

UNIVERSITY OF CAPE TOWN



An Exploratory Study of Financial Access Along the Renewable Energy Sector Value Chain: The Case of SMMEs in South Africa

A Dissertation

presented to

The Development Finance Centre (DEFIC)
University of Cape Town Graduate School of Business

In partial fulfilment
of the requirements for the Degree of
Master of Commerce in Development Finance

by

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December 2024

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DECLARATION

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ACKNOWLEDGMENTS

I would like to express my sincere appreciation and gratitude to my supervisor, Professor Latif Alhassan, for his patience and guidance throughout this journey. Secondly, I would like to thank my employer for the opportunity and support provided for the duration of this program.

I especially want to thank my husband and my children, for the encouragement, support, patience, love and sacrifices made for me to complete this course.

Finally, I want to thank my parents and brothers for encouraging, supporting, and holding me accountable throughout this journey. Thanks for the pointers, proof-reading, and for being sounding boards when needed. You are a blessing.

DEDICATION

I dedicate this research to Joshua and Jeremy. May this be a reminder that you can do hard things and that you have been blessed with amazing capabilities by the Almighty. Pursue your goals and be relentless in your efforts.

ABSTRACT

This research explored the financial challenges encountered by small and medium-sized enterprises (SMMEs) in South Africa's renewable energy sector, with a specific focus on access to finance. The study aimed to provide practical recommendations to assist SMMEs in overcoming financial barriers and promoting sustainable growth within the sector. This research sought to address the gap in existing research on financial accessibility for renewable energy SMMEs and highlight strategies that could empower these businesses to thrive in a developing market. A qualitative research approach was adopted, aligning with an interpretivist philosophy to explore participants' experiences and insights. The research strategy involved a case study design, which allowed for a comprehensive and detailed examination of financial access challenges specific to the South African renewable energy sector. Data collection was conducted through face-to-face, semi-structured interviews. The target population consisted of SMME managers and business owners involved in renewable energy sub-sectors, including solar, wind, and biomass energy. The sample comprised 15 participants, selected through purposive sampling to ensure representation across different types of renewable energy enterprises. The sample size was determined based on theoretical saturation, a point at which no new themes or insights emerged from the data, ensuring comprehensiveness of the findings.

Thematic analysis of the data identified five main themes: financial stability and revenue streams, financial management practices, market demand, operational costs and market conditions. The findings highlighted that financial stability was closely tied to project scale, with larger-scale projects providing more consistent revenue streams, while SMMEs in niche sectors often faced revenue variability. Financial management practices were essential for sustaining operations, particularly in managing costs and planning for fluctuating revenues. Additionally, market demand fluctuations, high operational costs, and broader economic conditions posed significant financial challenges. The study identified various barriers to financial access, such as stringent lending criteria and high collateral requirements, and evaluated alternative financing options, including venture capital, crowdfunding and government support. Recommendations were provided for policymakers and industry stakeholders to improve financial accessibility, including through policy modifications and development of targeted support programs. Overall, this research contributes to an understanding of the financial dynamics of renewable energy SMMEs in South Africa and offers actionable insights into strategies to foster resilience and sustainable growth within the renewable energy sector.

CONTENTS

DECLARATION	i
ACKNOWLEDGMENTS.....	ii
DEDICATION	iii
ABSTRACT.....	iv
LIST OF TABLES	viii
LIST OF FIGURES.....	ix
LIST OF ACRONYMS.....	x
CHAPTER ONE: INTRODUCTION	1
1.1 Introduction and Background to the Study	1
1.2 Research Problem.....	2
1.3 Research Questions	3
1.4 Research Objectives.....	4
1.5 Scope and Justification of the Study	4
1.6 Organisation of the Research	5
CHAPTER TWO: LITERATURE REVIEW	7
2.1 Introduction	7
2.2 Definitions of Concepts and Terms	7
2.2.1 Small and medium-sized enterprises (SMMEs)	7
2.2.2 Renewable energy	8
2.3 Overview of SMMEs and Renewable Energy Finance in South Africa	8
2.3.1 Overview of SMMEs in South Africa.....	9
2.3.2 Renewable energy financing in South Africa	10
2.4 Theoretical Frameworks	14
2.4.1 Resource-based theory (RBT)	14

2.4.2 Agency theory.....	15
2.4.3 The Market for Lemons theory.....	16
2.5 Financial Sources for Renewable Energy SMMEs.....	17
2.5.1 Traditional and Alternative Financing Models.....	17
2.5.2 Project Preparation as a Funding Approach for Renewable Energy SMMEs.....	18
2.6 Nature of Firms and Their Funding Requirements	19
2.7 Regulatory Challenges Affecting Access to Finance	19
2.8 Financial Value Chain of South African SMMEs in the Renewable Energy Sector	20
2.8.1 Stages of the financial value chain for South African renewable energy SMMEs	21
2.8.2 Challenges to accessing financial resources for SMMEs in South Africa	22
2.8.3 Impact of socio-economic and cultural factors on financial accessibility.....	23
2.9 Empirical Literature	24
2.10 Conclusion	26
CHAPTER THREE: RESEARCH METHODOLOGY	27
3.1 Introduction	27
3.2 Research Approach	27
3.3 Research Design	28
3.3.1 Target population and sampling strategy.....	29
3.3.2 Data collection and data instrument.....	30
3.3.3 Data analysis.....	32
3.3.4 Trustworthiness.....	34
3.4 Conclusion.....	35
CHAPTER FOUR: RESULTS AND DISCUSSION	36
4.1 Introduction	36

4.2 Demographical Information	36
4.3 Thematic Findings.....	39
4.3.1 Financial status of SMMEs in renewable energy.....	39
4.3.2 Access to finance for renewable energy SMMEs.....	46
4.3.3 Strategies and recommendations.....	54
4.4 Conclusion.....	62
CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS	63
5.1 Introduction	63
5.2 Summary of Findings	63
5.3 Research Conclusions.....	64
5.4 Recommendations.....	65
5.5 Areas for Further Research.....	67
5.6 Conclusion.....	68
REFERENCES.....	69
APPENDIX A: RESEARCH INSTRUMENT	79
APPENDIX B: INTERVIEW CONSENT FORM	85
APPENDIX C: ETHICAL CLEARANCE	87

LIST OF TABLES

Table 4.1: Demographic profile of respondents	37
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LIST OF FIGURES

Figure 2.1: Power Generation in South Africa.....	12
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LIST OF ACRONYMS

Acronym	Definition
GDP	Gross Domestic Product
IPCC	Intergovernmental Panel on Climate Change
OECD	Organisation for Economic Co-operation and Development
PPA	Power Purchase Agreement
RBT	Resource-based Theory
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SAREC	South African Renewable Energy Council
SBI	Small Business Institute
SMMEs	Small and Medium-sized Enterprises
USD	United States Dollar
ZAR	South African Rand

CHAPTER ONE: INTRODUCTION

1.1 Introduction and Background to the Study

The global transition towards renewable energy sources has garnered significant attention in recent years as countries seek to mitigate climate change and reduce their reliance on fossil fuels (IPCC, 2021). Within this context, small and medium-sized enterprises (SMMEs) play a crucial role in driving innovation and promoting sustainability within the renewable energy sector (Jones & Maphosa, 2019). In South Africa, SMMEs have emerged as key players in the renewable energy value chain, contributing to job creation, economic growth, and environmental sustainability (Khambule & Govender, 2020).

However, despite their potential contributions, SMMEs in the renewable energy sector face numerous challenges, particularly when accessing financial resources (Patel & Naidoo, 2021). Financial access is a critical determinant of SMME success, yet many enterprises struggle to secure the necessary funding to develop and scale their operations (Taylor et al., 2020). This challenge is exacerbated by the unique characteristics of the renewable energy sector, including long project gestation periods, uncertain revenue streams, and regulatory complexities (Green & Ndlovu, 2018).

Understanding the intricacies of financial access along the renewable energy sector value chain is essential to inform policy interventions and support SMME growth and development (Johnson & Patel, 2021). However, existing research in this area is limited, with few studies specifically examining the financial challenges faced by SMMEs operating within the renewable energy sector in South Africa (Gumede & Moyo, 2022). Thus, there is a clear need for further investigation to identify the barriers and opportunities for SMMEs seeking financial access in this context.

This study aims to address this research gap through an exploratory investigation into the financial access challenges encountered by SMMEs operating within the renewable energy sector value chain in South Africa. By examining the factors influencing financial access and proposing strategies for improvement, this research seeks to contribute to the development of evidence-based policy and practice initiatives aimed at fostering sustainable growth and economic development in the renewable energy sector.

Through a comprehensive analysis of the current state of SMMEs in the renewable energy sector and an exploration of potential solutions to enhance financial access, this study aims to

provide valuable insights for policymakers, investors, and industry stakeholders seeking to support the growth and development of SMMEs in South Africa's renewable energy market. Ultimately, the findings of this research could inform targeted interventions and support mechanisms that empower SMMEs to overcome financial barriers and contribute to a more sustainable energy future in South Africa and beyond.

1.2 Research Problem

Despite the growing importance of SMMEs in advancing the renewable energy sector within South Africa, there remains a significant gap in understanding the intricacies of financial access along the renewable energy sector value chain (Khambule & Govender, 2020). This gap in understanding poses critical challenges for SMMEs operating in the renewable energy sector, hindering their ability to access necessary financial resources to sustain and expand their operations effectively (Patel & Naidoo, 2021).

