Forum, (2021). It features examples of community owned networks across Africa's villages and townships. A battery Operated system for community outreach in Uganda, Zenzeleni in South Africa, Ineth in Cape Town South Africa which uses mesh routers, open cellular base stations and open source software. These initiatives allowed residents free access to reading material and file sharing, highlighting the importance of community-owned internet infrastructure and collaborative initiatives. The report emphasizes polices that empower communities by enhancing connectivity through the use of digital tools across the African continent, for social and economic development (World Economic Forum, 2021).

World Economic Forum (2021) was chosen because of its approach of employing community-driven digital approaches, achieved by collaborative initiatives. It was also chosen because of the importance of policy issues in the realm of community-digital inclusion initiatives. It emphasizes the use of digital tools to empower communities and enhance connectivity for social and economic development.

In comparison, all three publications emphasize community empowerment and engagement in digital initiatives. They each tackle digital inclusion by addressing the importance of bridging digital divides and enhancing connectivity for underserved populations. They share an interest in promoting digital solutions that benefit communities in the long term. The publications all emphasize community engagement in the research process to understand the communities' needs, challenges, and aspirations regarding digital connectivity. They employed a mixed methods approach, combining qualitative and quantitative approaches to provide a thorough assessment of the impact of digital initiatives. Case studies and implementation strategies to inform best practices and areas for improvement in community-driven digital programs were included. These studies employed ranging research methodologies, data collection methods, as well as analytical approaches. The publications give information on the effectiveness and challenges of community-led connectivity, in smart village initiatives, and in bridging various digital divide.

However the publications differ in their focus, UNHCR (2022) focused on refugee communities, while (ENRD 2023) and World Economic Forum (2021) targeted rural and African contexts, respectively. ERND and World Economic Forum reports concentrate on rural development and digital inclusion on a broader regional scale. The differences are the strengths of these publications in that they offer diverse views and approaches to addressing digital inclusion challenges, and focus on community-led and sustainable solutions in different contexts.

2.4.4 Benefits of community driven digital connectivity: Smart Village Briefs ERND (2023), World Economic Forum (2021) Bridging Africa's digital divide and (UNCHR 2022)

1. Enhanced Access to Information and Services

According to World Economic Forum (2021), Community-driven digital connectivity initiatives enable individuals in rural and underserved areas to access crucial information related to health, education, and governance. This access empowers citizens to make informed decisions and participate more actively in their communities. For example, with better connectivity, residents can receive updates about health services, educational opportunities, and agricultural best practices.

2. Empowerment of Local Communities

By involving community members in the design and implementation of connectivity solutions, these initiatives foster a sense of ownership and empowerment. People feel more in control of their futures, leading to increased engagement and participation in local governance UNHCR (2022). For example, community-led internet projects can help build leadership skills within the community, enabling residents to advocate for their needs.

3. Economic Opportunities

According to ERND (2023), Digital connectivity can open up new economic opportunities for community members by facilitating access to markets, improving the delivery of services, and enabling participation in the digital economy. For example empowering local entrepreneurs through e-commerce platforms allows them to reach broader markets beyond their immediate vicinity.

4. Fostering Social Cohesion

Community-driven approaches enhance social networks and cohesion within communities, which are vital for collaboration and mutual support. Stronger social ties lead to a more resilient and unified community World Economic Forum (2021). For example, online platforms can

create spaces for communities to organize events, share resources, and support one another during crises.

5. Improvement of Digital Literacy

According to UNHCR (2022), Community-driven initiatives often include training programs on digital literacy, which empower individuals to use digital tools effectively. This is crucial for maximizing the benefits of connectivity and reducing the digital divide. For example, digital literacy training can help residents utilize online resources for education, job searching, and accessing governmental services.

6. Innovation and Problem Solving

According to ERND (2023) local communities are often best equipped to address their unique challenges. Digital connectivity can facilitate local innovation, allowing residents to collaborate on developing solutions tailored to their specific needs. For example, with improved connectivity, communities can share best practices and develop innovative solutions to challenges such as agricultural productivity or waste management.

7. Advocacy and Policy Influence:

Enhanced connectivity facilitates better communication and advocacy efforts World Economic Forum (2021) Communities can mobilize, share their challenges, and advocate for policy changes that support their needs. For example, community groups can utilize social media to raise awareness about local issues and influence policy discussions at the regional or national level

These benefits illustrate the significant impact of community-driven digital connectivity initiatives on enhancing the quality of life within local communities, especially in rural and underserved areas.

2.5 Case Examples

In this section real-world examples are given, in-line with Yin (2018), to illustrate best practices, and outcomes of community-driven connectivity initiatives in different contexts. They provide evidence in the implementation of digital connectivity projects. Strategies and lessons learned can inform rural initiatives. Case studies can inspire innovation and creativity, by showing successful models of community engagement, and sustainable connectivity solutions.

2.5.1 Importance of partnerships in community-driven digital initiatives: Mexico's Community Centers for Learning

UN-Habitat promotes digital inclusion in urban areas through initiatives like smart city projects evidenced in projects such as Bucaramaga in Columbia (Eduado et al., 2022), community technology centers in rural and urban areas of Africa, and digital literacy programs (UN-Habitat, 2021).To assist in the application of its framework, the UN-Habitat launched a play book UN Habitat (2021), for policy makers, local governments, non-governmental organization and civil society, operating in urban or rural areas seeking to take action to bridge the digital divide in their communities. The playbook provides support to contextualize their efforts within the framework of the UN and the SDGs.

Cited in the UN Habitat Playbook, In 2013 Mexico became the first country in the world to make internet access a constitutional right, holding the government responsible for provision as in water and education. With this mandate the government established Community Information Centers for learning, as a result of multi-level partnerships between national, regional, local government, private sector, and non-government organizations (Community Information Centers Mexico, 2020). The partnership is implemented by the center manager coordinating the unit. The educational institution provides the courses in digital literacy skills, civil society support improvements and central government coordinates the procedures to implement the procedures (UN-Habitat, 2021).

Successes registered include, increased access to technology and digital literacy. The digital initiatives offered access to online learning platforms, software and tutoring, resulting in improved educational outcomes. These centers became digital skills development hubs that enabled community members to participate in economic projects. According to UN- Habitat, (2021), with the skills obtained relevant to the job market, employment prospects were increased.

Challenges that have been encountered in Mexico with these centers include unreliable internet connectivity or inadequate hardware, limited digital skills requiring tailored training and inconsistent funding for these initiatives threatening long term viability Community Information Centers Mexico (2020).

Lessons from these strategies can be adapted for rural communities to enhance digital access and skills among residents through collaborations with schools and universities providing expertise and curriculum development. Furthermore the need for regular monitoring and evaluation of the initiatives to assess impact and make necessary adjustments is worth emulating (UN-Habitat 2021).

2.5.2 Importance of engaging communities in digital initiatives: United Nations High Commissioner for Refugees (UNHCR) Community-Driven Digital Initiatives in Malawi

UNHCR (UNHCR Innovation Service, 2021), has partnered with various organizations to implement connectivity projects, providing internet access in refugee camps and settlements. In Dzaleka, Malawi, UNCHR partnered with The Jesuit Refugee Service and Konexio a digital education organization, to explore ways to open opportunities for refugees in the global digital economy. These initiatives aimed to bridge the digital divide and enhance communication and access to digital devices (UNHCR Innovation Service, 2021). Secondly, the joint initiative facilitated digital skills training programs to empower interested refugees with the necessary knowledge and skills enabling participants to register profiles on UpWork a freelance platform and by end of six months they had collectively earned more than 20 000 USD. These initiatives helped improve employment prospects, education, and communication within refugee communities (UNCHR Innovation Service, 2021).

However, the Dzaleka refugee camp had limited electricity hindering full utilization of the initiatives and the refugees had limited skills in need of extensive training, according to The Jesuit Refugee Service (2021).

This case serves to emphasize the importance of engaging communities in the design and implementation of digital initiatives to ensure relevance and sustainability. Tailoring initiatives to meet specific needs of the community in collaboration with local NGOs and community based organizations has been shown to yield results (UNHCR Innovation Service, 2021). Creation and use of platforms can enhance communities' self-reliance and facilitate access to essential services resulting in initiatives that empower community members.

2.5.3 Importance of Collaborations in digital initiatives: 'Digital Communities Wales'

Rural Digital Inclusion Initiatives in Southwest Wales.

Digital Communities Wales, an organization focused on digital inclusion, implemented a community-driven connectivity framework within rural South West Wales, with a key focus on empowering digital inclusion (Bryer and Bebb, 2022; Digital Communities Wales, 2023) The organization facilitated the establishment of community-run digital hubs through the Good Things Foundation, providing access to technology, internet connectivity, and digital training tailored to local needs (Smith, 2020). Their initiatives emphasized collaborative digital efforts in engaging community members in the co-creation of digital content and platforms. This enabled residents to actively participate in the digital space (Bryer & Bebb, 2022). Digital Communities Wales supported the development of local digital infrastructure, such as public Wi-Fi hotspots and community networks, fostering connectivity from within the community Digital Communities Wales (2023).

Challenges faced include the dispersed nature of communities in southwest Wales in the deployment of infrastructure and digital training. Also older citizens faced some form of digital exclusion Smith (2020).

This case study demonstrates the successful adoption of frameworks that display results of community-driven connectivity initiatives through collaborations with external organizations like NGOs, highlighting the importance of community participation and engagement.

Benefits of Community-Driven Digital Connectivity to Murombedzi: a comparative analysis

All these case studies focused on using community-driven digital connectivity initiatives in improving access to technology and digital literacy aiming to empower communities through digital tools. In so doing they demonstrated the potential of digital initiatives to solve social and economic challenges in different contexts. They show the importance of tailored programs that involve local organizations to address digital access and literacy barriers resulting in the empowerment of marginalized communities and improving their quality of life.

2.6 A model extracted from common themes and best practices

Phase 1: Assessment needs

Connectivity needs and gaps in the community have to be identified first. According to UN Habitat (2021) this is done through, but not limited to surveys, focus groups, stakeholder meetings. This study made use of a questionnaire and focus group discussions. Different stakeholders were also involved at various stages. Next stage is the identification of existing resources like (infrastructure, skills and organizations) that can be optimized. Last stage is working with the community to define their vision for digital connectivity and set clear objectives.

Phase 2 Implementation

Every step of the process residents have to be actively involved ERND (2023). Secondly appropriate technologies are chosen considering affordability, accessibility, and sustainability. Thirdly with the right technologies there is need for providing digital literacy training, technical support, and skill development for community members. Last in this stage is implementing the project with clear timelines, budgets and accountability.

Phase 3 Monitoring and Evaluation

At this stage Clear metrics to track the initiative's progress and impact have to be identified. Secondly data need to be gathered regularly to assess the initiative's effectiveness. Lastly the initiative has to be continuously adjusted based on the feedback evaluation results.

2.6.1 How the community can enhance digital Literacy and Skills Development

Conduct a comprehensive survey or focus groups to understand the community's current digital literacy levels, access to technology, and specific skill gaps. This can be tailored to different demographics within the community (e.g., youth, seniors, low-income families). Next step is to map existing resources and initiatives within the community, including libraries, community centers, schools, and existing digital literacy programs. This can be done through organizing open discussions, workshops, and community gatherings to encourage residents to share their needs, identify challenges, and brainstorm potential solutions for improving digital literacy. Further publicly available data, such as internet access statistics, educational attainment rates, and employment trends will be analyzed to identify areas where digital skills are crucial for success. Lastly observe community trends and activities to identify emerging needs. For example, if there's a growing trend of remote work as highlighted in the Dzaleka case UNCHR (2022), focus will be on developing relevant skills.

2.6.2 Example of collaborative efforts with stakeholders

Community driven digital connectivity initiatives need to be done in collaboration with local government agencies to leverage their resources, infrastructure, and expertise UNCHR 2022. This could include access to public spaces, community centers, and funding opportunities. Also collaborate with schools, colleges, and universities to utilize their faculty, resources, and facilities for digital literacy training. It is also important to partner with local businesses and non-profit organization to access their expertise, funding, and resources, and to create opportunities for skills training and employment. It is also necessary to collaborate with technology companies to access affordable technology, software, and technical support. All this needs to be done with the Involvement of community leaders, elders, and respected figures to encourage participation and build trust within the community UN Habitat 2021. Where possible, partner with volunteer organizations to provide technical assistance, mentoring, and support for digital literacy programs and also connect with other communities with similar initiatives to share best practices, resources, and lessons learned.

The above model is represented in a flowchart diagram below.

2.6.3 Flowchart Diagram

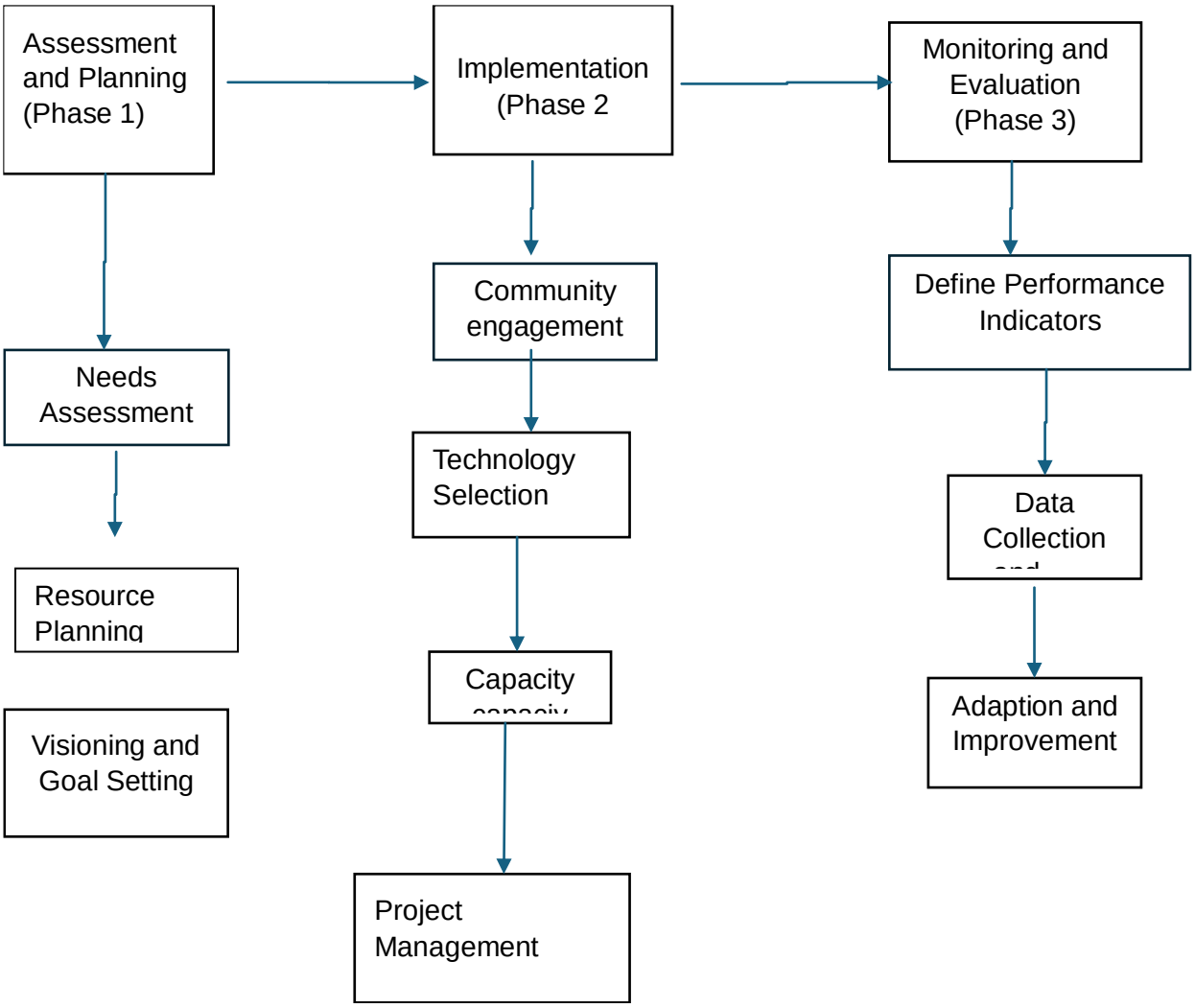


Fig 2.1: Outlining the essential steps for community-driven connectivity initiatives.

Source: own construct (2024)

2.7 Conceptual Framework

A conceptual framework in research is a structure that outlines and organizes ideas, concepts, and theories used to support research (Bordens & Abbott, 2018). It provides a structure for organizing and interpreting data, guiding the research and decision making Cresswell (2014)

From the preliminary literature review also guided by the theoretical framework of this study main concepts have emerged, namely: Policy advocacy and support, collaborative networking, digital inclusion, sustainable connectivity, community empowerment, community engagement and participation.