Despite the crucial role of SMMEs in driving innovation and promoting sustainability within the renewable energy sector, they often encounter barriers to accessing finance (Jones & Maphosa, 2019). These barriers include limited access to traditional financing sources, such as commercial banks; securing investment from alternative sources; and navigating complex regulatory frameworks (Gumede & Moyo, 2022). As a result, many SMMEs face difficulties in accessing the capital needed to develop renewable energy projects, invest in research and development, and expand their market presence (Smith & Jacobs, 2020). Furthermore, the unique characteristics of the renewable energy sector, including long project gestation periods and uncertain revenue streams, exacerbate the financial challenges faced by SMMEs (Green & Ndlovu, 2018). These challenges may deter potential investors and lenders from supporting SMMEs in the energy sector, leading to a lack of investment in critical renewable energy projects and technologies (Taylor et al., 2020).

A need exists for research that delves deeper into the specific context of SMMEs seeking financial access in South Africa's renewable energy sector to identify its unique challenges and opportunities. Existing literature lacks a comprehensive understanding of the nuanced financial access challenges encountered by SMMEs operating within South Africa's renewable energy sector value chain. While some studies identified broader barriers to finance for SMMEs, few have focused specifically on the renewable energy sector or closely examined the value chain

dynamics (Gumede & Moyo, 2022). Existing studies often adopt a broad lens, addressing general financial barriers for SMMEs rather than honing in on those unique to the renewable energy sector, potentially overlooking industry-specific dynamics (Jones & Maphosa, 2019). Additionally, much existing research is positioned at a global or regional level, failing to capture the nuanced context of South Africa's renewable energy market, where unique regulatory and economic factors shape financial accessibility (Khambule & Govender, 2020). Another gap is the lack of comprehensive value chain analysis, which limits understanding of how financial barriers vary across different stages, from project initiation to commercialisation. Regulatory hurdles, such as complex licensing and limited incentives, are often insufficiently addressed, despite playing a critical role in shaping financial access for renewable energy SMMEs (Gumede & Moyo, 2022). Finally, little attention has been given to alternative financing solutions like crowdfunding or impact investing, which may offer more effective options for these enterprises (Smith & Jacobs, 2020).

Addressing challenges faced by these SMMEs requires a comprehensive understanding of the specific barriers and opportunities along the renewable energy sector value chain in South Africa (Johnson & Patel, 2021). By exploring the factors influencing financial access for SMMEs in this context, policymakers, investors, and industry stakeholders can develop targeted interventions and support mechanisms to promote financial inclusion and unlock the growth potential of the renewable energy sector (White & Green, 2021). Therefore, it is essential to conduct an exploratory study to delve deeper into the nuances of financial access along the renewable energy sector value chain for SMMEs in South Africa to inform evidence-based policy and practice initiatives aimed at fostering sustainable development and economic growth in the renewable energy sector (Brown et al., 2019).

1.3 Research Questions

Based on the identified research problem, the following research questions were formulated:

1. What is the current financial status of small and medium-sized enterprises (SMMEs) involved in the renewable energy sector in South Africa?
2. What factors influence the financial access of SMMEs operating within the renewable energy value chain in South Africa?

3. What strategies and recommendations can be proposed to enhance financial access and sustainability for SMMEs in the renewable energy sector in South Africa?

1.4 Research Objectives

The identified research problem led to the formulation of the following research objectives:

1. Assess the current financial status of small and medium-sized enterprises (SMMEs) engaged in the renewable energy sector in South Africa.
2. Identify the factors influencing financial access for SMMEs operating within the renewable energy value chain in South Africa.
3. Formulate effective strategies and recommendations aimed at improving financial access and sustainability for SMMEs in the renewable energy sector in South Africa.

1.5 Scope and Justification of the Study

The scope of this study encompasses a comprehensive examination of the financial access challenges encountered by SMMEs operating within the renewable energy sector value chain in South Africa. The imperative for renewable energy companies to assume an active role in South Africa is underscored by the country's energy crisis and resultant heightened pressure on Eskom—the public electricity utility. In addition, South Africa's status as a major African economy has led to expectations that its renewable energy industries advance the energy sector and catalyse growth in ancillary industries.

Recognised globally as pivotal contributors to economic growth, SMMEs are instrumental in generating employment opportunities and bolstering GDP, thereby mitigating poverty levels (Afolayan et al., 2020; Telukdarie et al., 2022; Atiku & Abatan, 2021). Moreover, renewable energy SMMEs are anticipated to assume a significant role in the global economy by integrating innovation into the energy industry and meeting the demands of the global energy sector (Mkewbhavane & Ntuli, 2019; Cao et al., 2020). However, financing remains a formidable obstacle for small firms in this sector due to substantial initial investment requirements, protracted gestation periods, and constrained profitability (Zutshi et al., 2021; Eggers, 2020).

Consequently, the study aims to elucidate the multifaceted barriers encountered by SMMEs and provide insights that can inform policy formulation and initiatives by governmental and banking institutions. The research offers practical recommendations to empower SMME managers in the renewable energy sector to surmount financial challenges and foster sustainable growth. This research also endeavours to address the existing theoretical gap concerning the financial status of renewable energy firms in South Africa and the accessibility of financial resources, along with the barriers impeding access.

1.6 Organisation of the Research

The organisation of this research study is as follows:

Chapter One: Introduction

This chapter introduces the research study by providing background information on SMMEs in the renewable energy sector in South Africa. It outlines the objectives, research questions, and aims of the study, setting the context for the research.

Chapter Two: Literature Review

In this chapter, a comprehensive review of existing literature is conducted related to SMMEs in the renewable energy sector. The chapter covers topics such as financial access, challenges faced by SMMEs, factors influencing financial access, and strategies for enhancing financial sustainability.

Chapter Three: Research Methodology

This chapter details the methodology adopted for the study. The chapter includes the study design, methods of data collection (such as interviews and surveys) and data analysis techniques, and explains the goals, research questions, population, and sample selection criteria for this study.

Chapter Four: Results and Discussion

In Chapter Four the findings of the study are presented and discussed. This includes an analysis of the current financial state of SMMEs in the renewable energy value chain, identification of factors affecting financial access, and an exploration of potential strategies to address these challenges.

Chapter Five: Conclusions and Recommendations

The concluding chapter presents a summary of the study's main findings and offers recommendations informed by the research outcomes. Additionally, it identifies potential avenues for future research aimed at enhancing the support and understanding of SMMEs within South Africa's renewable energy sector.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Chapter Two contains the literature review, which analyses existing research relating to the status quo in South Africa and the involvement of SMMEs in the renewable energy sector. The chapter notes the limitations of existing literature and considers learnings and best practices from other countries which can be leveraged by South Africa.

2.2 Definitions of Concepts and Terms

The following sections define both small and medium-sized enterprises and renewable energy. A definition of these concepts and terms is essential to this research, which focuses on SMMEs within the renewable energy sector.

2.2.1 Small and medium-sized enterprises (SMMEs)

Small and Medium-Sized Enterprises (SMMEs) are defined based on various criteria, including number of employees, annual turnover, and asset value. According to the National Small Business Act of South Africa (1996), SMMEs are classified into micro, very small, small, and medium enterprises, with small enterprises typically employing between 11 and 50 employees and medium enterprises between 51 and 250 employees (Republic of South Africa, 1996). The OECD (2018) further defines SMMEs as businesses that play a significant role in economic development, employment creation, and innovation, particularly in emerging industries such as renewable energy.

In the renewable energy sector, SMMEs operate across different value chains, including manufacturing, importing, distribution, and service provision. Some businesses engage in local manufacturing of renewable energy components, such as solar panels, inverters, and battery storage units, while others import green energy technologies from international markets and distribute them within South Africa (Khambule & Govender, 2020). Additionally, a large segment of SMMEs in this sector focuses on installation, maintenance, and consulting services, providing essential support to residential, commercial, and industrial renewable energy projects (Mkhwebane & Ntuli, 2019).

Understanding the structure of these businesses is crucial to assessing their financial needs and funding constraints. Manufacturing SMMEs typically require substantial capital investment for production infrastructure and raw materials, while importers rely on trade finance and credit facilities to sustain operations. Service-oriented SMMEs, on the other hand, face challenges related to working capital, skilled labor costs, and access to technology (Fatoki & Smit, 2011). By distinguishing between these categories, this study provides a comprehensive analysis of SMMEs operating in the renewable energy sector, offering insights into their operational models, financial challenges, and investment potential.

2.2.2 Renewable energy

Renewable energy encompasses energy sources that are naturally replenished faster than they are used. These sources include solar, wind, geothermal, hydroelectric, and biomass energy (IEA, 2018). Renewable energy technologies serve as sustainable alternatives to traditional fossil and nuclear sources, providing solutions to meet energy needs while addressing climate change. As global focus intensifies on sustainable development, renewable energy technologies are anticipated to play a crucial role in reducing carbon emissions and supporting future energy demands (Harjanne, 2018).

2.3 Overview of SMMEs and Renewable Energy Finance in South Africa

South Africa has faced energy shortages since late 2007, resulting in increased stages of loadshedding that impact the fabric of society in terms of declining productivity and industry shutdowns. The adoption of renewable energy sources is an effective approach to address these shortages. To foster renewable energy as an alternate energy source involves a value chain encompassing a range of sectors, including manufacturing, professional services, transportation and logistics, construction, operations and maintenance, as well as various auxiliary services (Mkhwebane & Ntuli, 2019).

Renewable energy SMMEs have limited access to finance due to several factors. A prominent challenge is that most financial institutions perceive renewable energy ventures as high-risk investments (Dangerman & Schellhuber, 2013). In addition, SMMEs face a lack of collateral and credit history, making it difficult for them to attain financial loans from banking institutions

(Rupeika-Apoga, 2014). SMMEs struggle to access to adequate working capital, and require significant capital to acquire equipment, hire a skilled workforce, and undertake various operational costs. Bureaucratic and complex procedures, and lack of knowledge and skills on the part of SMMEs further hinder financing access. A lack of financing, which translates to limited research and development, means that SMMEs are unable to keep pace with the changing environment of the renewable energy industry by, for example, adopting modern technologies.

The renewable energy industry in South Africa has experienced significant growth over the past decade, driven by government initiatives, private sector investments, and increasing energy security concerns. The Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) has played a crucial role in expanding the market, attracting over ZAR 201 billion (USD 14 billion) in investments since 2011 (Mkhwebane, 2018). South Africa's renewable energy installed capacity has expanded from less than 1 GW in 2010 to over 7 GW in 2023, with solar and wind energy contributing the largest share (Department of Energy, 2023). Solar and wind power account for approximately 86% of renewable energy generation, with solar PV leading due to declining installation costs and government incentives. Small and medium-sized enterprises (SMMEs) play a vital role in decentralised renewable energy solutions, particularly in residential, commercial, and industrial markets.

2.3.1 Overview of SMMEs in South Africa

SMMEs are vital to South Africa's economy, and make substantial contributions to job creation, poverty reduction, and economic development. The National Small Business Act of 1996 defines an SMME by its annual turnover and number of employees, and South African SMMEs are typically characterised by their small scale of operations, limited resources, and reliance on entrepreneurial skills.

SMMEs contribute over 40% of South Africa's GDP and employ approximately 47% of the country's workforce (World Bank, 2020). In addition, the South African Renewable Energy Council (SAREC, 2023) reported that SMMEs account for around 25% of employment opportunities in the renewable energy sector. Despite their critical role, SMMEs encounter a variety of obstacles, including limited financial access, insufficient infrastructure, regulatory challenges, skill gaps, and restricted market access.

A study Serame (Serame, 2019) reveals that only 30% of SMMEs in South Africa have access to formal finance. This lack of finance hinders their growth and sustainability. Addressing these challenges requires a multifaceted approach, encompassing policy reforms, institutional strengthening, capacity building, and targeted interventions tailored to the unique needs of SMMEs in different sectors, including renewable energy.

2.3.2 Renewable energy financing in South Africa

This section of the research provides an overview of the current state of renewable energy financing in South Africa, focusing on the amount of financing invested in specific renewable energy projects across different sectors. Challenges and opportunities for renewable energy SMMEs are highlighted.

South Africa's abundant renewable resources, including solar, wind, biomass, and hydropower, makes financing renewable energy projects both challenging and promising. Tapping into these resources requires substantial investments in infrastructure, technology, and human capital. Fortunately, South Africa's renewable energy sector has received significant investments in recent years, from both domestic and international stakeholders. A major catalyst for investment has been the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), attracting over ZAR 201 billion (approximately USD 14 billion) in investment since its inception in 2011 (Mkhwebane, 2018). This program has facilitated the development of numerous renewable energy projects, predominantly in the solar and wind sectors.

Despite substantial investments, SMMEs face significant barriers in accessing finance for renewable energy projects. These barriers include perceived high risks, inadequate collateral, and complex regulatory frameworks. Several financial mechanisms are available for renewable energy projects in South Africa, including equity financing, debt financing, concessional financing, and public-private partnerships. However, the accessibility of these financing options varies significantly across different project scales and types of renewable energy.

2.3.3 Stylized Facts and Trends of the Renewable Energy Industry in South Africa

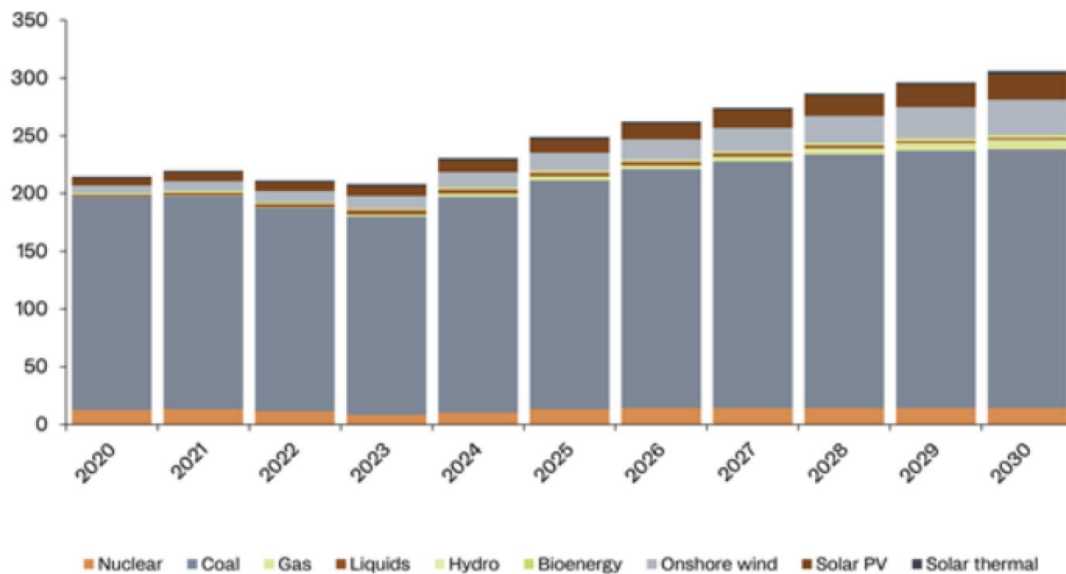
The South African renewable energy industry has undergone rapid development in the past decade, shaped by policy interventions and increasing private-sector participation. The installed renewable energy capacity has grown from approximately 1 GW in 2010 to over 7 GW in 2023, reflecting a significant shift towards sustainable energy sources. The market is predominantly composed of solar energy, which accounts for 55% of renewable energy installations, followed by wind energy at 31%, while biomass and hydropower make up the remaining 14% (Department of Energy, 2023). This growth has been largely facilitated by South Africa's commitment to reducing its dependence on fossil fuels and addressing its persistent energy supply challenges.

SMMEs have played an essential role in driving innovation and expanding access to renewable energy solutions, particularly in underserved markets. These enterprises contribute to over 40% of the jobs created in the renewable energy sector, focusing primarily on providing services to the residential and commercial segments. By leveraging cost-effective renewable technologies, SMMEs are increasingly offering decentralized energy solutions that reduce dependency on the national grid. They also facilitate solar energy adoption for households and small businesses that seek to reduce electricity costs and enhance energy independence. Furthermore, SMMEs are involved in industrial and agricultural applications, providing renewable energy solutions for manufacturers and irrigation systems, thereby broadening the scope of sustainable energy usage in South Africa.

The rapid expansion of renewable energy technologies and the role of SMMEs in the sector highlight the critical need for accessible financing options. Despite their growing market presence, many SMMEs struggle with financial constraints that limit their ability to scale operations and compete effectively. Understanding the stylized facts of South Africa's renewable energy industry is essential for addressing the structural challenges that impact financial access for SMMEs and ensuring their sustained contribution to the energy transition.

Figure 2.1: Power Generation in South Africa

Power Generation in South Africa Terawatt hours (TWh)



Source: Rystad Energy’s Renewables & Power Solution (2023)

The Power Generation in South Africa graph illustrates the projected energy mix from 2020 to 2030 in terawatt-hours (TWh), highlighting the evolving role of renewable energy sources and the gradual transformation of the country’s electricity sector. Despite South Africa's commitment to a low-carbon energy transition, coal remains the dominant source of power generation, though its share steadily declines, reflecting the country’s efforts to reduce carbon emissions and diversify its energy mix. However, coal still accounts for the majority of power generation, underscoring the slow pace of transition due to infrastructural and economic challenges.

Renewable energy sources such as onshore wind, solar PV, and bioenergy show incremental growth, driven by government policies, technological advancements, and increased private-sector investment. The Integrated Resource Plan (IRP) continues to play a crucial role in facilitating renewable energy expansion, particularly in the solar and wind sectors, which are projected to significantly contribute to the energy mix by 2030. However, this growth remains moderate compared to global benchmarks, indicating the need for further acceleration in renewable energy adoption.