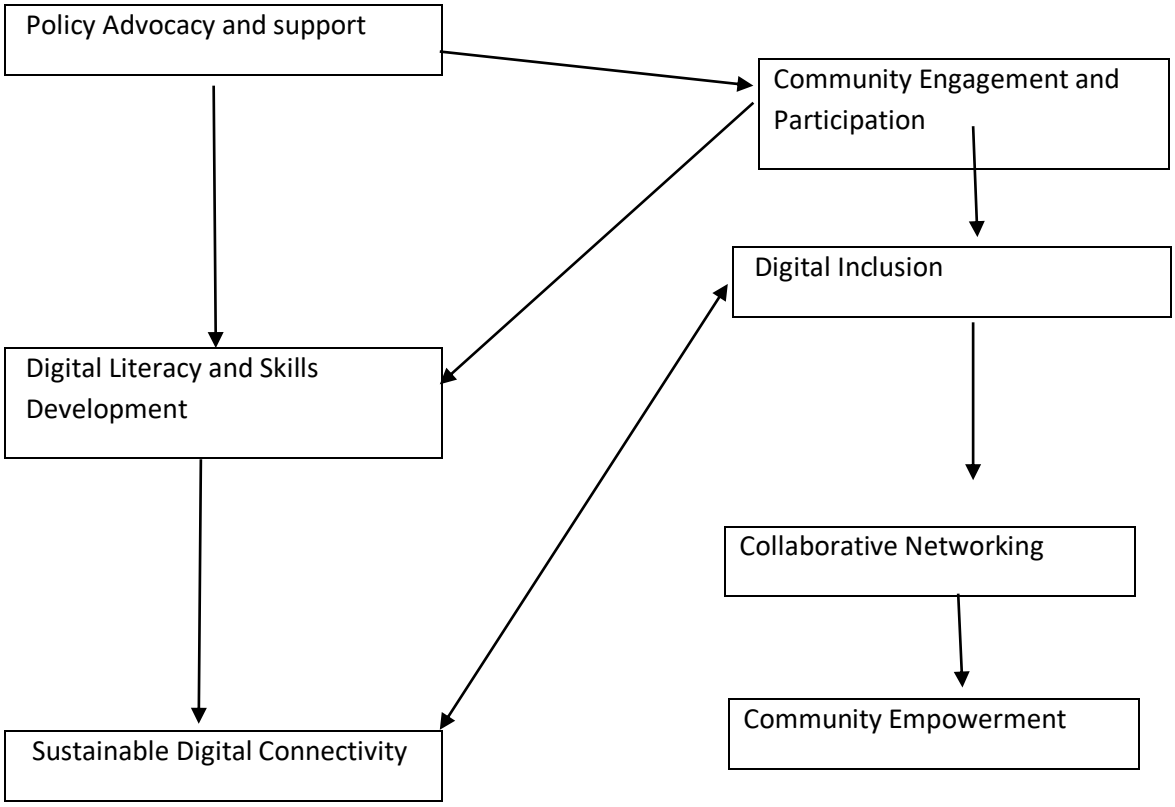


Fig 2.2: Illustrating relationships between key concepts.

Source: own construct (2024)

The objective is to develop a holistic conceptual framework that integrates community empowerment, policy advocacy, collaborative networking and digital literacy as foundational

components for enhancing sustainable digital connectivity and inclusion in rural communities. These concepts interact as follows:

- Community engagement and participation are influenced by policy advocacy and support as they create an enabling environment for community members to actively engage in decision making processes, planning, and implementation of connectivity initiatives.
- Policy advocacy and support play a role in promoting digital literacy and skills development by advocating for policies that facilitate access to educational resources, training programs, and skill-building opportunities within the community.
- Digital literacy and skills development contribute to sustainable connectivity by enhancing community members' capacity to utilize digital tools effectively, ensuring the lasting impact of connectivity initiatives.
- Sustainable connectivity depends on achieving digital inclusion by ensuring that connectivity solutions are accessible, scalable, and tailored to community needs for long-term viability.
- Digital inclusion fosters collaborative networking by ensuring equitable access to digital resources for all community members, promoting participation and engagement
- Collaborative networking facilitates community empowerment by enabling information sharing, resource pooling, and collective decision-making processes within the community.

2.7.1 Conceptual Framework Literature Review.

The concepts in the preceding section will be defined and explored in-depth to unveil how each concept becomes a cog in digital empowerment of rural communities, so that this review can provide a solid foundation for understanding, analyzing, and implementing effective strategies for promoting community-driven connectivity in rural settings like Murombedzi.

2.7.1.1 Community Empowerment.

Is the process of giving individuals and communities the knowledge, skills and resources they need to make informed decisions and take action to improve their lives (Aspen Institute, 2022),

with the purpose of promoting active participation in community decision-making resulting in community self sufficiency.

Community empowerment forms the basis for sustainable connectivity initiatives (Smith and Brown, 2019). This is achieved by giving communities tools to shape their digital destinies, fostering a sense of ownership and agency (Brush et al., 2021). Communities then become drivers of change and architects of innovation (Smith & Brown, 2019). According to World Economic Forum (2021), this empowerment enables communities to advocate for policies that promote inclusive digital access, which is affordable and sustainable in their regions (World Economic Forum, 2021).

Similarly, (Marshall, Wilson, & Dale 2023) mentioned collaborative efforts, policy advocacy, and community engagement as aiding communities to build digital ecosystems that empower individuals and drive sustainable growth. Empowered communities can achieve this by forming partnerships with diverse stakeholders and sharing of resources (Stojanova et al; 2022). This in turn promotes a sense of ownership and responsibility in the development and maintenance of connectivity infrastructure, ensuring long-term success (Marshall, Wilson, & Dale, 2023). Additionally, World Economic Forum (2021) found that policy advocacy plays a crucial role in supporting sustainable connectivity projects. This also empowers communities to advocate for inclusive digital policies.

Empowerment drives innovative approaches (ERND, 2023), examples of such innovative approaches are, but not limited to, where residents collectively manage and maintain internet infrastructure, as observed in initiatives such as Zenzeleni Networks in South Africa and Mesh Networks in Macha Zambia, and Murambinda in Zimbabwe, helping extend connectivity to underserved areas. Other initiatives are digital Inclusion Hubs that provide access to technology and training in digital skills. These are facilities for innovation and creativity, as evidenced in mobile-libraries tailored for digital empowerment (Smith & Brown, 2019).

The digital empowerment process requires Public-Private Partnerships for Infrastructure development. These are collaborations between local governments, private entities, and community organizations to build essential digital infrastructure and ensure reliable connectivity (UN-Habitat, 2021). Digital literacy and skill-building programs need to be tailored to address

the unique needs of the community, and provide opportunities for residents to enhance their technological competencies (ERND, 2023). Borrowing from the smart village concept, these innovative approaches represent a toolkit for engaging communities and expanding digital connectivity (ERND, 2023). They reflect the adaptability and creativity necessary to promote sustainable digital empowerment (ERND, 2023).

However there are challenges to community empowerment in rural digital Connectivity cited by the Pew Research center ranging from rural communities having limited access to financial, technical and human resources that are necessary for digital empowerment to digital literacy gaps. Many rural folks lack the digital skills and knowledge needed to fully participate in the digital economy and society (Pew Research Center, 2020). These challenges have also been echoed by the Aspen Institute. Rural communities can be dispersed making it difficult for residents to access digital infrastructure and services (Aspen Institute, 2022). The communities may also lack local leaders with the vision and skills to drive digital empowerment initiatives.

Most importantly, communities cannot empower themselves in isolation, they need to be empowered. Researches by the Pew Research Center, Aspen Institute and National Telecommunications and Information Administration (NTIA) have made recommendations to overcoming these challenges, including, providing rural communities with technical, financial and human resources needed to develop and implement digital empowerment initiatives. There is need to provide digital training and support programs to help residents to participate in the digital economy and society. Communities need to be given authority to design and implement digital empowerment initiatives that meet their unique needs. These recommendations are at the core of UN-Habitat smart city approach (UN-Habitat, 2021).

2.7.1.2 Policy Advocacy

Policy advocacy in this study refers to the process of influencing public policy decisions to support community-driven digital initiatives (Pew Research center, 2020). The support can be in the form of creating a supportive policy environment that enables and empowers communities to use technology to improve their lives.

The World Economic Forum, (2021) advocates for policy considerations in the area of promoting digital literacy, skills development, and improving access to ensure all community

members can benefit from connectivity initiatives. Advocating for supportive policies is crucial for the success of community-driven initiatives because they empower communities to take charge of their development, fostering local ownership and empowerment (World Economic Forum, 2021).

Policy advocacy serves as the voice for communities, and it may be done by an organization on behalf of the underserved community. For example, UNCHR initiated a working group to advocate for refugees in Uganda to improve their digital connectivity as cited in UN-Habitat (2021) in response the Ugandan communications Commission adopted a policy allowing Sim-Card registration for refugees thereby safeguarding their digital rights. Community-driven connectivity initiatives have significant policy implications (World Economic Forum 2021). Policies that support and enable community-driven initiatives have to be implemented first before the strategy can be acted upon (Colby et al; 2020). To empower communities, financial resources, technical assistance, and capacity-building support must be provided to drive connectivity projects sustainably.

The pew research center has highlighted that policy makers should encourage public-private partnerships, and multi-stakeholder engagements to maximize the impact and reach of community-driven projects (Pew Research Center, 2020).The policies should focus on sustainable connectivity, including maintenance and community ownership (World Economic Forum, 2021). The European Union favors policies that enhance digital inclusion to ensure that villages have equal access to connectivity. The policies promote social equity, bridging the digital divide and encourage innovation. Creativity within communities that drives solutions in-line with local needs and aspirations is advocated for (ERND, 2023). Well-designed policies promote sustainable connectivity of projects that ensure community-driven development World Economic Forum (2021).

However, the World Economic Forum has lamented policy makers not being fully aware of the challenges and opportunities related to rural digital connectivity. Rural digital connectivity may not be high on the agenda for policy makers, focusing on other issues like health (World Economic Forum, 2021). According to the same study, community advocates may lack data and convincing evidence demonstrating the benefits of the initiatives for policy makers to support

them. A solution to these policy challenges, at the rural community level, could be, to engage with elected officials to raise awareness about the importance of community-driven initiatives.

2.7.1.3 Collaborative Networking.

Collaborative networking involves building relationships and partnerships among community members, organizations, and stakeholders to share resources, knowledge, and expertise in enhancing connectivity (ENRD, 2023). Publications by the UN Habitat and UNCHR emphasize the importance of collaborative networking enabling the pooling of resources, expertise, and opportunities. To facilitate the co-creation of solutions and inclusive connectivity of digital initiatives (UN Habitat 2021, UNCHR 2022)

Studies have shown that collaborative networks play a crucial role in expanding digital reach and resources in rural areas (Pew Research Center 2020). There are several policy initiatives within the European Union to enhance participation in the digital society. In the use of library buses in Sweden, a general lesson learned from the project was that of openness to the meanings of digital divides to look more for different ways of achieving inclusion (Wihlborg & Engström, 2017). This was done by embracing different ways to approach digital technologies, so as to include and consider the diversity of needs among citizens and different target groups.

In the mobile library study, Wihlborg & Engström, (2017), by employing an action-oriented approach, demonstrated the importance of finding new ideas and approaches in research through open-minded collaboration in projects. The most significant contribution of these initiatives is the fostering of local solutions to local challenges (Stojanova et al., 2022). By drawing on the local knowledge and experiences of community members, innovations born from grassroots efforts are often tailored to address specific local needs (Friis-Hansen & Egelyng, 2022). These initiatives demonstrate the power of local knowledge in shaping technology to serve rural communities (Friis-Hansen & Egelyng, 2022), whether it's developing agricultural technologies suited to the region's crops or creating digital platforms for informal traders or informal transporters.

Community mesh networks, like Macha Networks in Zambia and Murambinda in Zimbabwe Tomazic, Tina and Nxumalo (2022) embody collaborative digital connectivity initiatives. These networks are built and maintained by residents and technology enthusiasts, aiming to provide

affordable and scalable internet access to underserved communities. This collaborative approach empowers local members to participate in network deployment, share resources, and collectively address connectivity challenges (Israel et al; 2013).

Collaborative networking may result in innovations as cited by Ndung'u, (2018), M-Pesa a mobile phone-based money transfer service, which has significantly fostered economic growth in regions such as East Africa, and the rise of Massive Open Online Courses (MOOCs) which has revolutionized educational advancement, offering access to high-quality courses from renowned institutions to individuals globally (Nurutdinova et al., 2023). Innovation hubs and technological incubators play a pivotal role in nurturing local innovation within rural areas Digital communities Wales (2023). In collaboration with communities access to resources such as mentorship, funding, and networking opportunities are provided, this empower local entrepreneurs and innovators to develop solutions that address the unique challenges faced in rural areas.

Grassroots efforts centered on technology, often led by community members themselves, are vital in empowering technology agencies within rural communities (UN Habitat, 2021). Initiatives such as digital literacy programs enable individuals to not only use technology but also become creators and problem solvers. Studies by The UN Habitat, ENRD, and UNCHR showcase how these efforts can shift the narrative from technology as a mere tool to technology as a platform for local empowerment and expression**.**

2.7.1.4 Digital Inclusion

According to The Australian Index (AD11), digital inclusion is about ensuring that citizens can access and use digital technologies effectively (Thomas et al., 2021). The AD11 uses three dimensions of Access, Affordability, and Digital ability to assess the level of digital inclusion in Australia. This view is in line with the United Nations Road Map for Universal and meaningful data connectivity (United Nations, 2021). In His report, Road map for digital Co-operation (2020), including at its core a commitment to connect all people to the internet by 2030, the UN secretary General' was to ensure that all members of society have the opportunity to benefit from digital technologies.

High-quality digital infrastructure provides entry into the digital domain, particularly to underserved communities (Correa & Pavez, 2016). Effective infrastructure plays a significant role in bridging the digital divide and promoting inclusivity **(**Conroy et al., 2020**).** It empowers communities and individuals to use technology for education, employment, healthcare, communication, and civic engagement. Robust digital infrastructure acts as an enabler for innovation, entrepreneurship, and economic development (ERND, 2023, Conroy et al 2020).

However, there exist connectivity barriers such as affordability, infrastructure gaps, and digital literacy (The UN Habitat 2021). Digital inclusion initiatives need to effectively address these to bridge the digital divide and empower underserved communities (UNCHR, 2022).

2.7.1.5 Rural Community Empowerment through Digital Inclusion

UN-Habitat has unveiled how digital technologies enable greater civic engagement, participation and influence in wider society Craig et al, (2015) added to this. The smart village concept in Europe has evidenced that effective digital infrastructure in rural areas can revolutionize local economies (ERND, 2023). Infrastructure provides access to markets, foster innovation, and creates new economic opportunities for businesses, and individuals (ERND, 2023). This economic empowerment aligns with the goals of digital inclusion which ensures equitable access to economic resources and opportunities (Gottschalk, Weise, 2023).

In rural settings, digital infrastructure enhances social connectivity (Craig et al., 2015), by facilitating communication and strengthening social networking. UNCHR Innovation service is committed to empowering individuals to engage with the local environment, access essential services, and participate in social and civic activities like voting (UNHCR 2022). Social empowerment aspect aligns with the inclusivity and connectivity objectives of digital inclusion (Gottschalk, Weise, 2023).

The United Nations has set a baseline for universal and meaningful data connectivity as part of its efforts to promote sustainable development and bridge the digital divide worldwide (ITU, 2022). The UN baseline for universal and meaningful data connectivity is the minimum standard of internet access and connectivity that should be available to all individuals and communities

(ITU, 2022). It enables full participation in the digital economy, access to essential services, and realization of human potential (Thomas et al., 2021). Universal access means connectivity for all (United Nations, 2021). Goals for designing to achieve universal inclusion were first presented by Schnedermann (2000), giving birth to a detailed proposition for provision of ICT support in the communities involved, through Community Information Centers (CICs) (Barbara et al.; 2006).

Digital inclusion ensures that everyone can fully participate in the digital world (Craig et al., 2015). Digital inclusion goes beyond connectivity. Alalemu, (2013), emphasizes the importance of addressing barriers related to skills, affordability, and relevance of content, and societal factors this also supported by Livingstone & Helsper (2007).

Community-driven initiatives that can be adopted include, but are not limited to community networks and community hubs. Craig et al; (2015) found that socially-embedded community-hubs provide flexible and adaptable learning to match people's range of needs, learning speeds and styles. Furthermore, they use existing community venues and are locally run, Mexico Community Information Centers in Mexico. The social nature of the hubs allows people to share tips and support each other, all within a relaxed, social atmosphere allowing older users (for example), to be assisted by the younger generations and access professional help. Community Information Centers (CICs) play a vital role in community-driven initiatives by providing access to information, digital resources, and essential services for community members (Agrawal & Srikant, 2009). CICs support sustainable development by promoting entrepreneurship, innovation, and local initiatives that address community challenges and opportunities through digital tools and resources (World Bank, 2002).

In a study by Agrawal and Srikant, citing a rural village in India, a Community Information Center was established as part of a community-driven initiative focused on enhancing digital literacy and economic empowerment. The center offered computer training, internet access, and business development workshops, empowering residents to start online businesses, access government services, and connect with broader market opportunities (Agrawal & Srikant, 2009).

Through community engagement and capacity-building programs, the center played a pivotal role in promoting digital inclusion and sustainable growth in the village.

Agrawal & Srikant, 2009 pointed out that there is a greater need for content and services that are relevant and tailored to local needs, ensuring that connectivity meets requirements of different communities.

However, Correa and Pavez (2016) found out that digital inclusion is a complex phenomenon because the challenges faced by a connected society do not end when people overcome access. On the contrary, when connectivity is provided, psychological and socio-cultural barriers emerge. For example, fear of new experiences was evident when some population in a community in Chile complained about the presence of the antenna that provided Internet connectivity. The new device was a source of negative discourses and fears. People described it as a foreign element that was installed without anyone being asked and was seen as a source of problems. There were reports of people's fears about negative health consequences (Correa & Pavez, 2016).