Hydropower and nuclear energy maintain a relatively stable contribution, while gas and liquid fuels remain marginal in the overall energy mix. The increasing share of solar and wind energy aligns with global trends in decarbonization and energy diversification, yet the data suggests

that South Africa's energy transition remains gradual rather than transformative. This trend presents significant opportunities for SMMEs in the renewable energy sector, particularly in distributed energy generation, installation, and maintenance services. As the country seeks to expand renewable energy capacity, SMMEs can play a crucial role in providing localized, decentralized energy solutions, particularly in solar PV and wind projects, to support South Africa's broader energy security, economic growth, and sustainability goals. However, challenges such as financial access, policy uncertainty, and infrastructure limitations continue to impede the full potential of SMME participation in the renewable energy market.

2.3.4 Niche Markets and Business Opportunities for SMMEs in the Renewable Energy Sector

SMMEs in the renewable energy sector cater to diverse markets that span residential, commercial, industrial, and agricultural applications (Khambule & Govender, 2020). The residential market represents a significant portion of SMME activity, as many households increasingly seek off-grid and rooftop solar installations to mitigate the impact of load shedding and rising electricity costs (Gumede & Moyo, 2022). The commercial sector has also embraced renewable energy solutions, with businesses adopting solar power to reduce operational expenses and meet sustainability targets (Smith & Jacobs, 2020). Retail centers and office complexes have particularly benefited from distributed solar energy systems, leading to increased demand for SMME-led energy projects.

The industrial sector, although less penetrated by SMMEs compared to larger independent power producers (IPPs), has begun integrating renewable energy solutions to enhance energy efficiency and reduce reliance on fossil fuels. Manufacturers and processing plants are incorporating solar and wind energy to support their production needs, creating opportunities for SMMEs to provide installation and maintenance services (Patel & Naidoo, 2021). Additionally, the agricultural sector has seen a growing demand for renewable energy solutions such as solar-powered irrigation systems, greenhouse climate control, and off-grid farming operations (Khambule & Govender, 2020). These innovations are particularly beneficial for rural areas where grid connectivity remains limited.

Despite these opportunities, SMMEs operating in niche renewable energy markets face numerous challenges, including limited financial access, regulatory hurdles, and competition

from larger energy providers. Addressing these challenges requires targeted policy support, improved access to credit, and investment in skills development to enhance the capacity of SMMEs to thrive in the renewable energy industry (Mazzucato & Semieniuk, 2018). Recognizing the market segments served by SMMEs and their contributions to the renewable energy transition is crucial for designing interventions that foster sustainable business growth and inclusive economic development in South Africa.

2.4 Theoretical Frameworks

The theoretical framework of this study was founded on resource-based theory (RBT) and agency theory. RBT was used to analyse the relationship between the performance of SMMEs and their resources, or access to financial resources. The analysis of performance along with financial accessibility is important to differentiate between the impact of socio-economic and cultural factors on financial accessibility. Agency theory was used as a framework to illustrate how asymmetric information among SMMEs and lenders impacts SMMEs' financial decisions and growth, which sheds light on the socio-economic factors affecting accessibility.

2.4.1 Resource-based theory (RBT)

Resource-based theory (RBT) is a strategic management framework that considers a firm's unique, immobile, complex, and sometimes intangible resources as critical drivers of its competitive advantage. These resources include human capital, social capital, physical assets, financial capabilities, organisational processes, and technological innovations. RBT assesses how these internal resources correlate with a firm's overall performance, including its capacity to secure external financing (Safari & Saleh, 2020). From the resource-based perspective, attributes which provide a competitive edge for a firm can also enhance its ability to access financial resources.

RBT analyses the influence of owners' characteristics on the relationship between SMMEs and banks when determining access to loans (Rao et al., 2021). Thus, this study used RBT to examine how firm-specific characteristics, including the skills and experiences of business owners, can improve the ease with which a firm obtains funding (Ogubazghi, 2014). RBT was also applied to explain how the internal capabilities of South African renewable energy SMMEs

affect their competitiveness in obtaining external funds. RBT provided a useful lens for understanding how certain internal resources enabled SMMEs to navigate the complex landscape of both formal and informal financial sources within the renewable energy sector.

Financial capital is one of the most critical resources SMMEs must secure to support growth, adopt new technologies, and expand operations. Research by Hussain et al. (2006) and Mahadea and Pillay (2008) underscores that access to finance remains a persistent challenge, with financial constraints often hindering business development, regardless of sector or location. In developing countries, such as South Africa, these constraints are more pronounced, exacerbating challenges faced by SMMEs in the renewable energy industry.

According to the OECD (2004), although SMMEs are the largest client group for commercial banks, loans are often limited to short periods due to the perceived risks, limiting SMMEs' capacity for long-term investments. This is particularly true for the renewable energy sector in South Africa, where the high cost of debt, stringent collateral requirements, and an overall reluctance to extend credit to SMMEs create significant barriers to financial access (Department of Basic Education, 2014).

2.4.2 Agency theory

Agency theory provides insights into the broader financial constraints faced by renewable energy SMMEs in South Africa, particularly in terms of their capital structure and access to loans. This theory posits that firm managers or owners prefer internal financing over external sources. This is largely because external financing subjects managers to greater scrutiny and investor oversight, which many seek to avoid (Frank & Goyal, 2007). In SMMEs, agency issues often arise between internal stakeholders, such as owners, and external financiers, such as banks or investors. In such cases, owners may exaggerate project costs to benefit themselves, while external lenders may impose strict conditions on financing (Kumar et al., 2020).

In the renewable energy sector, agency problems exacerbate existing difficulties in securing external financing, as financial institutions are wary of lending to high-risk ventures, especially those in developing markets. Fatoki and Smit (2011) highlighted that external equity in the form of venture capital or stock market investment is seldom available for new and small businesses. As a result, renewable energy SMMEs in South Africa rely heavily on capital from bank loans

and credit from suppliers. However, access to such financing is often limited due to high interest rates, collateral demands, and the risk-averse nature of lenders.

Debelis and Pinelli (2020) attested that agency theory explains SMMEs' reluctance to seek external financing, and caution by financial institutions when extending credit. This hesitance from both sides perpetuates the financing gap for SMMEs and limits their growth potential, especially in capital-intensive sectors like renewable energy. Jaffee & Stiglitz (1990) described this situation as 'credit rationing,' where financial institutions deny credit to certain borrowers due to asymmetric information and high monitoring costs, even when those borrowers appear similar to those who did receive financing. In this research, both resource-based theory and agency theory were instrumental in analysing financial barriers faced by renewable energy SMMEs, helping to explain the complex dynamics of financial access and the role of firm-specific characteristics and external financing limitations.

2.4.3 The Market for Lemons theory

The Market for Lemons Theory, proposed by Akerlof (1970), provides critical insights into the challenges of financial access faced by SMMEs in the renewable energy sector. The theory explains how information asymmetry between buyers and sellers in a market can lead to adverse selection and market failures. Applied to SMME financing, financial institutions often lack sufficient information about the creditworthiness and operational stability of small businesses, making it difficult to distinguish between high-risk and low-risk borrowers. Due to this information asymmetry, lenders adopt conservative lending practices, imposing high collateral requirements, stringent credit assessments, and risk premiums, which disproportionately exclude SMMEs from the credit market (Fatoki & Smit, 2011; Xie & Wang, 2019).

Akerlof's theory suggests that when lenders perceive uncertainty regarding an SMME's ability to repay loans, they either deny credit or offer loans under unfavourable terms (high interest rates, short repayment periods). This situation creates adverse selection, where only riskier businesses, desperate for financing, apply for loans, further reinforcing lenders' perception that SMMEs are inherently high-risk borrowers (Brown & Rocha, 2021). Moreover, moral hazard arises when SMMEs, having secured loans, misuse funds for unintended purposes, increasing the likelihood of default and further discouraging financial institutions from lending to the sector (Garcia et al., 2022).

In the context of South Africa's renewable energy sector, the Market for Lemons Theory helps explain why SMMEs struggle to obtain financing despite government incentives and industry growth potential. Financial institutions view renewable energy projects as long-term investments with uncertain returns, exacerbating risk perception and financial exclusion (Patel & Naidoo, 2021). This theory aligns with Agency Theory, which highlights the principal-agent problem in financial transactions between lenders (principals) and borrowers (agents), where misaligned interests and lack of trust hinder credit access (Debelis & Pinelli, 2020). Similarly, it complements Resource-Based Theory (RBT) by emphasizing how limited access to financial resources restricts SMMEs' ability to invest in new technologies, expand operations, and enhance competitiveness (Safari & Saleh, 2020).

Understanding the Market for Lemons dynamic in SMME financing is essential for addressing financial access barriers. Policymakers and financial institutions must adopt risk-mitigation strategies, such as credit guarantee schemes, alternative credit scoring models, and financial literacy programs, to bridge the information gap and facilitate better financial inclusion for SMMEs in the renewable energy sector (Mazzucato & Semieniuk, 2018). By reducing asymmetric information, these interventions can enhance SMME credibility, making them more attractive to investors and lenders, ultimately fostering sustainable growth in the renewable energy market.

2.5 Financial Sources for Renewable Energy SMMEs

Access to financing is a critical determinant of the success and sustainability of SMMEs operating in the renewable energy sector. Various funding mechanisms exist, including traditional financing options such as bank loans and equity financing, as well as alternative and impact-driven financing instruments. Given the high capital intensity of renewable energy projects, innovative financial models have been introduced to support the expansion and sustainability of the sector (Mazzucato & Semieniuk, 2018).