Those already online may still face barriers that prevent them from harnessing fully the potential of connectivity. UNCHR has understood that the mere presence of digital infrastructure, products, and services does not automatically translate to improved economic participation (UNCHR 2022). There is a need for efforts to learn and understand how this works. Furthermore digital skills training programs that provide training in digital literacy, internet use, and online safety should be availed (Livingstone & Helsper, 2007). This should be done through community engagement by involving local communities in shaping and co-creating digital solutions tailored to their specific needs and context (ERND, 2023). This includes considerations of language, accessibility for individuals with disabilities, and the cultural appropriateness. (UN Habitat 2021). Added to this should be support for access to affordable devices, and digital services, ensuring that they are accessible to the targeted community (UNCHR 2022).

2.7.1.6 Sustainable connectivity

According to the World Bank document, Sustainable Connectivity for rural communities, (World Bank 2021) sustainable connectivity is about ensuring that rural communities have access to reliable, affordable and high quality internet service over the long term. According to Israel et al; (2006) sustainable connectivity thrives on collaborative partnerships that build and maintain digital infrastructure for communities.

The United Nations 2030 Agenda includes 17 Sustainable Development Goals (SDGs). They are a universal call to action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity (United Nations, 2015). Target 9c of the SDGS aims to bridge the digital divide and ensure that everyone especially in the least developed countries (LDCs) has access to affordable reliable internet and ICT services. According to the Brundtland Report (World Commission on Environment and Development, 1987), sustainable connectivity involves creating and maintaining digital infrastructure and services in a way that meets current needs without compromising the ability of future generations to meet their own needs. Maria et al; (2021) defines Sustainable connectivity as ensuring the long-term viability and impact of connectivity initiatives.

In its publication Sustainable Connectivity for Rural Communities, the World Bank focused on digital inclusion supported by sustainable infrastructure and community ownership (World Bank, 2021). Projects incorporating community-managed broadband networks in Wales have shown resilience and adaptability, ensuring continuous connectivity. A study by Ju Wu et al; (2021) in post COVID China found that, while infrastructure companies and policy makers are important, sustainable connectivity requires the involvement of end users. Investing in infrastructure, nurturing local capacity, and fostering a culture of responsible digital stewardship are trademarks for Un-Habitat (UN Habitat 2021).

Sustainable Connectivity is about adopting best practices in infrastructure development, including using environmentally friendly technologies, and fostering community ownership (World Bank, 2021). Best practices focus on creating efficient, adaptable, and future-proof infrastructure to meet the fast paced, ever evolving connectivity needs. According to ITU (2022) implemented strategies should ensure that infrastructure is resilient, address security concerns and continuity of connectivity. These strategies should incorporate disaster preparedness like

creating back up power sources. Quality assurance measures, to maintain a strong digital infrastructure ecosystem need to be implemented (ITU 2022).

However there are challenges to sustainable digital connectivity. The infrastructure deficit in Africa remains a critical constraint to accelerated and sustained inclusive growth (ITU 2022). In the same report ITU (2022), high costs of infrastructure deployment and maintenance have been mentioned as hindering connectivity. Also the cost of internet access and devices in developing countries can be prohibitive. The ITU has also reported that many people especially in rural areas lack the skills and literacy needed to fully benefit from digital connectivity. This limits their ability to access information, services, and opportunities online. The United Nations Environment Program (2020) has warned of the environmental impact of E-waste, the production, use and disposal of ICT devices and infrastructure having negative environmental impact.

Cyber-security considerations are important to ensure security of digital infrastructure and data, for sustainable digital connectivity. Another challenge to sustainable connectivity is lack of government policies that promote investment in infrastructure and regulatory frameworks (World Economic Forum, 2021). Overcoming these challenges requires planning, innovative solutions and community engagement. (World Economic Forum, 2021)

To address the challenges, the Alliance for Affordable Internet, (2021) advocates for community engagement, that tailors solutions to the specific needs of the community, and to increase a sense of ownership. In this regard rural communities need to be capacitated to manage and maintain the digital infrastructure. According to UN-Habitat, initiatives that are community driven leads to sustainable connectivity, ensuring that the system or initiative can handle an increased workload without experiencing significant slowdowns or disruptions (UN-Habitat 2021).

2.7.1.7 Digital Literacy

The G8 Declaration recognized the importance of digital literacy encompassing the skills and abilities necessary for access once the technology is available G8 Hokkaido Toyako Summit (2008). Literacy is an understanding of the language and component hardware and software

required to successfully navigate technology (Gottschalk & Weise, 2023). It empowers individuals to engage with online resources effectively, and to participate in the digital economy.

There is no one-size-fits-all program. Local communities, using libraries and additional funding for new computers and programs, can help to develop a long-term and sustainable network of literacy (Carmi and Yates, 2020). A recurring theme found in the literature review is that enhancing digital literacy skills among rural populations boosts confidence and engagement in digital technologies (Carmi & Yates, 2020; UN-Habitat, 2021; World Bank, 2021).

Smith and Lee, (2020) found that training programs focusing on basic computer skills, online safety, and digital tools have empowered individuals in the use of technology for personal and professional growth. Digital literacy empowers individuals to navigate the online world confidently (Krimpizi, Peristeras, & Magnisalis, 2023). Equipping communities with digital literacy enables them to harness technology for their growth and prosperity (Mossberger & Tolbert, 2019). Digital literacy programs foster social inclusion and economic empowerment (Smith & Lee, 2020). Hilbert (2016) emphasized how enhancing digital competencies can bridge societal divides and unlock opportunities for marginalized communities. Digital literacy programs also empower communities to engage with government services, access educational resources, and participate in online civic activities like voting (UN Habitat, 2021). Research by Smith and Lee (2020) exploring the significance of digital skills training in rural development examines how building digital competencies among community members can lead to entrepreneurship opportunities, improved healthcare access, and enhanced quality of life in rural areas.

As time progresses, enhanced digital competencies will foster creativity, innovation, and entrepreneurship within communities, driving economic opportunities and technological advancement (Carmi & Yates, 2020). Digital literacy ensures that all individuals regardless of background or location, can access essential services (Khan& Patel 2019). Digital programs not only impart technical skills but also instill critical thinking, and digital citizenship (Carmi, Yates 2020; Khan, Patel, 2019).

Studies have consistently shown that digital literacy programs are effective in bridging information gaps within communities (UN Habitat 2021). The UNCHR initiatives that provide training in internet usage and online research skills have been shown to empower community members to access a wider range of information to help them participate more actively in civic and economic activities (UNCHR 2022). The impact of digital literacy on economic opportunities is a recurring theme in the literature.

Digitally skilled individuals can use digital platforms for marketing and sales. In turn this enhances income generation and economic resilience within communities of community-centered approaches in designing and implementing these programs has also been explored (Livingstone & Helsper, 2007). Recognizing the unique needs and context of each community, these approaches aim to foster a sense of ownership, and sustainability in digital skills development initiatives (UNCHR, 2022; UN Habitat, 2021).

However, Israel et al (2006) citing the literacy historian Graff (1991) identifies what she terms as "the literacy myth," the belief that the acquisition of literacy is a necessary prerequisite to and automatically results in economic development (Israel et al 2006). Graff has shown through historical analyses that this belief is incorrect. He provides evidence that increasing levels of literacy did not correlate with increased social equality, or improved conditions for the working class (Graff, 1991).

2.7.1.8 Community Engagement

It is the process of involving residents in the planning, implementation, and evaluation of community-driven digital initiatives (NTIA, 2021).

According to the Aspen Institute; (2022), active community engagement binds together the concept of community-driven initiatives. Engagement ensures that the digital inclusion efforts are relevant. Involving residents in all stages of the project enhances community ownership (NTIA, 2021). According to the ERND, Community engagement promotes dialogue, participation, and collaboration among community members bringing together diverse stakeholders (ERND, 2023), building trust, and paving the way for collective action toward rural

development. Wagg & Simeonova (2021) mentioned community engagement as being at the center of both sustainable connectivity and community empowerment, this has been echoed by de Souza Ferreira et al., (2022) adding that community engagement promote active involvement, shared decision-making, and collective action. The World Bank has identified communities actively engaged in designing and implementing digital projects as demonstrating higher adoption rates and long-term impact (World Bank 2021)

However, a study by Pew Research Center, (2020) found challenges to community engagement including lack of trust, community members may be hesitant to engage with external stakeholders, due to past negative experience and lack of transparency. They may also not have time to participate in engagement activities due to other commitments. Some community members may also not know much about digital connectivity initiatives. Lastly, language barriers can make it difficult for community members to fully participate.

To overcome these challenges, the UN-Habitat advocates for community members to be involved in planning and decision making, collaborating with local schools, libraries, businesses and not for profit making organizations to gain access to resources and expertise in supporting community-driven digital connectivity initiatives (UN Habitat, 2021).

2.8 The relationships between these variables of the conceptual framework

The United Nations Framework for Universal and Meaningful data connectivity highlights digital connectivity serving the foundational infrastructure, as an enabler to digital inclusion (UN 2020). In this context, digital connectivity can be considered a crucial component or sub-concept within the broader concept of digital inclusion (ITU, 2022). Connectivity provides access, opportunities, and resources for individuals and communities.

Through collaborative networking (Craig et al., 2015), empowered communities take control of local resources, share knowledge, and actively participate in digital initiatives (UN-Habitat 2021). Mosberger; Cami &Yates (2019) suggested that communities are empowered by digital literacy which equips them to use digital tools and resources effectively. According to UNCHR (2022), this also helps them to participate fully in digital initiatives and access information and opportunities online**.**

According to the publication, UN-Habitat (2021), targeted policy can bridge the digital divide. There is need to advocate for inclusive policies, (World Economic Forum, 2020), and secure funding for rural digital inclusion initiatives (Colby et al; 2020). In the USA, congress provides discretionary funding for these initiatives (Conroy et al; 2020). Digitally and socially excluded communities facing specific challenges need to be considered in both academic research and policymaking efforts (Craig et al., 2015). There is need for lobbying for government support, grants, and regulatory frameworks to facilitate the implementation of impactful digital projects in underserved rural areas (Gwaka & May, 2018).

Furthermore, through collaborative networking, communities can forge partnerships and engage stakeholders to benefit from collective expertise, resources, and creativity Barbara et al, (2006). Local organizations in partnership with government entities, businesses, and community members can facilitate the co-creation of solutions and shared knowledge to drive inclusive digital initiatives (Brush et al., 2021). Collaborative networking will assist communities in unlocking new possibilities and drive sustainable outcomes, eventually digitally empowering individuals and communities ERND, (2023).

To achieve inclusion, access to digital technologies across different populations has to be equitable and be used meaningfully (UN Habitat 2021). Best initiatives address more than inclusion, they address digital empowerment, opportunity, and digital excellence (Alalemu, 2013). Connectivity initiatives should capacitate communities to use technology as a tool, for education, economic development, and social well-being (Smith & Brown 2019). Communities may start as very basic users who simply need access to resources at a community technology center or a library (Alalemu, 2013).

In achieving the Sustainable Development Goals, community-driven connectivity must ensure equal access to digital resources, aligning with the goal of digital inclusion for all community members (Maria et al; 2021). Online learning tools and resources for skill development, promotes digital literacy which will in turn promote sustainable initiatives (World Bank, 2002).

Inclusive policies which facilitate digital literacy skills development programs play an important role in the broader framework of community development and empowerment According to Khan& Patel (2019), equipping individuals with the competencies to access information, and

utilize online tools effectively, contributes in empowering them to advocate for their needs. Literacy skills enable communities to access online resources for personal and professional growth and also to effect social change and community development (Khan, Patel, 2019).

World Bank (2015) emphasized that, sustainable digital efforts require deep local engagement and ongoing participation making the concept of sustainability central to the success of rural digital initiatives. Empowered community members are involved in the planning, implementation, and maintenance processes, making the initiatives endure (World Economic Forum, 2021)

2.9 Gaps in Literature.

By exploring the Interconnectedness of key concepts, the study sort to effectively fill both knowledge and literature gaps in the discourse surrounding rural community empowerment through digital inclusion. The focus is on pragmatic strategies to advocate for policy changes, enhance digital literacy, promote sustainable connectivity, and foster collaborative networking can significantly contribute to an enriched understanding of how to empower communities in the digital age. This holistic approach can inspire and inform practitioners, policy makers and researchers alike in developing more inclusive and effective digital initiatives

From the literature reviewed it is evident that the field of community-driven digital initiatives lack community-led research. It is heavily reliant on institutional perspectives. Research by communities themselves provides invaluable insights into local realities, cultural context, and lived experiences that institutional studies may miss. Community-driven research can offer more tailored and practical solutions, as it's grounded in the specific challenges and opportunities faced by those communities. This study in Murombedzi, seeks to address this gap by incorporating community voices throughout the research ensuring that the study reflects the lived experiences and perspectives of the people involved.

Secondly there is a gap in implementation caused by limited documented frameworks. While there are many reports and analyses on community digital initiatives, documented frameworks that provide actionable guidance are scarce giving rise to a research gap, due to a lack of guidance for stakeholders interested in similar initiatives. The study seeks to fill this gap by creating a practical framework that provides step by step guidance for communities.

2.10 Summary of chapter

The main purpose of this chapter was to review studies that offer different perspectives and empirical insights into the multifaceted nature of rural digital inclusion, emphasizing the importance of community-led approaches, collaborative networks, policy advocacy, and sustainable strategies for empowering rural communities through effective digital initiatives, to identify gaps that the study can fill. The identified concepts were explored to determine their interconnectedness to inform best practices and challenges of adoption.

CHAPTER 3

RESEARCH METHODOLOGY

3.0 Introduction

Chapter 3 outlines the research design, the research method, the population under study, the sampling procedure, and the method that was used to collect data. The reliability and validity of the research instrument are addressed. Data analysis and presentation techniques, and ethical standards upheld throughout the investigation are also discussed. The use of each methodology is justified, primarily in light of the study's goals and also the examined literature. The chapter was organized according to Saunders, Lewis, and Thornhill (2019) research onion.

3.1 Research Philosophy

Refers to the set of beliefs concerning the nature of the reality being investigated and the choice of the type of research philosophy applied in an area of research study depending on the knowledge being investigated (Chege and Otieno, 2020). It is important because it shapes the entire research process. It influences the research design, methods chosen, data interpretation and the way findings are presented. Having a clear research philosophy helps researchers maintain consistency, align their approach with their beliefs, and produce rigorous and meaningful research. Research philosophies, includes, Positivism, Interpretivism, and Pragmatism amongst many paradigms (Saunders et al 2019).

This study embraced a Pragmatic philosophical approach

3.1.1Pragmatism

Pragmatism is a philosophical and epistemological framework for interrogating and evaluating ideas and beliefs in terms of their practical functioning (Allemang et al, 2022). Emphasizing this principle of actionable knowledge as a starting point for research, researchers can develop research agendas anchored in respondent experiences and, hence, ensure the research is of practical relevance.

Conditions where Pragmatism is used

Pragmatism is frequently employed in the development of public policies and governance to prioritize solutions that are practical, feasible, and likely to produce desirable outcomes, based on the current context and needs. In the field of healthcare, pragmatism as a research philosophy in patient-oriented research as an engagement strategy are combined to strengthen the process and the outcomes of the research (Allemang, et al.; 2022). Pragmatism is also widely used in business management and decision-making to address operational challenges, allocate resources efficiently and navigate complex market conditions, by prioritizing practicality and effectiveness over theoretical considerations pragmatic business management focuses on implementing strategies that yield tangible results and contributes to the company's success in a competitive environment (Kaushik and Walsh)

Justifying the use of Pragmatism in this Study

The researcher believes that knowledge, and understanding are constructed through the interactions and experiences of community members, emphasizing that interpretations of digital inclusion must be rooted in the community's lived experiences. Hence research instruments such as in-depth interviews, open ended surveys, focus groups and ethnographical elements were used.

Pragmatism encouraged active stakeholder involvement in the research process, including policy makers, technology experts, and community members ensuring that the study was responsive to the needs of the community (Kaushik and Walsh, 2019). Another reason was that Pragmatism emphasizes evaluating the outcomes of interventions (Abutabenjeh and Jaradat, 2018). This practical relevance ensures that the findings of the study can inform policy and practice thereby contributing to improve the effectiveness of digital connectivity initiatives in rural communities.

As a result, the findings of the study can be used to drive actionable changes, enhancing the study's relevance and impact on rural digital inclusion efforts in Murombedzi. Furthermore, the researcher recognizes and acknowledges the inherent value of local knowledge, community participation, and ethical considerations. This was achieved by carrying out the study with a deep respect for the community's values, aspirations, and perspectives.

3.2 Research approach

The research approach is the research plan and procedure made up of steps of broad assumptions to detailed methods of data collection, analysis, and interpretation. It is therefore, based on the nature of the research problem being addressed and the reasoning behind the choice (Cooper and Schindler, 2017). Its purpose is to keep the study on course, the researcher focused on the research goals and objectives. The research approach involves investigation that leads to discovery and increasing knowledge in a systematic way (Saunders, *et al.*, 2019.