2.5.1 Traditional and Alternative Financing Models

- **Bank Loans and Debt Financing:** Commercial bank loans remain a primary source of funding for renewable energy SMMEs. However, stringent collateral requirements and high-interest rates often limit accessibility (Fatoki & Smit, 2011). Development banks and specialized green finance institutions offer low-interest loans and credit guarantees to improve accessibility.

- **Equity Financing and Venture Capital:** Some high-growth SMMEs attract funding from private investors and venture capital firms looking for long-term returns in the renewable energy market. Equity investment is particularly useful for firms seeking to scale operations or enter new markets (Boschmans & Pissareva, 2018).
- **Impact Financing and Green Bonds:** Impact financing is gaining traction in South Africa, with institutions and investors providing funds based on environmental, social, and governance (ESG) considerations. Green bonds, a type of debt instrument specifically designed to finance renewable energy and sustainability projects, have been introduced to support large-scale investment in the sector (Mkhwebane & Ntuli, 2019).
- **Grants and Donor Funding:** International development organizations and government agencies provide grants, subsidies, and donor funding to incentivize the adoption of renewable energy technologies. The Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) in South Africa is one such initiative aimed at fostering financial inclusivity (Khambule & Govender, 2020).
- **Rebates and Tax Incentives:** Financial incentives such as tax rebates, accelerated depreciation, and energy efficiency subsidies play a crucial role in lowering the cost of adopting renewable energy solutions (Taylor et al., 2020). These incentives encourage both SMMEs and consumers to invest in clean energy technologies.

By diversifying financial sources, SMMEs can improve access to capital and reduce dependency on traditional financing institutions.

2.5.2 Project Preparation as a Funding Approach for Renewable Energy SMMEs

Project preparation is an essential phase in renewable energy financing, involving technical, financial, and regulatory due diligence before projects reach the implementation stage. Many renewable energy projects struggle to secure financing due to a lack of well-structured business models, inadequate feasibility studies, and weak risk assessments (Creswell & Creswell, 2018). Project preparation addresses these challenges by:

- **Developing Bankable Projects:** Ensuring projects meet the investment criteria of lenders and investors by incorporating risk assessments, feasibility studies, and regulatory compliance measures.
- **Providing Technical Assistance:** Access to technical expertise and mentorship programs improves project viability and financing prospects.

- **Enhancing Investor Confidence:** Well-prepared projects attract funding more easily by reducing perceived risks for investors and financial institutions.

Several global organizations, such as the Global Infrastructure Facility (GIF) and the Green Climate Fund (GCF), support project preparation initiatives. South Africa has adopted similar approaches to facilitate private-sector participation in renewable energy through capacity-building programs and feasibility study grants (Smith & Jacobs, 2020).

2.6 Nature of Firms and Their Funding Requirements

The financial needs of SMMEs in the renewable energy sector vary significantly depending on the nature of their operations, which can be categorized into three primary activities: manufacturing, importing/distribution, and service provision. Each of these business models has distinct funding requirements due to differences in capital intensity, operational costs, and financial risk exposure (Boschmans & Pissareva, 2018).

- **Manufacturing Firms:** These businesses require substantial capital investment in equipment, raw materials, and production facilities. Due to the high upfront costs, long-term financing, venture capital, and green bonds are critical funding mechanisms.
- **Importers and Distributors:** Firms engaged in importing green energy products rely on trade finance, working capital loans, and credit lines to facilitate bulk purchases and manage supply chain logistics (Khambule & Govender, 2020).
- **Service Providers:** These firms, including installers and maintenance contractors, primarily need operating capital, training support, and project-based financing to sustain their businesses (Fatoki & Smit, 2011). Their funding challenges often stem from delayed payments from clients and a lack of collateral for securing loans.

By distinguishing these categories, this study highlights the unique financial constraints of different SMMEs in the renewable energy sector, enabling a more targeted approach to improving financial accessibility.

2.7 Regulatory Challenges Affecting Access to Finance

Regulatory barriers significantly impact the ability of SMMEs to secure financing in the renewable energy sector. While South Africa has several policy frameworks aimed at promoting renewable energy adoption, certain regulatory constraints hinder financial

accessibility, as reported in the study findings. The following key regulatory issues were identified:

1. **Complex Licensing and Compliance Requirements** – Many SMMEs struggle to navigate bureaucratic red tape and stringent licensing conditions, which delays project approvals and discourages investors from financing smaller firms (Mkhwebane & Ntuli, 2019). The National Energy Regulator of South Africa (NERSA) requires detailed compliance documentation that many SMMEs lack the resources to compile.
2. **Lack of Tailored Financial Regulations for SMMEs** – Existing financial regulations are primarily designed for large-scale energy projects, making it difficult for smaller firms to qualify for industry-specific loans and subsidies (Taylor et al., 2020). Many financing programs favor established firms with proven track records, excluding emerging SMMEs from critical funding opportunities.
3. **Inconsistent Government Incentives** – While tax incentives and rebates exist, their implementation and accessibility remain inconsistent. Many SMMEs report difficulties in qualifying for government-backed financial schemes, as eligibility criteria often favor larger, well-capitalized firms (Smith & Jacobs, 2020).
4. **Challenges in Public-Private Partnerships (PPPs)** – Although government-led energy initiatives encourage private sector involvement, bureaucratic inefficiencies and slow contract approvals create uncertainties that deter financial institutions from investing in small renewable energy businesses (Creswell & Creswell, 2018).

Addressing these regulatory challenges requires policy reforms that streamline compliance processes, introduce targeted financial incentives for SMMEs, and improve transparency in financing schemes. By tackling these issues, access to finance for renewable energy SMMEs can be significantly improved, fostering greater industry participation and business sustainability.

2.8 Financial Value Chain of South African SMMEs in the Renewable Energy Sector

Renewable energy is an ambitious target for the South African government, driven by vast available land resources and the higher expense of traditional energy sources. Small firms have ample opportunity to address these energy demands (Mutezo & Mulopo, 2021). Shahbaz et al. (2020) noted that such industries have attracted the attention of foreign banking institutions due to the vast available opportunities and government support. Aliyu et al. (2018) stated that Africa

has significant land resources which can be utilised for the development of solar energy. The presence of ample land across South Africa has led to the growth of SMMEs in this sector.

2.8.1 Stages of the financial value chain for South African renewable energy SMMEs

Stage 1: Financing for project development

Stage 1 involves securing initial capita for project planning, feasibility studies, and site identification. Renewable energy SMMEs often rely on a mix of financing options, such as venture capital, government grants, and loans from institutions that specialise in supporting renewable energy initiatives (Mabula & Han, 2018). Additionally, collaborations with larger corporations or global investors can offer funding opportunities for project development, thus broadening financial support (Sutaria et al., 2021).

Stage 2: Investment in infrastructure

Once project feasibility is established, SMMEs need funding to invest in infrastructure development, such as solar panels, wind turbines, or biomass facilities. This second stage requires significant capital investment, often sourced through a combination of equity financing, debt financing, and government incentives or subsidies (Nyoni & Frodyma, 2020). Collaboration with engineering firms or equipment suppliers may also facilitate access to financing options tailored to renewable energy infrastructure development (Zhang et al., 2022).

Stage 3: Operations and maintenance

After project construction, ongoing operations and maintenance activities require continuous funding to ensure optimal performance and longevity of renewable energy assets. SMMEs may allocate funds for routine maintenance, equipment upgrades, and compliance with regulatory requirements (Aryeetey & Ahene, 2005). Revenue generated from energy sales or power purchase agreements (PPAs) is typically reinvested into operations and maintenance, and is supplemented by financing options, such as leasing agreements or asset-backed loans (Siriwardane et. al, 2021).

Stage 4: Expansion and diversification

As SMMEs mature and expand their operations, they may seek additional financing to scale up existing projects or diversify into new renewable energy technologies or geographic markets (Hadi et al., 2022). This stage involves strategic planning, market analysis, and investment in research and development to capitalise on emerging opportunities and stay competitive in the evolving renewable energy landscape. Financing options may include equity financing, strategic partnerships, or access to specialised funding programs supporting innovation and expansion initiatives (Boschmans & Pissareva, 2018).

Nathaniel and Theon (2020) suggested that the lack of large-scale firms in the renewable energy industry coupled with encouragement towards research and innovation, has led to growing market demand being occupied by small industries, with the potential to rise even further in the foreseeable future. Mostafaeipour et al. (2020) noted that not every firm may be able to succeed in this sector, as geographical and climate conditions act as major barriers. On the flip side, these geographical and climate conditions also facilitate the growth of different firms apart from solar energy, such as wind and biomass energy, throughout the country. Lorber and Tresch (2021) acknowledged that growing public awareness and increasing trade opportunities with other African nations have led to the growth of the renewable energy sector; however, there is a challenge of limited finance to run operations.

2.8.2 Challenges to accessing financial resources for SMMEs in South Africa

The South African government has made several attempts to provide organised financial assistance to SMMEs, both through legislation and establishing priority lending norms (Fouejieu et al., 2020). Masocha (2019) noted that firms which produce goods and services in accordance with the economic objectives of government may find it easier to secure finance, as is the case with renewable energy industries.