According to Saunders et al. (2019) there are three main approaches of research, which can be used in any research investigation: deductive, inductive, and abductive approaches. A deductive approach (quantitative) is a suitable method when developing a research strategy to test hypotheses, while an inductive approach (qualitative) is more suitable for the development of theory. An abductive approach mixes the two approaches. In contrast to deductive theory and inductive theory, which move the researcher from theory to data and vice versa, abductive theory effectively enables the researcher to move back and forth between data and theory (McCombes, 2019). Given its adaptability, a well-developed abductive (mixed method) technique can be used in a number of research situations and is most likely suited to postmodernism, pragmatism, or critical realism (Curran and Blackburn, 2017). This study adopted a mixed-method Approach.

Mixed Method Approach Justification

One of the ultimate goals of the research was to inform evidence-based policy and practice. A mixed methods approach provides rich insights into the factors that contribute to the success or failure of these initiatives as well as the impact they have on community development by combining qualitative narratives with quantitative data, the researcher can offer nuanced recommendations for policymakers, funders, and practitioners (Kaushik, and Walsh, 2019).

Mixed methods approach involved the use of both, qualitative and quantitative approaches in tandem so that the overall strength of the study is greater than either qualitative or quantitative research (Cresswell, 2014).

3.2.1 Qualitative Approach

Qualitative Techniques used in this study were In-depth interviews, Focus group discussions, and interviews.

In-depth interviews

In-depth interviews were used to capture detailed insights, perspectives and experiences of key stakeholders and community leaders. This allowed for rich contextual understanding and identification of success factors and barriers in community-driven projects.

Focus Group Discussions

Focus group discussions were employed to facilitate group interactions among community members, to gather collective insights, opinions, and collaborative ideas.

Ethnographic Elements

Ethnographic elements were incorporated into the interviews by focusing on storytelling, personal narratives, and cultural contexts to capture the unique perspectives, motivations and aspirations of community members and stakeholders involved in digital inclusion efforts. This allowed for the uncovering of hidden insights, unspoken challenges, and community-driven solutions that could not be captured through traditional interview methods thereby enhancing the research depth and relevance.

3.2.2 Quantitative Approach

Quantitative techniques used in this study are Questionnaires and statistical analysis

Questionnaires

The purpose was to gather quantitative data on key connectivity challenges, community digital needs, preferences, and satisfaction levels with digital services, infrastructure projects, and

collaborative programs this allowed for systematic data quantification, supporting statistical analysis for identifying patterns and trends.

Statistical analysis

Quantitative data obtained from questionnaires was analyzed to quantify impacts, measure effectiveness, and identify correlations. This enabled statistical testing, hypothesis validation, and numerical interpretation of data to derive meaningful insights and draw informed conclusions.

Integrating both qualitative and quantitative techniques allowed for a thorough examination of rural digital inclusion efforts in Murombedzi offering multi-dimensional insights, triangulated data validation and enabled the researcher to capture qualitative narratives alongside quantitative metrics, enhancing the depth and breadth of the study's findings thereby contributing to evidence –based recommendations for fostering sustainable community-driven digital initiatives in Murombedzi.

3.3 Research Strategy

According to Sassower (2017), a research strategy is a step-by-step plan of action that directs the researcher's thoughts and efforts, allowing them to perform research methodically and on schedule to produce high-quality results and thorough reporting. The overall direction of the research, as well as the methodology used, is provided by the research strategy. Examples of these research methods include case studies, experiments, surveys, action research, grounded theory, and ethnography. This study employed a pragmatist research philosophy using mixed methods techniques, case study, survey, action research, grounded theory and an element of ethnography.

Action Research Elements

Action-oriented research elements were infused, integrating participatory observations, engagement, and collaboration with community members, ensuring that the study's outcomes directly support actionable change within the community. This method is suited for studying unique social problems that cannot be replicated outside that context, Cresswell (2014).

Participatory Research Framework

The researcher grounded the research within a participatory research framework (Vaughn, 2020) emphasizing community involvement, local expertise, and the co-creation of insights and findings to foster an authentic, collaborative approach to understanding digital inclusion within the community, thus providing a voice for the participants.

Ethnographic Elements

Living with the subjects they are researching is common practice for Ethnographers (Bartunek, Li, and Easterby-Smith, 2019). Data was gathered from key informants, who are those with the most in-depth cultural knowledge. This was done by incorporating ethnographic elements into the interviews aiming to capture some hidden meanings in the responses and the cultural, social, and contextual aspects that shape digital inclusion initiatives within the community, enabling the researcher to understand of local dynamics.

Reflexive Research Practice

The researcher prioritized reflexive research practices, encouraging critical self-reflection and transparency, ensuring that the research process was openly documented, fostering authenticity and trust with the community.

Data Analysis

Thematic analysis of qualitative data was utilized to identify key themes, challenges, successes, and community perspectives related to digital inclusion initiatives.

Descriptive Statistical Analysis

Statistical analysis of quantitative data, providing a quantitative summary of digital infrastructure impact and perceptions within the community was carried out.

3.4 Research Design

It is a plan targeted at resolving a particular research topic Saunders, et al. (2019). Also, the framework of the research methodologies and procedures a researcher selects to carry out a study (Poole & Poole, 2021). The layout enables researchers to focus on developing research

techniques appropriate for the topic and set up their investigations for success (Poole and Poole, 2021). The techniques include exploratory, experimental, explanatory, case study, descriptive, cross- sectional, and longitudinal research designs. This study employed exploratory and explanatory designs research.

3.4.1 Exploratory research

When a researcher has no prior data or only a small number of studies to draw upon, they perform exploratory research (Schein, 2017). This study is occasionally casual and unorganized. It acts as a tool for preliminary investigation and offers a speculative or theoretical notion of the investigation's issue. Thus, it is appropriate whenever a researcher wants to learn something new about a topic. Exploratory research's ability to further knowledge of a topic or phenomenon that is loosely defined is its strength. This is consistent with the study's decision to allow for subjectivity. The exploratory concept was combined with the explanatory research design approach.

3.4.2Explanatory research

Explanatory research designs seek to justify the investigator's conclusions and hypotheses in order to advance the theory (Onwuegbuzie, 2016). In order to provide the reader with the findings that address the what, how, and why of the research's fundamental thesis, the researcher uses this research strategy to explore the boundaries and limits of a subject. The explanatory research design is employed to identify the core issue or a fresh approach to a challenge. As a result, the explanatory design is concentrated on providing justifications for why a phenomenon behaves in a particular way (Onwuegbuzie, 2016). This study strategy was chosen because it may be applied to both qualitative and quantitative studies.

3.4.3 Content Analysis

Case studies are in-depth analyses of specific individuals, social groups, or institutions. Depending on the goal of the study and the design picked by the researcher, a case study may be categorized as either quantitative or qualitative research (McMurdo, Mole & Paterson, 2020). For a case study to be regarded as a qualitative study, just like other kinds of qualitative studies, the researcher must be more interested in what the experiences mean to the individuals

themselves than in extrapolating findings to other groups of people. Although case studies are not used to evaluate hypotheses, they can be used to develop it (Flammer & Bansal, 2017). The phrase "content analysis" refers to the process of analyzing communication messages discovered through case studies and other kinds of qualitative research (Zubair, 2023).

3.4.4 Thematic Analysis

Thematic analysis was conducted following Braun and Clarke's (2006) six-phase framework. It provided a robust framework for analyzing the qualitative data, allowing for a comprehensive understanding of the challenges and opportunities faced by the Murombedzi community in relation to digital connectivity. The use of participants' exact words ensured that their perspectives are authentically represented, enriching the overall findings of this study.

3.5 Sampling Procedure

A sample is a subset of individuals or participants from within a population to estimate the characteristics of the whole population. Researchers attempt to collect samples that are representative of the population in question (Mintzberg and Waters, 2018). It is related with the selection of a subset of individuals from within a population to estimate the characteristics of a whole population (Mintzberg and Waters, 2018)

3.5.1 Population

According to Kersley, et al. (2017), population refers to the total number of items that the research's conclusions are to be attributed to. It comprises of the actual population and the targeted population. Residents of Zvimba South were the actual population of this study.

3.5.2 Target Population

The target population of Murombedzi according to the Population census of 2022 is 285.258. It was the population from which a sample was drawn (Cresswell 2014). The researcher targeted Murombedzi community as it is the District Service Center.

3.5.3 Unit of Analysis

A unit of analysis is an object of study within a research project. It is the smallest unit a researcher can use to identify and describe a phenomenon, the 'what' or 'who' the researcher wants to study (Cresswell and Poth, 2018). A clear unit of analysis assisted the researcher in forming the hypothesis, decide on the sampling method, select the right measuring instrument for data collection, decide valid data analysis option and generalize the results to a population. In this study the geographical unit of analysis is Murombedzi, situated within Zvimba Rural District Council, Mashonaland West province in Zimbabwe. Individual community members, local authorities, and technology experts in Murombedzi formed the unit of analysis for this study. The researcher was interested in investigating the aggregate behavior, perception, attitude or opinion of these as a community towards adopting community-led digital connectivity initiatives.

3.6 Sample Size Determination

Calculating Sample Size with Margin of Error, Population, and Expected Response Rate. According to the Population census of 2022, Murombedzi, Population is 285.258, the margin of error was taken to be +-5%, assuming a conservative response rate of 50%. For the questionnaire, any resident of Murombedzi has an equal chance of being picked and participation will be on a voluntary basis.

The required sample size is approximately 385 using the RaoSoft sample size calculator RaoSoft, (Inc. n.d.).

Taking 10% of the figure for Pilot Test =36 people

For the Qualitative part of the research study interview guides.

According to the audio guides on the platform, the sample size should be small, 10-30. 10% of that for the pilot test = approximately 1 person for each guide.

Sample	size	Instrument
Murombedzi Community Members (focus Group)	10	Interview Guide
Community Information Center Staff	1	Interview Guide
Technology experts/ Providers	2	Interview Guide
Local Authorities Officials	1	Interview Guide
Survey	371	Questionnaire
Total	385	

3.7 Sampling Techniques

There are various sampling strategies that are available to researchers which include probabilistic and non-probabilistic sampling strategies.

3.7.1 Probability sampling

Probability sampling includes some form of random selection in choosing the elements (Lewis, Bromley and Sutton, 2021). Greater confidence can be placed in the representativeness of probability samples. This type of sampling involves a selection process in which each element in the population has an equal and independent chance of being selected. Four main methods include: 1) simple random, 2) stratified random, 3) cluster, and 4) systematic (Lauren, 2020). Simple Random Sampling is used when the population members are similar to one another on important variables (Lewis, Bromley and Sutton, 2021). It ensures a high degree of representativeness. Systematic Sampling is more suitable when the population members are similar to one another on important variables (Kuvaas, 2018). It ensures a high degree of

representativeness, and less need to use a table of random numbers. Cluster Sampling is more suitable when the population consists of units rather than individuals (Harkiolakis, 2020). It is easy and convenient

3.8 Non-probability sampling

The elements that make up the sample are selected by non-random methods. This type of sampling is less likely than probability sampling to produce representative samples (Kivunjal, 2017). Even though this is true, researcher can and do use non-probability samples. The three main methods are: 1) convenience, 2) quota, and 3) purposive (Kersley, et. al., 2017).

Convenience Sampling is suitable when the members of the population are convenient to sample (Kivunja1, 2017). It ensures convenience and is relatively inexpensive. Quota Sampling is more suitable when strata are present and stratified sampling is not possible (Kivunja1, 2017). It ensures some degree of representativeness of all the strata in the population as limits are placed for each stratum.

The researcher used stratified random sampling for questionnaires and purposive sampling for the interviews.

3.9 Stratified Random Sampling for Questionnaires

Stratified Random Sampling involves dividing the population into homogeneous subgroups (strata) based on specific characteristics, then randomly selecting samples from each stratum. It is more suitable when the population is heterogeneous and contains several different groups, some of which are related to the topic of the study (Kivunjal, 2017).

The subgroups used in this study were, community members, technology experts, community Formally employed regardless of sector, Students, Informal traders, this sub-group included but not limited to, Rank Marshals, Informal Transporters, Vendors, for example, those selling food and airtime, second hand clothing sellers and last sub-group of, Formal business, persons regardless of sector.

This approach ensured proportional representation of different segments of the population. Using stratified random sampling for questionnaires helped the researcher capture a broad spectrum of

perspectives, ensuring that the survey responses were reflective of the diversity within the rural community of Murombedzi, thereby enhancing the representativeness of the sample, allowing for comparisons across different strata, and improving the reliability of survey results by considering variations in the population.

3.10 Purposive Sampling for interviews

Purposive sampling refers to a group of non-probability sampling techniques in which units are selected because they have characteristics in the sample (Kivunjal 2017) Purposive sampling enabled the researcher to target key informants, experts, community leaders, or individuals with in-depth knowledge and experiences related to rural digital inclusion initiatives, to provide valuable insights or unique perspectives relevant to the research objectives. Community participation is at the core of community-driven digital connectivity initiatives hence the need for focus group discussions.

Purposive sampling facilitated access to targeted participants who possessed critical knowledge, allowing for in-depth exploration of specific issues, and ensured a focused collection of rich qualitative data through personalized interactions.

3.11 Research Instruments/ Reliability and Validity

Research instruments are tools, techniques, or devices used by researchers to collect data, measure variables, or facilitate data analysis in a research study to gather empirical evidence, qualitative insights, or quantitative measurements to address effectively the research questions and objectives of the study. Research instruments are selected and designed based on the nature of the study, the research goals and the type of data needed (Creswell, 2014). The main data collection methods can be categorized into primary methods of data collection and secondary methods of data collection.

3.11.1 Primary data collection methods

Primary data is what is generated from the first-hand experience of the researcher themselves rather than data they've sourced from the past. The data gathered under primary data collection methods is also very specific to the researcher's motive and what they're trying to achieve.

Primary data collection methods can be divided into two main categories quantitative and qualitative research.

3.11.2 Data collection methods in quantitative research

Data collection methods involve gathering numerical data that can be analyzed statistically. Common methods are Surveys and experiments. A questionnaire is a tool used mostly in normative surveys for the collecting of data (Harkiolakis, 2020). This is a carefully crafted form or document that has a series of questions that are intended to elicit replies from respondents or research informants in order to gather data. Closed-ended questions are typically used to collect quantitative data.

3.11.3 Data collection methods in qualitative research.

Primary data collection methods include interviews and focus group discussions. Open-ended questions can be used to acquire qualitative data. According to Bartunek, et al (2019), an interview is a conversation between the interviewer (the one asking the questions) and the interviewee (the person being questioned). A list of questions or topics that the interviewer intends to cover throughout the interview is known as an interview guide. This can record non-verbal cues and is primarily used to gather qualitative data. This study applied both (mixed methods approach) qualitative and quantitative data collection methods, by using questionnaires and interview guides.

3.12 Questionnaires

It is a tool used mostly in normative surveys for the collecting of data (Harkiolakis, 2020). Cresswell (2014) defines a research instrument as a tool for data collecting. Instruments that can be used to gather primary data include questionnaires, experiments, observations, and interviews. The project report's list of appendices includes the research instrument as an attachment. A questionnaire, according to Wright and Boswell (2018), is a written form that asks respondents about their ideas and other matters related to the topic of study in addition to a list of questions. . Often, a questionnaire uses both open and closed questions to collect data. Both open-ended and closed-ended items were included in the questionnaire utilized for this study. Closed-ended

questions made it easier for the researcher to code and interpret the data by preventing the researcher from having too many opposing viewpoints.

3.12.1. Structure of the questionnaire

Sections of the questions were separated. The researcher first asked respondents for information about their background and demographics. The parts that follow are now made to elicit details on each of the objectives in the order they are listed. When it came to questions on the objectives, closed-ended questions were used, while open-ended questions were used when the researcher thought participants might want to share their ideas, experiences, or other information.

3.12.2 Advantages of questionnaire

According to Yin (2018), the use of closed-ended questions had the advantage of reducing the divergence of the respondents' responses for consistency and simpler data processing. Questionnaires can effectively measure the behavior, attitudes, preferences, opinions, and intentions of relatively large subjects more cheaply and quickly than other methods. Often, a questionnaire uses both open and closed questions to collect data. This is beneficial as it means both quantitative and qualitative data can be obtained (Cresswell and Poth 2018).

The usage of the questionnaire was beneficial to the researcher as it enabled the researcher to quickly and efficiently gather both data kinds from a huge number of respondents. The Questionnaires were self-administered helping the researcher save a lot of time by allowing for the quick and inexpensive collection of a large amount of data from a large number of respondents, this according to Saunders et al. (2019). The respondents were free to provide their answers without the researcher present. As a result, they would feel comfortable and free providing their own replies knowing that their identities would not be revealed (Yin. 2018).

3.12.3 Interview Guides

Collection of data with the aid of interview guides involved interaction between the researcher and the respondents which needed to be documented. Each interview was conducted in comfortable, secure, and private surroundings, preferably in the interviewees' office or any place which was convenient for them. The interviewees had the assurance that the information which they were going to provide would be treated in the utmost confidence. The researcher encouraged the interviewees to respond, by assuming a neutral stance, invitational attitude

towards them. The interview guide was used to obtain data from focus group discussions, local leaders and Community Information Center staff and Technological Experts
.

3.12.4 Justification for using both questionnaires and interview guide.

With questionnaires, participants are asked to answer a series of preset questions as part of an organized data collection process. They were employed because the researcher wanted to swiftly and effectively collect data from a large number of people. Various formats, including paper-based or online, as well as self-administered or researcher-administered questionnaires were used. Interviews were a more adaptable approach of gathering data that involved asking people open-ended questions. Interviews provided rich information on the experiences, attitudes, and perspectives of participants and allowed for a more thorough study of the research issue. Thus, there were various advantages to using both a questionnaire and an interview guide in one research project. First of all, it made it possible to triangulate data, which refers to the process of gathering the same data from various sources in order to increase the validity and trustworthiness of the results.

3.12.5 Secondary Data

Secondary data analysis involves using existing data sets collected by other researchers or organizations. Information about the Murombedzi Information Center was obtained from POTRAZ publications and local Newspapers. Population statistics were obtained from Zimbabwe Statistics (ZimStat) publications. Analyzing this data has the advantage of being cost-effective and time saving.

3.12.6 Content analysis

This was done by focusing on interpreting the meanings and contexts of content. The strength this method of data collection is that it allowed the researcher to delve deeply into textual and virtual materials to explore meanings, themes and patterns enabling the researcher to gain rich insights into complex phenomena, capturing nuances and subtleties that may be hidden. It

allowed for an inductive approach to data analysis, where themes and patterns emerge from the data itself than being predefined by the researcher.

3.13 Instruments Piloting/ Reliability and validity

The instrument was first given to colleagues to check whether the questions were relevant, unambiguous and clear. The supervisor further critically evaluated the questionnaire and research guide, and suggestions made were implemented. The researcher then carried out a small scale replication of the actual study, targeting a small number of persons with characteristics similar to those of the target group of respondents. The purpose of the pilot study was to determine the feasibility of the study; to test the reliability and validity of the instrument and trustworthiness of respondents for data collection in the main study; to establish how appropriate, understandable and practical the instrument is; to address any problems prior to the main study; and to check the time required for the completion of the questionnaire.

The pilot study demonstrated that the questionnaire was not well structured to cover the intended objectives, it was said to be too long and not specific. This was addressed accordingly. Further the pilot participants kept on asking what would be the benefits of implementing the proposed community driven initiatives, resulting in a fourth research question being added. All queries were improved until the type of data gathered through a given query was consistent with the nature of possibilities under each query.

3.14 Data collection procedures

The data collection procedures employed to comprehensively understand the dynamics of rural digital inclusion in Murombedzi shed light on the transformative potential of community-driven connectivity initiatives.

A multi-faceted approach was adopted to gather comprehensive data on rural digital inclusion in Murombedzi. The first data collection method involved the administration of structured survey questionnaires to residents and stakeholders within the community. These questionnaires were meticulously designed to capture quantitative data on various aspects of digital connectivity, usage patterns, and community needs. By ensuring broad representation across demographic

groups, the survey provided valuable insights into the prevailing digital landscape in Murombedzi and identified key areas for intervention and support.

In addition to surveys, semi-structured interviews were conducted with key community leaders, local leadership, and representatives from local organizations involved in digital infrastructure development and community empowerment initiatives. These interviews served as a platform to delve deeper into the challenges, opportunities, and aspirations related to digital inclusion in Murombedzi. Through open-ended questions and active engagement with participants, the interviews unveiled nuanced perspectives and highlighted the significance of community-driven approaches in fostering sustainable digital ecosystems.

Furthermore, focus group discussions were organized to facilitate dialogue and interaction among community members regarding their perceptions, experiences, and preferences regarding digital technologies. These discussions provided a forum for residents to voice their concerns, share their aspirations, and collectively envision pathways towards digital empowerment. By leveraging the collective wisdom and insights of the community, focus group discussions offered invaluable inputs for designing targeted interventions and initiatives tailored to the specific needs of Murombedzi.

These studies involved systematic observation of digital usage patterns, infrastructure utilization, and community interactions in real-time. By immersing the researcher in the everyday life of Murombedzi, observational studies provided context-rich data on the actual usage and impact of digital technologies within the community, offering valuable insights for informed decision-making and policy formulation.

In conclusion, the data collection procedures employed to study rural digital inclusion in Murombedzi were characterized by a holistic and participatory approach, encompassing surveys, interviews, focus group discussions and observational studies. By adopting a multi-faceted methodology, the researcher was able to gain comprehensive insights into the dynamics of digital inclusion within the community and identify actionable strategies for empowering residents through innovative infrastructure development and collaborative digital initiatives.

3.15 Ethical considerations

The acceptability or suitability of the researcher's behavior with respect to the rights of the respondents and other study subjects, are the study ethics according to Saunders, Lewis, and Thornhill (2019). Before taking part in the study in Murombedzi, participants were told of its purpose. The participants' participation in the study was voluntary, and they were informed (verbally and in writing) that they might stop at any time with no negative consequences.

The participants were given the opportunity to ask questions to clarify the procedure before conducting the interviews. The researcher first explained the purpose of the study and the length of the interview. Assurance was given that anonymity in the final dissertation report would be guaranteed.

Permission to conduct the study in Murombedzi was requested from the BUSE University and permission was also sought from the District Administrator of Zvimba to conduct a research in Murombedzi, which was granted. This was done to enable participants to ascertain the genuineness of the research before they could participate. Furthermore, no participant was given any financial or non-financial reward for participating, but they were all thanked verbally for participating.

3.16 Summary

The chapter outlined the comprehensive data collection procedures, including surveys, interviews, focus group discussions, observational studies, and document analysis, aimed at gaining insights into digital connectivity, usage patterns, and community needs. Ethical considerations are carefully addressed throughout the research process to ensure the rights, dignity, and well-being of participants. The data collected are meticulously analyzed using both quantitative and qualitative methods, allowing for a nuanced understanding of rural digital inclusion in Murombedzi. Through triangulation of data sources and engagement with the community, the chapter highlights the transformative potential of community-driven connectivity initiatives in fostering equitable digital development and empowering residents. Therefore the following chapter will focus on data presentation and analysis.

CHAPTER 4

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.0 Introduction

The chapter focused on the presentation, analysis, interpretation and discussion of collected data from Murombedzi. The questionnaire was the main instrument of the study, backed by the interview guide to collect both quantitative and qualitative data respectively. The response rates of the instruments are presented first. After analysis, the results were presented in form of graphs, tables and charts and in writing (text). The data collected from questionnaires was analyzed with the aid of the Statistical Package for Social Sciences (SPSS 23) and Microsoft excel. Data collected from interviews was analyzed through content analysis. Tables, themes, figures, graphs, cumulative tables and frequencies were used in presenting the data.

4.1 Demographic Information

4.1.1Response Rate

Table 4.1 presents the response rate on the instruments that were employed in data solicitation.

Category	**Type of instrument administered**	**Number of instruments administered**	**Number of instruments returned**	**Response rate%**
Community members	Questionnaire	371	335	90%

CIC staff	Interview Guide	1	1	100%
Technology Experts	Interview Guide	1	1	100%
Local Leadership	Interview Guide	2	2	100%
Focus Group	Interview Guide	10	10	100%
Total		**385**	**349**	**90%**

Source: Primary data, (2024)

The results presented in Table 4.1 shows that 335 out of 371 questionnaires were successfully filled in and returned representing 90% of the respondents. In addition all the 14 scheduled interviews were successfully carried out representing a 100% response in this category. This overall response rate was 90%. According to Shirley and Sushanta (2018), a response rate of at least 70% is acceptable and meaningful conclusions can be drawn from the study hence with a response rate of 90% this study can make meaningful and reliable conclusions..

4.1.2 Gender of respondents

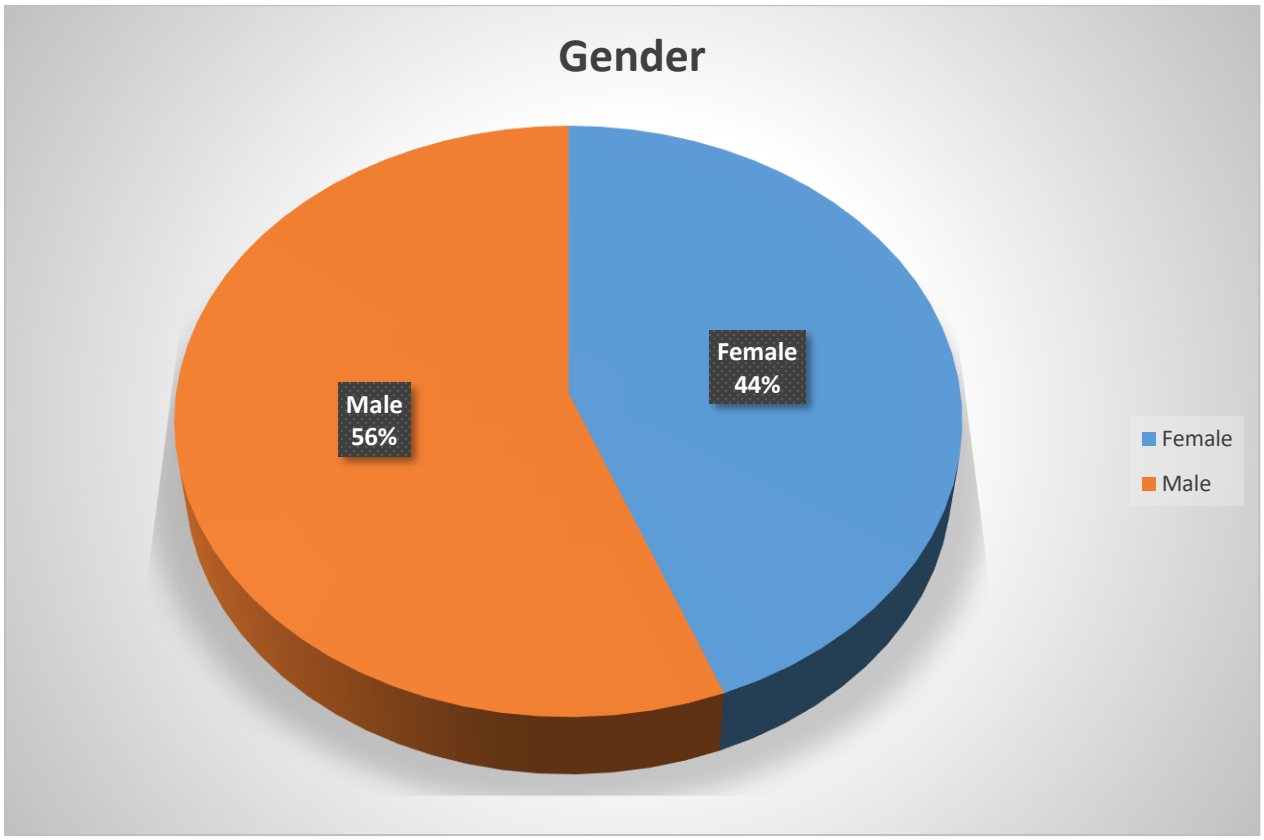


Figure 4.1

Source: Primary data, (2024)

The pie chart above shows the gender distribution of the sample population of 349 individuals where 44% are female (154 individuals) and 56% are male (195 individuals). This indicates a gender imbalance in the sample, with males being more represented than females. This observed gender imbalance may have been influenced by socio-cultural factors that affect participation rates of males having more freedom or availability to participate in studies or surveys, while females might face constraints due to household responsibilities or societal norms. Understanding these factors is crucial for interpreting the data accurately.

This gender imbalance can also impact the study's conclusions, especially if gender differences play a significant role in the variables being analyzed. For instance, if the study pertains to access to digital resources, differing levels of access or digital literacy between genders could skew the results. Ensuring gender-balanced representation is essential for obtaining a holistic

understanding of the community's needs and behaviors. Scholarly evidence supports the significance of gender considerations in research. Connell (2019) discusses how gender roles and expectations can significantly influence participation rates in various activities, including research studies.

4.1.3 Age of respondents

Table 4.2

Age	**Number**	**Percentage (%)**
Less than 25	42	12
25 to 30	63	18
31 to 35	81	23
36 to 40	50	14
41 to 45	52	15
46 to 50	39	10
Over 50	22	6
Total	**349**	**100**

Source: Primary data, (2024)

The age distribution among the 349 participants is diverse for capturing a broad spectrum of experiences advocated by Warburton and McLaughlin (2015), The highest representation was found in the 31 to 35 years category, this was followed by the age group 25 to 30 years accounting for 18% of the sample, evidencing a trend among younger populations who are often more adaptable to new technologies and innovations. Moreover, the inclusion of the 41-50 years

age range, represented at 25%, holds considerable socio-economic influence and provides valuable insights into stability and continuity within communities. However, the lower representation in the 50+ category, making up 6% of the participants, highlights common challenges in engaging older populations in research, such as health issues or lower mobility as noted by McMurdo et al. (2021).

4.1.4 Period of residence in Murombedzi

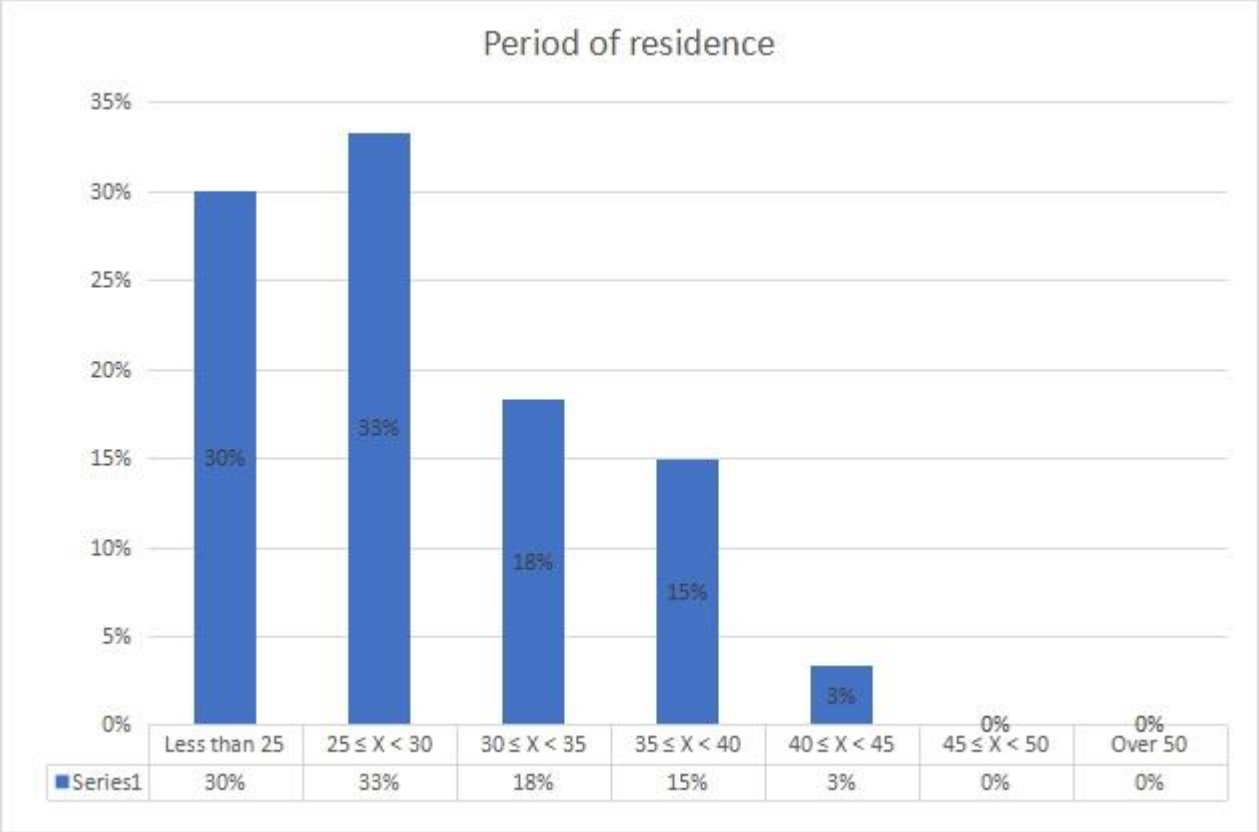


Figure 4.2

Source: Primary data, (2024)

The table above shows the period in number of years which the respondents have been residents of Murombedzi. 30% of the respondents noted that they had less than 25 years of age being residents of Murombedzi. 33% of the respondents noted that they had between 25 to 30 years of

age living in Murombedzi. 18% of the respondents noted that they had between 30 and 35 years of age being residents of Murombedzi. 15% of the respondents noted that they had between 35 and 40 years of age being residents Murombedzi. 3% of the respondents noted that they had between 40 and 45 years of age being residents of Murombedzi. None of the respondents had being staying in Murombedzi for over 45 years. The distribution of the years of residents' shows that the study respondents had stayed in Murombedzi long enough to take part in a study concerning the impact and effectiveness of community-driven digital inclusion initiatives within the Murombedzi community.

Occupation

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< Student	10	38.6	38.6	38.6
	Employed	23	29.5	29.5	68.1
	Farmers	18	18.2	18.2	86.3
	Informal Trader	13	13.7	13.7	100
	Total	64	100.0	100.0	

The demographic portrait of Murombedzi's community encapsulates a mosaic of occupational roles, reflecting the multifaceted nature of its economy. Among the 385 participants, approximately 29.5% are employed, with another 18.2% engaged in farming activities. These roles, while diverse, converge to sustain the local economy and contribute to its resilience and 13.7% percentage of informal traders underscores the significance of micro-enterprises and small-scale commerce in driving livelihoods and fostering economic dynamism within the community.