Msomi et al. (2022) mentioned that firms with huge profitability or sufficient collateral can more easily secure finance than institutions which do not have such services. This can lead to major challenges for firms that do not have collateral and operate using innovative technology. Wellalage and Fernandez (2019) added finance is not directly related to innovative ability, and financial institutions may resist providing sufficient finance for industries which have limited profitability chances or longer gestation periods. Mabula and Han (2018) concur that firms

employing newer technologies may find it harder to secure finance in South Africa due to the limited desire of banking institutions to include such risky firms in their portfolio.

Msomi et al. (2022) shared that industries may not be able to secure finance for their different needs, such as marketing and daily operations, with formal sources, which can create further challenges for the firms. However, Einola (2018) noted such challenges exist mostly for new firms in any sector, as they do not have sufficient revenue opportunities. To add to this, Msomi et al. (2022) stated that industries may find it harder to secure more finance if they are unable to provide for existing finance. This lack of existing finance may occur due to a firm still trying to capture the market or develop newer products for the user base, and can lead to the narrowing of markets or the rise of informal sources of finance to meet the needs of businesses.

2.8.3 Impact of socio-economic and cultural factors on financial accessibility

The level of education and socio-cultural aspects of the population are closely connected to access to finance by SMMEs, both with respect to the perception of managers, as well as the perspective of banking institutions towards providing finance (Zhang et al., 2018). Byuro and Mmbaga (2022) suggested that government policies can impact financial accessibility by supporting or promoting financial schemes aimed towards specific sectors which can reduce access by the general population. However, government has initiated dedicated programs which are reducing inequality in this regard.

According to Gordon et al. (2020), certain demographics of society may be at a particular disadvantage when it comes to accessing finance due to their socio-economic situation. For example, Asongu and Odhiambo (2018) suggested that the gender of the borrower can determine credit accessibility due to the perception of banking institutions, with females at a disadvantage. However, banking institutions have implemented several schemes which aim to provide adequate support to women.

Sarkodie and Adams (2018) expressed that the availability of basic amenities like electricity and water supply can determine the level of financial accessibility for previously disadvantaged societies. This view is based on the interaction between social forces and entrepreneurship capability. Additionally, the rise of poverty in rural regions of the country can lead to further challenges when accessing finance to support ventures as this population does not have sufficient funds for their day-to-day needs, making it difficult to meet the requirements for securing a bank loan (Falchetta et al., 2022).

Siksnylyte-Butkiene (2021) noted that social and cultural norms, particularly among vulnerable sections of the population, may prevent access to organised finance and may either prevent or promote access from informal sources like village leaders. Thus, socio-economic and cultural factors, play a role in financial accessibility by renewable energy SMMEs in South Africa.

SMMEs play a major role in the development of South Africa by reducing poverty and increasing employment (Higgs & Hill, 2019; Kademeteme & Twinomurizi, 2019). There are major prospects for the growth of renewable energy in South Africa, due to the large availability of natural resources and the high cost of traditional power sources (Mpandeli et al., 2018; Ahmad & Zhang, 2020). Despite the importance of such an industry, there have been limited studies by researchers regarding the financial state and capabilities of renewable energy SMMEs in the financial value chain of South Africa. Finance is a major aspect of SMMEs and traditionally these enterprises have faced several barriers to accessing finance (Moos & Sambo, 2018; Coffie et al., 2021). Previous studies have covered various aspects, but a focussed examination of socio-economic and cultural factors is needed, and will be addressed through this research.

Different sources of finance are available for SMMEs, ranging from formal bank loans to informal finance; however, each has both advantages and challenges which need to be considered in conjunction with the industry and geographic location of the firms (Akinsola & Ikhide, 2019; Mpofu & Sibindi, 2022; Asah et al., 2022). This research addressed the lack of such financial mechanisms for South African SMMEs in the renewable energy sector and thus addressed existing gaps in finance acquisition literature.

2.9 Empirical Literature

The empirical literature on financing renewable energy projects offers valuable insights into the multifaceted landscape of financing decisions, stakeholders' roles, innovative financing mechanisms, and the influence of policy support and regulatory frameworks. Studies by Musiela et al. (2019) and Chen et al. (2017) delve deep into the factors influencing financing decisions. These studies underscore the importance of considering various factors for financing, such as project size, technology type, prevailing economic conditions, and the presence of supportive policies. Understanding these determinants is critical for SMMEs venturing into the renewable energy sector, and empowers SMMEs to tailor their financing strategies according

to the specificities of their projects and the regulatory environments within which they operate, thus enhancing their chances of securing funding.

The pivotal role played by different stakeholders in facilitating renewable energy financing is explored by Tang, et al. (2019) and Liu et al. (2019), who shed light on how financial institutions, governmental policies, and multilateral development banks contribute to mitigating risks and ensuring the scalability and performance of renewable energy projects. Recognising the interplay between these stakeholders is indispensable for SMMEs navigating the complex terrain of finance. Such an understanding equips SMMEs with insights into the available support structures and avenues through which they can access funding, thereby bolstering their capacity to effectively finance renewable energy ventures.

Li et al. (2021) and Cheng et al. (2021) delve into innovative financing mechanisms as potential solutions to bridge the financing gap for SMMEs in the renewable energy sector. These studies explore alternative financing avenues such as venture capital, public-private partnerships, and green finance. These mechanisms offer SMMEs opportunities to diversify their funding sources and surmount traditional barriers to finance, thereby fostering growth and innovation in the renewable energy sector.

The criticality of policy support and regulatory frameworks in shaping renewable energy financing landscapes are explored by works from Khan et al. (2020) and Wu et al. (2020), who accentuate the role of government policies in creating an enabling environment for investments. Policies such as feed-in tariffs, tax incentives, and renewable energy targets incentivise investors and diminish investment risks, thereby augmenting the appeal of renewable energy projects for financiers.

In conclusion, the synthesised overview of empirical literature serves as a robust foundation for comprehending the intricacies of SMMEs' financing in the renewable energy sector. By assimilating these insights into the research analysis, this research aims to deepen an understanding of the financial landscape for SMMEs and furnish policy recommendations aimed at bolstering their growth and development within the renewable energy domain.

2.10 Conclusion

In conclusion, the literature review underscores the critical role of SMMEs in driving renewable energy development in South Africa, while highlighting the multifaceted challenges faced when accessing finance. Theoretical frameworks provide analytical frameworks for understanding these challenges, while empirical studies shed light on the current state of financial accessibility and its determinants. Addressing these challenges and effectively leveraging available financial resources are crucial for unlocking the full potential of SMMEs in the renewable energy sector and fostering sustainable economic growth in South Africa.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

Chapter 3 provides a clear outline of the research methodology for this research. The chapter delves into various aspects of the research, such as the research approach and design, methodology, population sampling and size, data collection and data instrument, data analysis, and ethical considerations.

3.2 Research Approach

The three main research approaches are quantitative, qualitative or a mixed-method approach. For the purposes of this study, a qualitative approach was chosen for its ability to deeply explore the multifaceted issues affecting financial accessibility for SMMEs in South Africa's renewable energy sector. Qualitative research is rooted in inductive reasoning, a process that builds generalisations from specific observations or data points (Cuervo-Cazurra et al., 2017). Unlike the quantitative approach, which tests pre-determined hypotheses, qualitative research is more flexible and adaptive, focusing on participants' lived experiences, attitudes, and behaviours. The qualitative method is particularly effective for examining complex social and cultural phenomena, as it allows for in-depth exploration through descriptions and observations (Maxwell, 2013). The researcher aimed to employ qualitative research to uncover the intricacies of human experiences and organisational behaviour that quantitative methods could overlook (Creswell, 2018). Qualitative data was gathered from interviews, which provided first-hand accounts and enabled the researcher to build a complex, detailed picture of the challenges these businesses face.

In this research, the qualitative approach was pivotal in capturing the nuanced realities of SMMEs, and their challenges and strategies regarding financial access. Given the limited prior research on financial accessibility for SMMEs in South Africa's renewable energy sector, a qualitative inquiry was deemed suitable to provide a rich, holistic understanding. The chosen methodology also allowed for an exploratory approach, whereby new insights and themes could emerge naturally during the data-collection process. Such flexibility allowed the research to be adapted as new issues or patterns arose, contributing to a more robust analysis of how financial barriers and opportunities are experienced by SMMEs. Thus, the qualitative approach was selected to allow for a comprehensive exploration of the sector's financial dynamics.

3.3 Research Design

The research design is the blueprint for conducting a study and outlines the steps taken to achieve the research objectives and respond to the research questions. Creswell (2018) defines research design as a structured plan for data collection, analysis, and interpretation. This plan helps ensure that the research process is methodical, appropriate, and aligned with the study's aims.

For this study, an exploratory research design was adopted. Exploratory research is particularly useful when the research problem is not well-defined or when there is limited existing knowledge on the subject (Creswell & Clark, 2017). This type of design is not concerned with testing hypotheses or offering definitive solutions but instead aims to explore new insights and identify patterns that could guide future research. An exploratory approach is well-suited to understanding complex and under-researched topics, such as the financing challenges of SMMEs, by offering flexibility and the ability to follow up on emerging trends during data collection. Thus, an exploratory design was deemed most appropriate for this research given the limited existing literature on financial accessibility for SMMEs in South Africa's renewable energy sector. The study sought to uncover insights that had not been previously documented, addressing the gap in existing knowledge.