In tandem, the educational composition reveals a substantial presence of students, constituting approximately 38.6% of the sample. This prevalence reflects the community's investment in

human capital development and highlights the pivotal role of education in shaping its future trajectory. The considerable representation of students suggests a vibrant cohort of young individuals poised to become the next generation of professionals, entrepreneurs, and community leaders. Scholarly research, such as that by Karimova (2023), underscores the transformative power of education in fostering social mobility and economic empowerment. By nurturing a robust educational ecosystem, Murombedzi not only cultivates individual potential but also lays the foundation for sustainable development and prosperity for generations to come.

Reliability test

Graham, (2020) postulates that reliability is the degree to which an instrument used in a study produces consistent results given that the same research instrument is administered more than once. Before further analysis was done on the data gathered through questionnaires the researcher tested the instrument for reliability. Various measures can be employed in measuring reliability such as first and second eigenvalues, Dillon Goldstein Rho and Cronbach's alpha. This study used Cronbach's alpha to measure questionnaire reliability. The questionnaire was made up of four constructs namely key connectivity challenges faced by residents in Murombedzi, community-Driven Solutions be leveraged to enhance digital connectivity in Murombedzi, Critical components essential for the successful adoption digital inclusion and the benefits of digital connectivity within Murombedzi community. The table below shows the results of the reliability test, run in SPSS version 23.

Table 4.3: Cronbach's alpha

Construct	**Number of items or Manifest variables**	**Cronbach's alpha**
Key connectivity challenges faced by residents in Murombedzi	4	0.814

Community-Driven Solutions be leveraged to enhance digital connectivity in Murombedzi	4	0.772
Critical components essential for the successful adoption digital inclusion	4	0.751
The benefits of digital connectivity within Murombedzi community	4	0.789

Source: Primary data, (2024)

Table 4.4 above shows the values of Cronbach alphas for the four constructs that made up the questionnaire on Rural Digital Inclusion in action: Empowering community-driven connectivity in Murombedzi through Innovative infrastructure development and collaborative digital initiatives. The first construct was key connectivity challenges faced by residents in Murombedzi and this construct constituted of 4 items. The respective Cronbach's alpha value for this construct was 0.814 which was significant given that the acceptable Cronbach alpha value should be bigger than 0.7. This shows that the items or manifest variables which made up the construct key connectivity challenges faced by residents in Murombedzi were relevant in measuring the respective construct. The other construct was community-Driven Solutions be leveraged to enhance digital connectivity in Murombedzi which constituted of 4 items or manifest variables. The respective alpha value of this construct was 0.772 which is greater than 0.7 hence acceptable and reflecting that the items under this construct were internally consistent. The third construct was Critical components essential for the successful adoption digital inclusion which constituted of 4 items or manifest variables. The respective alpha value of this construct was 0.751 which is greater than 0.7 hence acceptable and reflecting that the items under this construct were internally consistent. The fourth and last construct was the benefits of digital connectivity within

Murombedzi community which was made up of 4 items or manifest variables. The respective alpha value of this construct was 0.789 which is greater than 0.7 hence acceptable and reflecting that the items under this construct were internally consistent. An analysis of table 4.4 above shows that all the items making up the different construct were internally consistent and related as a group.

SECTION B: RESEARCH RELATED QUESTIONS

4.3 Key connectivity challenges faced by residents in Murombedzi

Table: 4.4

Key connectivity challenges faced by residents	**Strongly agree**	**agree**	**Uncertain**	**Disagree**	**Strongly disagree**
Slow internet speeds	62%	20%	12%	6%	0%
Interruptions in power supply	54%	25%	16%	3%	3%
Lack of proper connectivity gadgets	75%	15%	7%	3%	0%
Social isolation	66%	22%	6%	6%	0%

Source: Primary data, (2024)

To identify the key connectivity challenges in Murombedzi, a comprehensive questionnaire was administered to a diverse group of respondents. Through demographic data key stakeholders and

segments with specific connectivity challenges were identified. The respondents shared their experiences and perspectives on internet access, digital literacy, and the impact of digital tools on their daily lives. Analyzing responses common connectivity challenges such as slow internet speeds, power outages and lack of proper connectivity gadgets. Their responses offer valuable insights into how different demographic groups interact with digital technology and highlight the critical areas where the community center can enhance its support to bridge the digital divide and empower residents. The researcher asked the respondents if they faced slow internet connectivity speed when using their digital gadgets. 62% of the respondents strongly agreed that they faced slow internet connectivity speed when using their digital gadgets and a further 20% also agreed to this same notion. In total 82% agreed to this notion, 12% was indifferent and 6% was in disagreement that they faced slow internet connectivity speed when using their digital gadgets. Based on the mode the research can conclude that the residents of Murombedzi faced slow internet connectivity speed when using their digital gadgets. This finding was in line with UN Habitat (2021) which highlight that slow internet speeds in urban and rural communities impact on economic opportunities, education, and access to essential services. Further the findings agree with Community Information Centers in Mexico (2020), which provide information about the impact of slow internet speeds on community information centers, highlighting how access to reliable internet connectivity is essential for economic development, education, and social inclusion, underscoring the significance of addressing these challenges.

Asked if the residents of Murombedzi face interruptions in power supply 54% strongly agreed to this assertion and a further 25% also agreed to the same notion. In total 79% of Murombedzi residents agreed that they face interruptions in power supply, 16% of the respondents were indifferent and 6% were in disagreement that they face interruptions in power supply. Based on the mode the research can conclude that Murombedzi face interruptions in power supply. This finding was in line with Digital Communities Wales (2023) case study which highlighted how power outages disrupt access to online services, affect productivity, and create challenges for businesses and residents and ERND (2023) showing the adverse effects of power outages on agricultural activities as leading to crop losses and financial setbacks.

Asked of their opinions if they lacked proper connectivity gadgets, 75% strongly agreed to this notion while a further 15% also agreed to the same assertion. In total 90% agreed that the residents of Murombedzi lack proper connectivity gadgets, 7% was indifferent and 3% disagreed that the residents of Murombedzi lack of proper connectivity gadgets. Based on the mode the research can conclude that the residents of Murombedzi lack proper connectivity gadgets in line with UNCHR (2022). This report focuses on the impact of digital divides and access to technology. Highlighting how outdated devices limit access to essential online resources, education, and healthcare.

66% of the respondents strongly agreed that social isolation was a connectivity challenge faced by the residents of Murombedzi while a further 22% also agreed to the same assertion. In total 88% of the respondents agreed that social isolation was a connectivity challenge faced by the residents of Murombedzi. 6% of the respondents were indifferent and 6% were in disagreement that social isolation was a connectivity challenge faced by the residents of Murombedzi. Based on the mode the research concludes that social isolation was a connectivity challenge faced by the residents of Murombedzi. Digital connectivity challenges cause communication barriers and social isolation, as discussed by ERND (2023) hindering farmers' access to market information and support networks. Access to reliable internet connectivity is essential for economic development, education, and social inclusion, underscoring the significance of addressing these challenges.

4.4 Community-Driven Solutions that can be leveraged to enhance digital connectivity

Table 4.5

Community-Driven Solutions to enhance digital connectivity	**Strongly agree**	**agree**	**Uncertain**	**Disagree**	**Strongly disagree**

Training on digital skills and digital literacy	54%	30%	10%	6%	0%
Grassroots initiatives such as fundraising for digital infrastructure.	60%	24%	5%	5%	6%
Partnerships with various stakeholders	46%	44%	4%	3%	3%
Seeking donor or government funding	48%	32%	5%	8%	7%

Source: Primary data, (2024)

The success of community-driven solutions relies on understanding the demographics and needs of the community. In a bid to ascertain the community-driven Solutions that can be leveraged to enhance digital connectivity the researcher asked the respondents if training on digital skills and digital literacy can be leveraged to enhance digital connectivity. 54% strongly agreed that training on digital skills and digital literacy can be leveraged to enhance digital connectivity and a further 30% also agreed to the same notion. In total 84% agreed that training on digital skills and digital literacy can be leveraged to enhance digital connectivity, 10% was indifferent and 6% was in disagreement that training on digital skills and digital literacy can be leveraged to enhance digital connectivity. Based on the mode the research can conclude that training on digital skills and digital literacy can be leveraged to enhance digital connectivity. This finding is in alignment with UN (2021) report on SDGs which highlights the importance of bridging the digital divide to reduce inequality and ensure equitable access to opportunities. This solution aligns with SDG 10's goal of reducing inequalities by empowering individuals with digital skills. This training helps bridge the digital gap and creates a more equitable society.

Asked if grassroots initiatives such as fundraising for digital infrastructure can be leveraged to enhance digital connectivity, 60% of the respondents strongly agreed to this notion and a further 24% also agreed to this same assertion. In total 84% agreed that grassroots initiatives such as fundraising for digital infrastructure can be leveraged to enhance digital connectivity, 5% was indifferent and 11% were in disagreement that grassroots initiatives such as fundraising for digital infrastructure can be leveraged to enhance digital connectivity. Based on the mode the

research can conclude that grassroots initiatives such as fundraising for digital infrastructure can be leveraged to enhance digital connectivity. The Murombedzi community's grassroots fundraising initiative to improve digital infrastructure aligns with World Bank (2002) SDG 9, demonstrating a commitment to sustainable development and community participation which emphasizes the importance of community engagement and local knowledge in disaster response and recovery, highlighting the relevance of grassroots involvement in addressing local challenges. Furthermore, the training program on digital skills directly addresses United Nations (2021) SDG 10 by reducing inequalities and empowering individuals with the skills necessary to thrive in the digital age.

Furthermore asked of their opinions if partnerships with various stakeholders can be leveraged to enhance digital connectivity, 46% of the respondents strongly agreed to this notion and a further 44% also agreed to the same notion. In total 90% agreed that partnerships with various stakeholders can be leveraged to enhance digital connectivity. 4% was indifferent and 6% disagreed that partnerships with various stakeholders can be leveraged to enhance digital connectivity. Based on the mode the research can conclude that partnerships with various stakeholders can be leveraged to enhance digital connectivity. By partnering with local businesses and NGOs, the Murombedzi community actively contribute to building a more robust and inclusive digital ecosystem as advocated for by World Bank (2002) on sustainability.

48% of the respondents strongly agree that seeking donor or government funding can be leveraged to enhance digital connectivity. A further 32% also agreed to the same notion. In total 80% of the respondents agreed that seeking donor or government funding can be leveraged to enhance digital connectivity. 5% of the respondents were indifferent and 15% were in disagreement that seeking donor or government funding can be leveraged to enhance digital connectivity. Based on the mode the research concludes that seeking donor or government funding can be leveraged to enhance digital connectivity. Seeking support from donors and governments is a strategy for achieving SDG 10, as it leverages resources to reduce inequalities in access to technology and digital literacy United Nations (2021).

4.5 Critical components essential for the successful adoption of this model within the community.

Table 4.6

Critical components essential for the successful adoption	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
Community engagement	56%	33%	4%	4%	3%
Government support and Donor Funding	46%	33%	10%	6%	5%
Continuous up-grading of Infrastructure	44%	40%	7%	6%	3%
Working together with policy makers and PORTRAZ	39%	48%	3%	6%	4%

Source: Primary data, (2024)

In a bid to ascertain the critical components essential for the successful adoption of this model within the community the researcher asked the respondents if community engagement was a critical component essential for the adoption of a community driven digital connectivity model. 56% of the respondents strongly agreed to this assertion and a further 33% also agreed to the same notion. In total 89% agreed that community engagement was a critical component essential for the successful adoption of a community driven digital connectivity model. 4% was indifferent and 7% was in disagreement that community engagement was a critical component essential for the adoption of a community driven digital connectivity model. Based on the mode the research can conclude that community engagement was found to be a critical component essential for the adoption of a community driven digital connectivity model digital. This finding is at the core of UN-Habitat (2022) play book which emphasizes the importance of community participation and ownership in developing sustainable urban solutions. This aligns with community engagement in digital connectivity initiatives. Jesuit Refugee Service (2021) in Dzaleka Malawi supports this finding. The case study highlights how refugee communities are actively involved in shaping

digital solutions tailored to their specific needs. This demonstrates the importance of involving community members in every stage of the initiative.

Asked if Government support and Donor Funding is a critical component essential for the successful adoption of a community driven digital connectivity model 46% of the respondents strongly agreed to this assertion and a further 33% also agreed to this notion. A total of 79% agreed that government support and donor funding is a critical component essential for the successful adoption of a community driven digital connectivity model, 10% was indifferent and 11% were in disagreement that government support and donor funding is a critical component essential for the successful adoption of a community driven connectivity model. Based on the mode the research can conclude that government support and donor funding is a critical component essential for the successful adoption of a community driven digital connectivity model. This finding is supported by UN-Habitat (2022) play book which has included a help desk for governments discussing the role of governments and donors in supporting urban development projects, including digital infrastructure. Jesuit Refugee Service (2021) in Dzaleka, Malawi provides an example of how governments and donors can play a role in supporting digital connectivity initiatives in refugee camps showing how external support can help overcome financial barriers. NTIA (2021) Toolkit also outlines funding opportunities and government support programs for expanding broadband access and digital inclusion.

Furthermore the respondents were asked of their opinions if continuous upgrading of infrastructure is a critical component essential for successful adoption of a community driven digital connectivity model 44% of the respondents strongly agreed to this statement while a further 40% also agreed to this notion. In total 84% agreed that continuous up grading is a critical component essential for the adoption of a successful community driven connectivity model 7% was indifferent and 10% disagreed that continuous up-grading of infrastructure is a critical component essential for the successful adoption of digital. Based on the mode the research can conclude that up grading of infrastructure is a critical component essential for the successful adoption of a community driven digital connectivity model. It is critical because ICT advancement is fast paced. This finding is supported by UN-HABITAT (2021).The playbook include principles for building sustainable and adaptable infrastructure which can be applied to digital connectivity initiatives, emphasizing the need for upgrades and ongoing maintenance. Jesuit Refugee Service (2021) in Dzaleka, Malawi illustrates how digital infrastructure is being upgraded to meet the evolving needs of the refugee community. This shows the importance of adapting infrastructure to new technologies and demand.

39% of the respondents strongly agreed that working together with policy makers and PPORTRAZ is a critical component essential for the successful adoption of community driven digital connectivity initiatives. 48% of the respondents agreed to this assertion. In total 87% of the respondents agreed that working together with policy makers and PORTRAZ is a critical component essential for the successful adoption of community driven digital connectivity initiatives. 3% of the respondents were indifferent and 10% were in disagreement working

together with policy makers and PORTRAZ is a critical component essential for the successful adoption of community driven digital connectivity initiatives. Based on the mode the research concludes that working together with policy makers and PORTRAZ is a critical component essential for the successful adoption of a community driven digital connectivity model. NTIA (2021) toolkit provides guidance on engaging with policymakers to create supportive policy environments for digital connectivity initiatives. This emphasizes the importance of aligning with government regulations and policies. UN-HABITAT (2021) includes strategies for collaborating with policymakers to implement urban solutions which are relevant to digital connectivity initiatives, emphasizing the need for coordination and collaboration.

4.6 Benefits of Community Driven Digital Initiatives

Table 4.7

Benefits of Community-Driven Digital Initiatives	**Strongly agree**	**agree**	**Uncertain**	**Disagree**	**Strongly disagree**
Promotes Equitable digital Inclusion	54%	28%	8%	6%	4%
Promotes Sustainable Connectivity	38%	38%	12%	6%	6%
Leads to Local development	40%	32%	14%	8%	6%
Creation of jobs and employment prospects	44%	22%	14%	12%	8%

Source: Primary data, (2024)

In a bid to ascertain the benefits of rural community-driven digital connectivity in Murombedzi the researcher asked the respondents if community-driven internet connectivity would lead to equitable and efficient rural digital inclusion. 54% of the respondents strongly agreed to this statement and a further 28% also agreed to the same notion. In total 82% agreed that community-driven connectivity leads to equitable rural digital inclusion. 8% was indifferent and 10% was in

disagreement to the assertion. Based on the mode the research can conclude that community driven connectivity leads to equitable digital inclusion. This assertion was in line with Digital communities Wales (2023) approach. This case study highlights how community-driven initiatives in Wales are addressing the digital divide and providing equal access to technology for everyone, regardless of background. The finding also concurs with UNCHR (2022) which discusses the importance of digital inclusion for protecting human rights and promoting social justice.

Asked if community driven initiatives promotes sustainable digital connectivity, 38% of the respondents strongly agreed to this notion and a further 38% also agreed to the same assertion. A total of 76% agreed that community driven connectivity promotes sustainable development, 12% was indifferent and 12% were in disagreement that community driven digital connectivity promotes sustainable digital connectivity. Based on the mode the research can conclude that community driven digital initiatives leads to sustainable digital connectivity this is in line with World Bank (2015) for sustainability which emphasizes the importance of building sustainable digital infrastructure, including community participation, as a crucial factor for long-term development. The finding also agrees with UN Habitat (2021). UN Habitat playbook showcases how community driven approaches to digital infrastructure are more sustainable and adaptable to local needs.

Furthermore the researcher asked the respondents of their opinions on if community driven rural digital inclusion promotes development of the local community. 40% of the respondents strongly agreed to this assertion and a further 32 also agreed to the same notion. In total 72% agreed that community driven digital inclusion promotes development of the local community, 14% of the respondents were indifferent and 14% disagreed that efficient community driven rural digital inclusion promotes development of the local community. Based on the mode the research can conclude that community driven rural digital inclusion promotes development of the local community, supported by ERND (2023) which offers data on the economic impact of digital connectivity in different regions, potentially illustrating how community-driven projects in Europe contribute to local development. This finding has also been supported by Digital Communities Wales (2023). This case study demonstrates how community-driven connectivity projects have contributed to economic growth and development in Wales.

44% of the respondents strongly agreed that efficient rural community digital connectivity promotes creation of jobs and employment prospects within the local community. A further 22% of the respondents also agreed to the same notion. In total 66% of the respondents agreed efficient rural community driven digital connectivity promotes creation of jobs and employment prospects within the local community. 14% of the respondents were indifferent and 20% were in disagreement that efficient rural digital connectivity promotes creation of jobs and employment prospects within the local community. Based on the mode the research concludes that efficient community driven rural digital connectivity promotes creation of jobs within the local community and the skills acquired improve employment prospects this is also supported by the community-driven connectivity initiative in Wales, highlighted in the Digital Communities Wales report (2023), demonstrating how this approach can promote equitable digital inclusion. By involving local residents in the planning and implementation of the project, it has ensured that everyone has equal access to the internet and its benefits. This aligns with the UNCHR's (2022) emphasis on digital inclusion as a fundamental human right.

SECTION C: INTERVIEW ANALYSIS

Interview Responses from key informants

In fostering digital connectivity and coordinating community-driven efforts in Murombedzi, interviews were conducted with key informants from various sectors. The insights gathered from these interviews provide valuable perspectives on the current challenges and opportunities in enhancing digital inclusion within the community. Key informants included a staff member from the Community Information Center, a technology expert/provider, and two local authority officials. Each of these informants offered unique viewpoints based on their professional experiences and interactions with the community, shedding light on the effectiveness of existing initiatives and potential strategies for improvement. Their responses are critical in identifying the strengths and weaknesses of the current digital infrastructure and in formulating actionable recommendations for future development.

Responses on the Key connectivity challenges faced by residents in Murombedzi

Responses from Community Information Center staff

P1 (Interview) highlighted, "*The internet connectivity in Murombedzi cannot be said to be the best it is not reliable because it is slow and may take too much time than necessary".*

"……Many residents rely on the community center for reliable internet access because they don't have affordable and dependable internet at home."

Adding that*, "Power outages is a big problem because most of the times the Murombedzi center may not have fuel to use generator then we have to wait for electricity otherwise we will not have access to Internet".*

The Community Information Center staff highlighted several key connectivity challenges faced by residents in Murombedzi. One major issue is the inconsistent and slow internet speed, which hinders the effective use of digital resources for education, business, and personal communication. They emphasized that many residents rely on the community center for reliable internet access due to the lack of affordable and dependable home internet services. Additionally, the staff member noted frequent power outages that disrupt internet access and the overall operation of the center. They also mentioned the limited digital literacy among residents, which restricts their ability to fully utilize available digital tools and services. Studies such as Warschauer (2003) highlight the importance of public access points in bridging the digital divide, emphasizing how crucial such centers are in providing connectivity to underserved populations.

P6 (Focus group discussion) asserted that*, "some of the residents have outdated models of gadgets hence they are slow in connecting to the internet".*

Based on the responses highlighted from both the interviews and the questionnaires it can be deduced that residents of Murombedzi face a number of challenges when it comes to digital connectivity. Some of these challenges include slow internet connectivity, power outages and outdated gadgets being used by the residents of Murombedzi. The identification of key challenges demonstrated the potential of digital initiatives to address the different social and economic challenges in line with the lessons learnt from case studies such as Community Information Centers in Mexico (2020), Digital Communities Wales (2023) and UN-Habitat (2021) By tailoring programs to specific needs of the community, addressing barriers to digital

access and literacy, community driven initiatives have empowered communities and improved their quality of life UNCHR (2022)

The scholarly evidence supports the identified challenges, providing insights into their impact on education, business operations, and livelihoods.

Responses on community-driven initiatives that can be leveraged to enhance digital connectivity

Murombedzi community members (focus Group), community Information Center Staff, Technology experts or Providers were interviewed so as to get their opinions on community-Driven Solutions be leveraged to enhance digital connectivity. Highlighted below are their responses from the interviews:

P1 (interview) aired that. "*there is need to enlighten one another through training on digital connectivity, what it means, how it can be attained, how it can be maintained as well as its benefits to the community*".

P2 (interview) noted that, "*contributions by the local community such as the community members can provide fuel for the generators".*

P4 (Interview) highlighted that*, "looking for external funding to improve the digital infrastructure will enhance connectivity".*

P7 (interview) opined that*, "The community driven-initiatives are very important because the community as a whole can address the problems they are facing much better and faster since they are the ones experiencing them and also since it benefits the community more".*

Based on the responses that were highlighted above it is evident that there is need to enlighten one another through training on digital connectivity so as to enhance digital connectivity. Grassroots initiatives such as fundraising for digital infrastructure will also enhance digital connectivity in Murombedzi. It was also deduced that looking for external funding to improve the digital infrastructure will enhance connectivity. The findings of this study concur with World Bank (2002) publication which discusses the effectiveness of community-based governance in

managing common resources, underscoring the value of coordinated efforts in addressing local challenges. The community members also discussed ongoing and planned initiatives aimed at improving digital infrastructure, promoting digital literacy, and making internet access more affordable and widespread. Research by Smith and Lee, (2020) supports the notion that digital literacy is important in achieving digital inclusion and ensuring equitable access to information and services. Digital literacy programs empower individuals by enhancing their ability to use technology for learning, working, and social interaction, which can contribute to economic and social development. The suggestion to provide fuel, donate more computers shows the community's readiness to adopt a community-driven model. The suggestion to pay for using the internet may not be good because it will exclude other community members thereby self defeating, but the willingness to maintain the facility is in line with the concept of Sustainability embedded in the SDGs (United Nations 2021).

Responses on critical components essential for the successful adoption of a community driven digital connectivity model within Murombedzi

Murombedzi community members (focus group), community Information Center Staff, Technology experts or Providers were interviewed so as to get their opinions on the critical components essential for the successful adoption of this model within the community. Highlighted below are their responses from the interviews:

P1 (interview) opined that, "*involving community members in projects of improving digital infrastructure will lead to the successful adoption of such projects*".

P2 (interview) noted that, "*there is need for government support if any projects which involve the community as a whole are to be successful such as the digital inclusion program*".

P5 (interview) aired that, "*continuous research and development is important if digital inclusion projects are to be successful as technology is an ever changing phenomenon*".

P6 (Interview) highlighted that, "*there is need to incorporate regulating bodies such as PROTRAZ and other telecommunication regulators for the successful adoption of digital inclusion programs*".

Based on the responses from the questionnaires as well as the interviews highlighted above it can be deduced that community involvement is essential if any projects which involve the community itself is to be successful. The study also deduced that there is need for government support if any projects which involve the community as a whole are to be successful. Another notable element is that there is need for continuous up grading of infrastructure as technology is an ever changing phenomenon. There is need to incorporate regulating bodies such as PROTRAZ and other telecommunication regulators. These findings concur with Eduardo et al.; (2020) who concludes that the existence of partnerships is also critical in the success of inclusive telecommunications projects. Local authority officials underscored the role of community-driven initiatives in enhancing digital connectivity. They proposed establishing public-private partnerships where the community, local businesses, and government entities collaborate to improve infrastructure and provide affordable internet access. Scholarly evidence from Warschauer (2003), (Smith and Lee, (2020), World Economic Forum (2021), UN-Habitat (2021) and UNCHR (2022) supports the inclusion of the government and effectiveness of these community initiatives for successful adoption of inclusive telecommunications projects.

Responses on the Benefits of community-driven connectivity in Murombedzi

Murombedzi community members (focus Group), community Information Center Staff, Technology experts or Providers were interviewed so as to get their opinions on the benefits of community driven digital connectivity in Murombedzi.

Highlighted below are their responses from the interviews:

P2 (Interview) noted that, "*community driven initiatives if implemented efficiently leads to effective communication and reliable internet connectivity*".

P3 (interview) opined that, "*digital connectivity in Murombedzi would lead to the creation of jobs for example, through maintaining the digital infrastructure*".

P4 (interview) highlighted that, "*there will be local community empowerment if there is digital connectivity which enables activities such as learning and businesses to operate smoothly*".

Based on the responses highlighted above it is evident that community driven initiatives if implemented efficiently leads to effective communication and reliable internet connectivity. Also community-driven digital connectivity in Murombedzi would lead to the creation of jobs. The study also observed that there will be local community development if there is digital connectivity. These findings are in line with Harold, (2021) who concludes that by having efficient digital inclusion programs to specific needs of the community, addressing barriers to digital access and literacy, initiatives have empowered communities into development and improved their quality of life. Townsend et al. (2013) on a digital inclusive-based community development emphasizes the importance of identifying and mobilizing local resources for sustainable development initiatives.

4.8. Discussion of findings

The findings from both the questionnaire responses and the interview data shed light on the multifaceted challenges faced by residents in Murombedzi regarding digital connectivity. Consistent themes emerged across both data sources, providing a comprehensive understanding of the issues at hand. These challenges collectively hinder residents' ability to access online resources for education, business, and personal communication. The questionnaire responses provided quantitative insights into the prevalence of these challenges among different demographic groups, while the interviews offered qualitative perspectives on their impacts and underlying causes.

This research has revealed a compelling case for community-driven digital connectivity initiatives as a powerful tool for promoting equitable digital inclusion, fostering sustainable development, and driving local economic growth. While the challenges faced by the Murombedzi community, including slow internet speeds, power outages, and outdated gadgets, are common in underserved communities, community-driven solutions offer a robust and impactful approach.

Key Findings

Community engagement is crucial

The research underscores the importance of community engagement in every stage of the initiative, from identifying needs to implementing solutions and ensuring ongoing sustainability. This aligns with the emphasis on community ownership in the UN-HABITAT playbook (2022) and the success stories in Dzaleka, Malawi, as highlighted by the Jesuit Refugee Service (2021).

Government Support is Essential

Government support and donor funding have been found to be essential because community-driven initiatives rely on government support and donor funding to overcome financial barriers and build the necessary infrastructure. The NTIA (2021) toolkit provides valuable guidance on securing funding and navigating policy landscapes.

Continuous Upgrading and Policy Alignment

Sustaining digital connectivity requires ongoing infrastructure upgrades and policy environments that support digital inclusion. The UN-HABITAT playbook (2021) emphasizes the need for adaptable infrastructure, while the NTIA (2021) toolkit highlights the importance of working with policymakers.

Benefits of Community-Driven Approaches

Equitable Digital Inclusion

Community-driven initiatives promote equitable access to technology, bridging the digital divide and ensuring everyone benefits from the digital economy. This aligns with the UNCHR's (2022) focus on digital inclusion as a human right.

Sustainable Connectivity

Community-driven projects build resilient and adaptable digital infrastructure that meets local needs, aligning with the World Bank's (2015) emphasis on sustainable development.

Local Development and Job Creation

By empowering communities to shape their own digital landscape, these initiatives foster economic growth, create jobs, and contribute to overall local development, as illustrated in the case studies from Digital Communities Wales (2023).

4.9 Conclusion

In conclusion, the findings from both the questionnaire responses and interview data underscore the significant challenges faced by residents in Murombedzi regarding digital connectivity, including slow internet speeds, power outages, limited digital literacy, and high costs of internet

services. The research findings strongly suggest that community-driven digital connectivity initiatives offer a compelling and effective path towards bridging the digital divide and achieving sustainable development goals. By harnessing the power of community engagement, leveraging government and donor support, and ensuring ongoing infrastructure upgrades and policy alignment, residents can work collaboratively to enhance digital connectivity and promote digital inclusion in Murombedzi and unlock the transformative potential of digital technologies for economic growth, social inclusion, and , and overall well-being.

4.7 Descriptive statistics

Table 4.8: Descriptive

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
KCCF_MEAN	335	2.25	5.00	4.1889	.53075
CDSD_MEAN	335	1.75	5.00	4.0333	.72809
CCEA_MEAN	335	1.25	4.75	3.7889	.77415
BODC_MEAN	335	2.50	4.75	3.9833	.48383

Valid N (listwise)	335				

Source: Authors Computation, 2023 (SPSS-23.0)

Table 4.8 above shows the descriptive statistics of the variables employed in the study. The constructs each with 4 items were computed into new variables namely key connectivity challenges faced converted into KCCF_MEAN had 335 observations with a mean value of 4.1889 translating to agree on the licket scale and a standard deviation of 0.53. CDSD_MEAN had 335 observations a mean of 4.0333 and standard deviation of 0.73. CCEA_MEAN had 335 observations a mean of 3.7889 and standard deviation of 0.77. BODC_MEAN had 335 observations a mean of 3.98 and standard deviation of 0.48. In this case, most of respondents agreed on the items in the constructs used in the study. Therefore, the descriptive analysis that shows the item of each variable is normally distributed and shows that the constructs used are good.

4.8 Correlation Matrix

Table 4.9: Correlation matrix

Correlations

		KCCF_MEAN	CDSD_MEAN	CCEA_MEAN	BODC_MEAN
KCCF_MEAN	Pearson Correlation	1	.417**	.168	.538**
	Sig. (2-tailed)		.004	.269	.000
	N	335	335	335	335

CDSD_MEAN	Pearson Correlation	.417**	1	.318*	.433**
	Sig. (2-tailed)	.004		.033	.003
	N	335	335	335	335
CCEA_MEAN	Pearson Correlation	.168	.318*	1	.628**
	Sig. (2-tailed)	.269	.033		.000
	N	335	335	335	335
BODC_MEAN	Pearson Correlation	.538**	.433**	.628**	1
	Sig. (2-tailed)	.000	.003	.000	
	N	335	335	335	335

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The values shown in table 4.9 above show the correlation matrix between the study variables used in the study namely KCCF_MEAN, CDSD_MEAN, CCEA_MEAN and BODC_MEAN. The sample size used in the study had respondents (returned questionnaires) (n=335). It is evident that at 5% level of significance there is a weak positive relationship with a coefficient of 0.417 between KCCF_MEAN and CDSD_MEAN. This shows that these two variables had a moderate positive significant relationship. A change in the key connectivity challenges will result in a positive moderate change in community driven solutions that enhance digital connectivity. KCCF_MEAN and CCEA_MEAN had a correlation coefficient of 0.168, which shows a weak positive relationship between the two variables signifying that a change in the key connectivity challenges does not significantly result in a change in critical components essential for digital connectivity. KCCF_MEAN and BODC_MEAN had a correlation coefficient of

0.538, which shows a significantly strong positive relationship. This means that a change in the key connectivity challenges will have a positive change in the benefits of digital inclusion. CDSD_MEAN and CCEA_MEAN had a correlation coefficient of 0.318, which shows a weak positive relationship between the two variables signifying that a change in community driven solutions that enhance digital connectivity will moderately result in a change in the critical components essential for digital connectivity. CDSD_MEAN and BODC_MEAN had a correlation coefficient of 0.433, which shows a weak positive relationship between the two variables signifying that a change in community driven solutions that enhance digital connectivity will significantly result in a change in the benefits of digital inclusion. CCEA_MEAN and BODC_MEAN had a correlation coefficient of 0.628, which shows a fairly positive relationship between the two variables signifying that a change in the critical components essential for digital connectivity will significantly result in a change in benefits of digital inclusion.

4.9 Model Summary

Table 4.10

Model Fitting Information

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
Final	0.942a	.888	.626	.817	2.374

The adjusted R2 of the model is .626 with R^2 = .888. This means that the linear regression explains 88.8% of the variance in the data; therefore, the model is a good model since an R-

square close to 1.0 indicates that we have accounted for almost all of the variability specified in the model.

Table 4.10 Coefficients

Coefficients[a]						
Model	**Unstandardized Coefficients**	**Standardized Coefficients**			**Collinearity Statistics**	
B	**Std. Error**	**Beta**	**t**	**Sig.**	**Tolerance**	**VIF**
(Constant)	.352	.533	.660	.511		
KCCF_MEAN	.328	.108	.303	.003	.482	2.074
CDSD_MEAN	.641	.110	.558	.001	.483	2.071
CCEA_MEAN	.317	.129	.238	.020	.479	2.089
BODC_MEAN	.201	.162	.165	.021	.271	3.685
a. Dependent Variable: Rural digital inclusion						

The Durbin-Watson indicates that the assumption of independent error is tenable since for this data, the figure is 2.374, which is greater than two, showed that the model was not suffering from autocorrelation so there are no possibility of spurious regression (Durbin & Watson, 1951). No incidences of multicollinearity are observed in the model since none of the variance inflation factors (VIF) are close to or greater than 5. The analysis of variance table also show that the variables in the model have a statistically significant effect on rural digital inclusion (F=25.32984; Sig. =0.000).

The results also show that all variables have a statistically significant effect on rural digital inclusion. Statistically significant effects are observed on the key connectivity challenges faced (KCCF_MEAN) (t=3.03, sig. = .003); community driven solutions to enhance digital connectivity (CDSD_MEAN) (t=5.58, sig. = .001); critical components to enhance digital connectivity (CCEA_MEAN) (t=2.387, Sig. = .020) and benefits of digital inclusion (BODC_MEAN) (t=1.65, sig. =0.021).