The design incorporated open-ended interviews to allow participants to express their thoughts freely, ensuring that unanticipated issues could be identified. This method enabled the researcher to gather rich, detailed data about barriers to financial access, financial strategies of SMMEs, and broader market conditions influencing these businesses. By focusing on participants' experiences, the exploratory research design contributed to a deeper understanding of the dynamics affecting financial access. This design also facilitated the discovery of relationships between variables, such as policy interventions, SMME characteristics, and access to financial resources.

3.3.1 Target population and sampling strategy

The target population for this study consisted of SMMEs operating in South Africa's renewable energy sector. These SMMEs were involved in various stages of renewable energy production, distribution, installation, and servicing, with a focus on technologies such as solar, wind, geothermal, hydroelectricity, and biomass. This population was selected due to its critical role in driving innovation and growth within the renewable energy landscape in South Africa, while also facing unique challenges in terms of financial access.

For the sampling strategy, the study employed purposive sampling to select participants with the relevant knowledge and experience to provide deep insights into the financial challenges faced by SMMEs in the renewable energy sector. Purposive sampling was appropriate for targeting individuals directly involved in managing these enterprises and who had first-hand experience with the financial landscape. To ensure diversity in the sample, maximum variation sampling was utilised, ensuring a range of participants based on factors such as business size, geographical location, and years of operation. This approach captured a broad spectrum of experiences, from well-established enterprises to newer market entrants. In cases where additional participants were needed, snowball sampling was employed. This technique allowed initial participants to refer other SMMEs that were relevant to the study. Snowball sampling enabled the researcher to identify further participants who could contribute meaningfully to the research objectives.

The sample size was determined by theoretical saturation, meaning data collection continued until no new themes or information emerged from the interviews. It was estimated that around 15 participants would be necessary to reach saturation and ensure depth and comprehensiveness of the study (Flick, 2016). This estimation is supported by Guest et al. (2020), who suggested that qualitative data can reach thematic saturation with a sample size as small as 12 participants, depending on the study's complexity. Hennink et al. (2017) agreed that qualitative studies typically reach saturation after 12 to 16 interviews. A sample of 15 participants was used.

3.3.2 Data collection and data instrument

Data collection involved gathering insights from participants to address the research questions and objectives (Creswell, 2018). The data-collection method built on the exploratory nature of the research design, which emphasised a deep understanding of participant experiences. Therefore, in-depth interviews were selected as the primary data-collection tool, allowing for a detailed exploration of the challenges faced by SMMEs in accessing finance.

3.3.2.1 Interviews

According to Graebner (2021), interviews provide an interactive process wherein the interviewer and interviewee engage in a dialogue that helps address the research questions, allowing for both retrospective and prospective insights. Interviews are particularly valuable in qualitative research as they generate rich, detailed information on the experiences, challenges, and strategies of participants (Grey, 2014).

In this study, semi-structured interviews were employed to ensure that key topics were covered, while still allowing flexibility for participants to freely discuss their experiences. This approach enabled the researcher to capture nuanced data related to the financial barriers, strategies, and external factors influencing SMMEs in the renewable energy sector. The interviews were designed to explore how these businesses navigated the financial landscape, with a particular focus on the effectiveness of the formal and informal financing options available to them.

3.3.2.2 Rationale for adopting interviews as a data-collection tool

The choice of interviews as the main data-collection method for this research is closely aligned with the research goals and the specific nature of the research questions. First, interviews allow researchers to investigate the underlying motivations, perspectives, and decision-making processes of participants, producing rich, comprehensive data that reveals the complexities inherent to this topic. Thus, this method offers a qualitative method well-suited to achieving a deep, nuanced understanding of participants' views, experiences, and insights regarding the financial access challenges faced by SMMEs in South Africa's renewable energy sector.

Additionally, interviews foster a supportive, trusting environment between researcher and participant, which encourages open and honest dialogue. These interactions promote data authenticity and validity, as participants feel more comfortable sharing candid insights and detailed opinions. Interviews also provide flexibility to ask follow-up questions and probe into emerging themes, allowing researchers to gather layered information and explore areas of particular relevance, ultimately enhancing the overall depth and breadth of the data collected.

Interviews provided the researcher with the opportunity to capture diverse perspectives and experiences by engaging with a purposively selected sample of participants representing various segments of the SMME landscape in the renewable energy sector. By interviewing stakeholders such as SMME owners, financial institution representatives, government officials, and industry experts, a holistic understanding was gained of the challenges and barriers faced by SMMEs in accessing finance, as well as the contextual factors influencing these dynamics.

Interviews allowed for the contextualisation of findings within the broader socio-economic and cultural context of South Africa, providing valuable insights into the intersectionality of factors shaping financial accessibility for SMMEs in the renewable energy sector. By exploring the interplay between economic policies, cultural norms, institutional frameworks, and individual agency, researchers can unravel the complexities of the financial landscape and identify potential avenues for intervention or support.

3.3.2.3 Interview structure

The interviews were conducted face-to-face (in-person) and recorded for further analysis, with participants providing consent beforehand. Interview sessions lasted between 35 and 52 minutes each, spanning from the 30th July 2024 to the 27th August 2024. Ethical clearance for the study was granted on 6th June 2024, prior to the commencement of data collection. The interviews were structured as follows:

- Section A: Introduction and Demographics
- Section B: Research Objective 1 – To assess the current financial status of small and medium-sized enterprises (SMMEs) engaged in the renewable energy sector in South Africa.

- Section C: Research Objective 2 – To identify and analyse the factors influencing financial access for SMMEs operating within the renewable energy value chain in South Africa.
- Section D: Research Objective 3 – To formulate effective strategies and recommendations aimed at improving financial access and sustainability for SMMEs in the renewable energy sector in South Africa.

3.3.3 Data analysis

Data analysis entails organising and condensing data to generate insights that researchers can interpret and understand (Žukauskas et al., 2018). This process is both intricate and creative, requiring a close connection between the researcher, participants, and data collected (Neuman, 2014). Following a qualitative approach, this research used a thematic analysis to examine the collected data. Thematic analysis offers a systematic and flexible approach to identifying patterns, themes, and meanings within the dataset, contributing to a structured understanding of the data's thematic components, which aligned with the study's objectives and research questions (Creswell, 2018).

Thematic analysis is structured yet adaptable, allowing researchers to draw meaningful insights across varied data sources. This analysis is suitable for exploring and interpreting qualitative data collected through interviews as it provides a flexible framework that can accommodate the diverse range of data collected through this research mechanism. Given the open-ended nature of qualitative interviews, thematic analysis allows researchers to capture and analyse a wide variety of themes and sub-themes that emerge from the data. This flexibility enables exploration of both anticipated and unexpected findings, ensuring a comprehensive and nuanced understanding of the research topic. Moreover, thematic analysis offers a transparent and replicable process for data analysis, enhancing the credibility and trustworthiness of the research findings. By adhering to systematic procedures for coding, categorising, and interpreting data, researchers can demonstrate the rigor and validity of their analytical approach, thereby enhancing the credibility of study outcomes.

Thematic analysis enables researchers to maintain a close connection with the original data, preserving the richness and depth of participants' perspectives. Through careful coding and interpretation of participant narratives, researchers can stay grounded in the lived experiences

and voices of participants, ensuring that findings remain contextually embedded and culturally sensitive. Furthermore, the identification of overarching themes and patterns that cut across individual interviews enables researchers to draw connections and insights at a broader conceptual level. By synthesising findings into coherent themes, researchers can generate valuable insights for theory-building, policy development, and practical interventions.

Thematic analysis was used in this study to analyze the qualitative data collected from 15 SMME owners and managers. This approach, as outlined by Braun & Clarke (2019), was employed to identify, analyse, and report patterns (themes) within the dataset. The process followed a systematic six-step approach, ensuring a structured and rigorous analysis. Each step was operationalized in the current study as follows:

1. **Familiarization with the Data** – The recorded interviews were transcribed verbatim to ensure accuracy. The transcripts were read multiple times to gain an in-depth understanding of the content. Initial observations, such as repeated concepts and key phrases, were noted for further analysis.
2. **Generating Initial Codes** – The transcribed data was systematically coded using both manual methods and NVivo software. This involved highlighting key concepts, phrases, and patterns that appeared relevant to the research questions. A coding framework was developed to categorise responses into meaningful groups.
3. **Searching for Themes** – The generated codes were examined to identify broader themes. Codes were grouped into potential themes that aligned with the study's objectives, such as financial access barriers, policy constraints, market opportunities for SMMEs, and challenges in the renewable energy sector.
4. **Reviewing Themes** – The identified themes were refined by comparing coded extracts across different interviews. Some themes were merged due to their conceptual similarities, while others were split into subthemes where necessary. This step ensured that the themes accurately reflected the dataset.
5. **Defining and Naming Themes** – Each theme was clearly defined to ensure consistency in interpretation. Themes were named based on their relevance to the research questions, ensuring clarity in the analysis. For example, under the broader theme of financial barriers, subthemes such as stringent loan requirements, lack of collateral, and high-interest rates were identified.