All the four variables (KCCF_MEAN, CDSD_MEAN, CCEA_MEAN and BODC_MEAN) yield positive Beta coefficients indicating that they have a significant impact in rural digital inclusion. Therefore, at Į=0.05 level of significance, the study conclude that key connectivity challenges faced, community driven solutions to enhance digital connectivity, critical components to enhance digital connectivity and benefits of digital inclusion have a positive effect on rural digital inclusion.

The model used can depict as follows:

Rural digital inclusion = 0.352 + 0.328 KCCF_MEAN + 0.641 CDSD_MEAN + 0.327 CCEA_MEAN + 0.201 BODC_MEAN + e

Based on the findings of this study provides reasonable ground to conclude that innovative infrastructure development and collaborative digital initiatives has a positive impact on rural digital inclusion.

4.10 Chapter summary

The chapter focused on the presentation, analysis, interpretation and discussion of collected data from Murombedzi. The questionnaire was the main instrument of the study, backed by the interview guide to collect both quantitative and qualitative data respectively. The response rates of the instruments were presented first. After analysis, the results were presented in form of graphs, tables and charts and in writing (text). The data collected from questionnaires was analyzed with the aid of the Statistical Package for Social Sciences (SPSS 23) and Microsoft excel. Data collected from interviews was analyzed through content analysis. Tables, themes, figures, graphs, cumulative tables and frequencies were used in presenting the data.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Summary

This chapter gives a summary of all the chapters, gives the conclusions drawn and gives recommendations in line with the findings on Rural Digital Inclusion in action: Empowering community-driven connectivity in Murombedzi through Innovative infrastructure development and collaborative digital initiatives. Chapter 1 set the tone of the study by giving the background on empowering community-driven connectivity through Innovative infrastructure development and collaborative digital initiatives. The problem statement, limitations, assumptions, delimitations, and significance of the study as well as definition of key terms were also covered in Chapter 1. The study was guided by the research objectives highlighted below:

i. To identify the key connectivity challenges faced by residents in Murombedzi?
ii. To explore community-Driven connectivity initiatives that can be leveraged to enhance digital connectivity in Murombedzi?
iii. To identify the critical components essential for the successful adoption of this model within the community?
iv. To articulate the benefits of digital connectivity within Murombedzi community?

Chapter 2 looked at the literature relating to Rural Digital Inclusion in action: Empowering community-driven connectivity through Innovative infrastructure development and collaborative digital initiatives. Literature was reviewed in line with study objectives. Literature review helped in coming up with conceptual framework, determining theories relating to the study as well as the empirical evidence.

Chapter 3 focused on research methodology that was used in the study. The study employed a mixed methods approach. Questionnaires with closed ended questions were used in the study as well as interviews in the collection of data for use in the study.

Chapter 4 focused on presenting, analyzing and discussing data that was collected from the Murombedzi community members (focus Group), community Information Center Staff, Technology experts or Providers. The data collected from questionnaires was analyzed with the aid of the Statistical Package for Social Sciences (SPSS 23) and Microsoft excel. Data collected from interviews was analyzed through content analysis. Tables, themes, figures, graphs, cumulative tables and frequencies were used in presenting the data.

5.1 Summary of findings

The following were the findings in relation to Rural Digital Inclusion in action: Empowering community-driven connectivity in Murombedzi through Innovative infrastructure development and collaborative digital initiatives:

5.1.1 To identify the key connectivity challenges faced by residents in Murombedzi

In trying to determine the key connectivity challenges faced by the residents in Murombedzi the research found that the residents of Murombedzi faced slow internet connectivity speed when using their digital gadgets. The study also found that residents of Murombedzi face interruptions in power supply which affects digital connectivity. Another notable challenge in connectivity was that that the residents of Murombedzi lack proper connectivity Infrastructure. It was also observed that social isolation was a connectivity challenge faced by the residents of Murombedzi this is a challenge that (UNCHR 2022) seeks to address within the refugee communities. Also in line with the United nations Universal and Meaningful data connectivity publication United Nations (2021) which emphasizes inclusivity, aiming to ensure that all individuals and communities have access to affordable, reliable, and secure digital connectivity by 2030.

Identification of the challenges will enable co-creation of community driven initiatives that are relevant to the community UNCHR (2022).

5.1.2 To explore Community-Driven connectivity initiatives that can be leveraged to enhance digital connectivity in Murombedzi.

In an attempt to determine the Community-Driven Solutions to be leveraged to enhance digital connectivity in Murombedzi the study observed that training on digital skills and digital literacy can be leveraged to enhance digital connectivity. The G8 Hokkaido Toyako (2008) Declaration recognized the importance of skills development and digital literacy. It was also found that grassroots initiatives such as fundraising for digital infrastructure can be leveraged to enhance digital connectivity. The study was also able to come to a conclusion that partnerships with various stakeholders can be leveraged to enhance digital connectivity. It was also concluded that seeking donor or government funding can be leveraged to enhance digital connectivity, Digital communities Wales (2023) employs this approach.

5.1.3 To identify the critical components essential for the successful adoption of this model within the Murombedzi community.

The research found that community engagement was a critical component essential for the adoption of a community driven digital connectivity model this is strongly advocated by UNCHR (2022). It was also observed that government support is a critical component essential for the successful adoption of a community driven digital connectivity model this was also found by Aspen Institute (2020) Research Center. If adoption of community driven digital connectivity model was to be sustainable it was deduced that there is need for continuous up grading this was on the agenda of G8 Hokkaido Toyako Summit (2008). The study was also able to conclude that working together with policy makers and PORTRAZ is a critical component essential for the successful adoption of a rural community driven digital connectivity model. UNCHR has recognized the importance of engaging policy makers in the host nations. The world Economic Forum 2022, deliberated on this.

5.1.4. To articulate the benefits of adopting community driven digital connectivity initiatives in Murombedzi

The research found adopting community driven connectivity initiatives in Murombedzi leads to equitable rural digital inclusion. The study was also able to deduce that adopting community driven digital connectivity initiatives promotes sustainable development. The research also concluded that community driven digital connectivity initiatives leads to development of the local community. It was also found that adopting community driven connectivity initiatives promotes creation of jobs and employment prospects within the local community. UNHCR (2022) publication on Community-led Connectivity focuses on empowering communities in refugee settings through community-led digital connectivity initiatives observed these benefits in its numerous works with refugees and hosting communities. This was also in line with the G8 Digital Opportunities for All Summit, G8 Hokkaido Toyako Summit (2008).

Overall Conclusion

Based on the findings of this study provides reasonable ground to conclude that increased collaboration and investment in innovative infrastructure development with a focus on sustainability has a positive impact on rural digital inclusion. The study found that slow internet speeds, interruptions in power supply and inadequate infrastructure were key connectivity challenges in Murombedzi. On finding solutions to the key challenges, digital literacy and skills development programs, community fundraising for digital Infrastructure, partnerships with different organizations like non-governmental organizations that promote digital inclusion initiatives, seeking government or donor funding to support community-led connectivity, were found to be suitable in addressing the connectivity challenges in Murombedzi. The study found community engagement, government support, continuous up grading and working together with policy makers and PORTRAZ to be critical components essential for the successful adoption of a community driven connectivity model in Murombedzi. Lastly the benefits of a community driven model found were that it would lead to sustainable digital connectivity, equitable rural digital inclusion, create jobs and increase employment prospects through digital skills and literacy programs and this would eventually lead to local development.

5.2 Recommendations

The study adopted action research elements such that it may be adopted as phase 1 of the project. A structured model, based on synthesized themes and best practices from case studies, provided can be found under the literature review section for other communities who may be interested in

community-driven initiatives. However it is important to emphasize that it is a recommended framework, not a rigid blueprint. Communities will need to adapt it to their specific circumstances.

Based on the findings and conclusions highlighted above and in collaboration with an expert, the research suggests the following recommendations for the Murombedzi community:

Recommendations

1. **Invest in Infrastructure Development:**
   Prioritize investments in expanding broadband infrastructure and improving internet connectivity in rural areas like Murombedzi. This may involve collaborating with telecommunications companies, government agencies, and community organizations to extend network coverage and enhance internet speeds, ensuring equitable access to digital resources for all residents.

Promote Digital Literacy Programs:

Implement comprehensive digital literacy programs targeted at residents of all ages in Murombedzi. These programs should focus on building basic digital skills, educating community members on internet safety and responsible usage, and providing training on utilizing digital tools and platforms effectively. By improving digital literacy, residents can fully leverage the benefits of digital connectivity for personal and socio-economic development.

Foster Community Partnerships:

Encourage collaboration and partnership-building among stakeholders, including government entities, non-profit organizations, local businesses, and community leaders. By working together, these stakeholders can pool resources, share expertise, and coordinate efforts to address connectivity challenges, implement innovative solutions, and sustain digital inclusion initiatives in Murombedzi.

Support Community-Led Initiatives:

Empower community-driven initiatives aimed at enhancing digital connectivity and promoting digital inclusion in Murombedzi. Provide funding, technical assistance, and capacity-building support to grassroots organizations, community centers, and local initiatives that focus on expanding internet access, providing digital skills training, and fostering community engagement around digital technology.

Advocate for Policy Changes:

Advocate for policy changes at the local, regional, and national levels to support rural digital inclusion efforts in Murombedzi. This may include advocating for funding allocations for rural infrastructure development, advocating for regulatory reforms to encourage private sector investment in rural broadband, and promoting policies that prioritize digital inclusion and equitable access to digital resources for all residents. By advocating for policy changes, stakeholders can create an enabling environment for sustainable rural digital inclusion initiatives in Murombedzi and other communities.

5.3 Areas for future research

This study focused mainly on one district which is Murombedzi. Related studies can be carried out in different districts so as to compare the results and see if the findings hold or they differ across varying districts. Future studies can also observe the in-depth benefits or challenges of community driven digital initiatives in a rural community.

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Appendix1 **Questionnaire**

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF COMMERCE

GRADUATE SCHOOL OF BUSINESS

MASTERS OF LEADERSHIP AND CORPORATE GOVERNANCE DEGREE

Dear Respondent

My name is Manera View a student at the Bindura University of Science Education. I am conducting a research on **"Rural Digital Inclusion in action: Empowering community-driven connectivity in Murombedzi through Innovative Infrastructure Development and Collaborative Digital Initiatives".** Please note this research is purely for academic purposes and shall not be used for any other purpose without the consent of the participants and / or organizations concerned. The information gathered will be treated as highly confidential always. I appreciate your willingness to help me in my research effort.

Contacts:

Phone: 0776335964, Email:ruthmanera@gmail.com

Kindly attempt all questions by ticking your response.

SECTION A: Demographic Information

1. Age (*please tick where appropriate*)

Less than 25 years ☐

Between 25 and 30 years ☐

Between 30 and 40 years ☐

Between 40 and 50 years ☐

Above 50 years ☐

2. Gender (*please tick where appropriate*)

Male ☐ Female ☐

3. How many years have you been staying in Murombedzi

Less than 25 years ☐

Between 25 and 30 years ☐

Between 30 and 40 years ☐

Between 40 and 50 years ☐

Above 50 years ☐

4. What is your highest level of Education?

"O" Level ☐

"A" level ☐

Diploma ☐

Degree 

Masters 

Phd 

Other 

SECTION B: RESEARCH RELATED QUESTIONS

5. Key connectivity challenges faced by residents in Murombedzi?

The following are statements on the Key connectivity challenges faced by residents in Murombedzi? . Do you agree? Indicate your response against each of the following statements on a scale of 1-5 as highlighted below: *5= Strongly agree; 4= Agree; 3= Neither agree nor disagree; 2= Disagree; 1= Strongly disagree.*

CODE		1	2	3	4	5
	slow internet speeds					
	interruptions in power supply					
	Lack of proper connectivity gadgets					
	social isolation					

5. Community-Driven Solutions that can be leveraged to enhance digital connectivity

The following are statements on community-Driven Solutions that can be leveraged to enhance digital connectivity. Do you agree? Indicate your response against each of the following statements on a scale of 1-5 as highlighted below: *5= Strongly agree; 4= Agree; 3= Neither agree nor disagree; 2= Disagree; 1= Strongly disagree.*

CODE		1	2	3	4	5
	Training on digital skills and digital literacy					
	Grassroots initiatives such as fundraising for digital infrastructure.					
	Partnerships with various stakeholders					
	Seeking donor or government funding					

7. Essential components for the successful adoption of this model within Murombedzi community?

The following are statements on critical components essential for the successful adoption of this model within the community. Do you agree? Indicate your response against each of the following statements on a scale of 1-5 as highlighted below: *5= Strongly agree; 4= Agree; 3= Neither agree nor disagree; 2= Disagree; 1= Strongly disagree.*

CODE		1	2	3	4	5
	Community engagement					
	Government support					
	Continuous upgrading of digital infrastructure					
	Working together with policy makers and Portraz					

8. Benefits of rural community driven digital connectivity in Murombedzi

The following are statements on benefits of rural community driven digital connectivity in murombedzi. Do you agree? Indicate your response against each of the following statements on a scale of 1-5 as highlighted below: *5= Strongly agree; 4= Agree; 3= Neither agree nor disagree; 2= Disagree; 1= Strongly disagree.*

CODE		1	2	3	4	5
	Promotes Equitable digital inclusion					
	Promotes sustainable development.					
	Creating local jobs and employment prospects					
	Leads to local development					

Appendix 2 Interview Guide

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF COMMERCE

GRADUATE SCHOOL OF BUSINESS

MASTER OF LEADERSHIP AND COPORATE GOVERNANCE

Interview Guide

Dear Respondent

My name is Manera View a student at the Bindura University of Science Education. I am conducting a research on **"Rural Digital Inclusion in action: Empowering community-driven connectivity in Murombedzi through Innovative Infrastructure Development and Collaborative Digital Initiatives".** Please note this research is purely for academic purposes and shall not be used for any other purpose without the consent of the participants and / or organizations concerned. The information gathered will be treated as highly confidential always. I appreciate your willingness to help me in my research effort.

Contacts:

Phone: 0776335964, Email:ruthmanera@gmail.com

SECTION A: DEMOGRAPHIC QUESTIONS

1. What is your age
2. How many years have you been working on your designated post?
3. What is your highest level of Education?

SECTION B: RESEARCH RELATED QUESTIONS

4. What are the Key connectivity challenges faced by residents in Murombedzi?
5. How can community-Driven Solutions be leveraged to enhance digital connectivity in Murombedzi?
6. Which are the essential components necessary for the successful adoption of this model within the community?
7. What are the benefits of community driven digital connectivity within Murombedzi community?

NB: The interviewer will probe for more clarity and explanation during the interview in line with the research related questions.

Thank you for participating in this interview

Appendix 3

BINDURA UNIVERSITY OF SCIENCE EDUCATION

P Bag 1020
741 Chimurenga Rd, Off Trojan Road
Bindura, Zimbabwe

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Tel: +263 66210 – 7615, 7531/2, 7622/4
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gsb@buse.ac.zw
jmwenje@buse.ac.zw

GRADUATE SCHOOL OF BUSINESS

Where Great Minds Meet

25 March 2024

TO WHOM IT MAY CONCERN

REF: REQUEST TO CARRY OUT RESEARCH: MS MANERA VIEW [B227575A], MASTER OF LEADERSHIP AND CORPORATE GOVERNANCE (MLC), PART 2.1 STUDENT

This letter serves to confirm that Manera View **[B227575A]**, is a Master of Leadership and Corporate Governance student in the Graduate School of Business at Bindura University of Science Education.

The student is the final stage of study which requires her to carry out a research. Her dissertation is titled ***"Rural Digital Inclusion in Action: Empowering community-driven digital connectivity initiatives in Murombedzi through innovative Infrastructure development and collaborative digital initiatives."***

We would be grateful if you could give her any assistance she may require.

For more details, please do not hesitate to contact us.

Yours faithfully,

Mwenje

COORDINATOR
GRADUATE SCHOOL OF BUSINESS
FACULTY OF COMMERCE
PRIVATE BAG 1020, BINDURA
OFFICIAL

Dr J. Mwenje
Director, Graduate School of Business

Appendix 4

.All correspondence to be addressed The DDC

Reference:

Telephone:- 2059 (067 215)

Facsimile :- 2014 (067 215)

Email:dazvimba@gmail.com

ZIMBABWE

MINISTRY OF LOCAL GOVERNMENT AND PUBLIC WORKS

OFFICE OF THE DISTRICT DEV. COORDINATOR

ZVIMBA DISTRICT

P BAG 2030

MUROMBEDZI

08 April 2024

TO WHOM IT MAY CONCERN

REF: PERMISSION TO CARRYOUT AN ACADEMIC RESEARCH IN MUROMBEDZI: MANERA VIEW

The above matter refers

View Manera is a final year student at Bindura University of Science Education and is doing a postgraduate degree, Master in Leadership and Corporate Governance.

She has been granted permission to carry out an academic research. The research project is entitled ''Rural Digital Inclusion in Action'' Empowering Community in Murombedzi, through Innovative Infrastructure Development and Collaborative Digital Initiatives."

Manyurapasi J

DISTRICT DEVELOPMENT COORDINATOR

ZVIMBA DISTRICT

Dist. Dev. Coordinator-Zvimba
Ministry of Local Govt. and Public Works
District Development Coordinator
08 APR 2024
P.O. Box 2010, Murombedzi, Zim.
Tel: 067215205?/2152014

Manera View Turnitin

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