6. **Writing the Report** – The final themes were presented in **Chapter Four**, supported by direct quotes from participants to provide evidence-based insights. The findings were linked to existing literature to demonstrate alignment with previous studies and to provide a broader context for understanding the challenges faced by SMMEs in the renewable energy sector.

By systematically following these steps, the thematic analysis approach was effectively applied in this study to extract meaningful insights from the collected data. This structured methodology ensured that the themes emerged inductively from the data rather than being predetermined, allowing for a richer understanding of the perspectives shared by SMME owners and managers. By adopting Braun & Clarke's (2019) thematic analysis approach and explicitly linking it to research trustworthiness measures, this study ensures a rigorous and credible analysis of the qualitative data collected from SMMEs in the renewable energy sector.

3.3.4 Trustworthiness

Establishing a study's trustworthiness is essential to ensure the credibility and validity of its results (Nowell et al., 2017). This research achieved trustworthiness by adhering to the four key pillars of credibility, dependability, transferability, and confirmability, which collectively reinforce the study's rigor and integrity. By adhering to these pillars, the study upheld the integrity and validity of its findings, contributing to the advancement of knowledge in the research field. These pillars are detailed below.

Credibility: Multiple strategies were employed to enhance credibility. Data triangulation was utilised to validate findings through the use of diverse data sources such as interviews, observations, and documents (Flick, 2018). Additionally, member checking, whereby participants review and provide feedback on the accuracy of interpretations, was conducted to ensure alignment of the data with their experiences and perspectives (Guest et al., 2017).

Dependability: Ensuring dependability involves establishing consistency and reliability of research procedures and findings. Dependability was achieved through methodological transparency, where detailed documentation of research processes, including data-collection and analysis techniques, were maintained (Maxwell, 2013). Peer debriefing sessions were also conducted, allowing external reviewers to scrutinise the research process and verify the reliability of interpretations (Birt et al., 2016).

Transferability: Transferability relates to the degree to which study findings can be extended or applied to different settings. To strengthen transferability, this study provided detailed, context-rich descriptions of the research environment, participant characteristics, and data-collection methods (Tracy, 2019). This approach allows readers to assess how findings might be relevant in other contexts. Purposeful sampling was employed to select participants with diverse backgrounds and experiences relevant to the research topic, in order to ensure the breadth of perspectives represented in the study (Patton, 2015).

Confirmability: Confirmability involves demonstrating that the research process and findings maintain objectivity and impartiality. To achieve confirmability, reflexivity was practiced, with the researcher critically reflecting on their biases, assumptions, and preconceptions throughout the research process (Finlay, 2018). Additionally, an audit trail documenting the decision-making processes, data analysis steps, and interpretations was maintained to enhance transparency and accountability (Braun & Clarke, 2019).

3.4 Conclusion

Chapter 3 provided a comprehensive overview of the research methodology adopted for the study, focusing on both qualitative and quantitative approaches. The rationale for selecting a qualitative research methodology was driven by the need to explore the complexities of factors influencing financial accessibility for SMMEs in South Africa's renewable energy sector. Through in-depth interviews, the study aims to gain rich insights into the experiences and perspectives of stakeholders. The research design was carefully outlined, including sampling strategy and data-collection techniques to ensure the collection of robust and relevant data. Thematic analysis was chosen as the method for analysing qualitative data, offering a systematic approach to identifying patterns and themes. The trustworthiness of the study was upheld through strategies such as data triangulation, member checking, and methodological transparency. By adhering to these rigorous methodologies, the study aimed to produce credible and transferable findings that contribute to advancing knowledge in the field of renewable energy finance for SMMEs in South Africa.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

Chapter four presents the results and discussion of the study, providing a thorough examination of the data collected from SMMEs operating in the renewable energy sector. This chapter is structured to address the research objectives by presenting a detailed thematic analysis of the primary data. The chapter explores the financial status, challenges, and strategic responses of these enterprises, integrating insights from interviews with key stakeholders. By linking the findings to existing literature, this chapter offers a comprehensive understanding of the current landscape and identifies critical factors influencing the financial health and operational effectiveness of SMMEs in the sector.

4.2 Demographical Information

The demographic data provided insight into the profile of participants engaged in the renewable energy sector, shedding light on gender distribution, age range, specific technology focus, experience levels, and market orientation. This context is crucial for understanding the characteristics and potential needs of the sector's workforce. Demographic data also highlighted certain trends and gaps that may influence broader industry dynamics. Table 4.1 provides a summary of the participants' demographical data, highlighting a predominance of male respondents. This distribution provided insight into the gender imbalance within the sector, which may reflect broader industry trends.

Most participants were between 31 and 40 years old, indicating a relatively youthful workforce in the renewable energy sector. This age group is typically characterised by higher adaptability to technological advancements and market shifts, which is beneficial for the fast-evolving field of renewable energy. The presence of fewer participants in the below 30 and above 50 age brackets suggested that, while there was a strong presence of emerging professionals, there was also a noticeable gap of those in the very early career stage and of more experienced professionals who could provide a long-term industry perspective.

Table 4.1: Demographic profile of participants

Participant	Gender	Age	Type of Renewable Energy	Years of Experience	Primary Market	Date of Interview	Duration of Interview	Business Ownership	No. of Employees	Funding Source	Revenue Stability
Participant 1	Male	35	Solar	5	Industrial	30/07/2024	45 minutes	Sole Proprietor	12	Self-financed	Moderate
Participant 2	Male	41	Wind	3	Industrial	05/08/2024	50 minutes	Partnership	20	Bank Loan	Low
Participant 3	Male	29	Wind	3	Industrial	07/08/2024	40 minutes	Sole Proprietor	8	Private Investment	High
Participant 4	Male	42	Solar	11	Commercial	07/08/2024	35 minutes	Private Company	35	Government Grant	High
Participant 5	Male	43	Biomass	6	Industrial	12/08/2024	40 minutes	Sole Proprietor	10	Bank Loan	Moderate
Participant 6	Female	31	Wind	4	Government	21/08/2024	35 minutes	Partnership	15	Self-financed	Low
Participant 7	Male	37	Solar	5	Residential	13/08/2024	48 minutes	Sole Proprietor	7	Private Investment	Moderate
Participant 8	Female	34	Solar	6	Commercial	21/08/2024	52 minutes	Private Company	40	Government Grant	High
Participant 9	Male	45	Solar	12	Commercial	19/08/2024	50 minutes	Partnership	25	Self-financed	High
Participant 10	Female	33	Solar	1	Residential	22/08/2024	47 minutes	Sole Proprietor	5	Family Loan	Low
Participant 11	Male	36	Biomass	7	Industrial	20/08/2024	55 minutes	Private Company	30	Bank Loan	Moderate
Participant 12	Male	32	Solar	4	Industrial	16/08/2024	40 minutes	Sole Proprietor	10	Self-financed	Moderate
Participant 13	Female	41	Solar	9	Residential	26/08/2024	45 minutes	Partnership	18	Private Investment	High
Participant 14	Male	50	Solar	15	Industrial	19/08/2024	40 minutes	Private Company	50	Government Grant	High
Participant 15	Female	28	Solar	1	Residential	26/08/2024	35 minutes	Sole Proprietor	6	Family Loan	Low

The predominance of male respondents (66.7% or 10 of 15 participants) compared to female respondents (33.3% or 5 of 15 participants) highlighted a gender imbalance in the sector. This gender disparity is notable as it may reflect broader industry trends where men are more represented in technical and managerial roles within the renewable energy sector. Understanding this imbalance is important for addressing diversity and fostering inclusive practices within the industry, potentially leading to more balanced perspectives and innovation.

The data showed solar energy to be the predominant type of renewable energy in which participants were engaged, with 66.7% (10 of 15) participants working in this area. This finding aligns with widespread adoption and deployment of solar technology due to its decreasing costs and increasing efficiency. The lesser representation of wind and biomass technologies indicated that these areas might be less developed or face different market dynamics compared to solar energy. This concentration on solar technology may reflect its maturity and established market opportunities within South Africa.

Of the 15 participants, 6 (40%) have been in the industry for 3 to 5 years, suggesting a relatively recent entry into the sector. This timeframe typically indicates a period of growth and learning, where businesses are establishing their market presence and navigating initial challenges (Phelps et. al, 2007). The presence of participants with 6 to 10 years of experience and a few with over 10 years provides the research with a mix of insights from those who are still relatively new to the industry and those who have witnessed its evolution over a longer period. This diversity in experience levels was valuable for understanding both emerging trends and long-term industry developments.

The primary market for most participants was residential (6 of 15, or 40%), followed by commercial (5 of 15, or 33.3%), with smaller numbers focused on industrial (3 of 15, or 20%) and governmental/institutional (1 of 15, or 6.7%) sectors. This distribution indicated a strong focus on residential and commercial markets, likely driven by increasing consumer demand for renewable energy solutions and the need for energy efficiency in commercial operations. The lower representation in the industrial and governmental sectors may point to these markets being either more challenging to penetrate or less prioritised by the participants.

4.3 Thematic Findings

4.3.1 Financial status of SMMEs in renewable energy

The thematic analysis of responses to assess the current financial status of SMMEs engaged in the renewable energy sector in South Africa identified the following themes: financial stability and revenue streams, financial management practices, market demand, operational costs, and market conditions. These themes are discussed in detail in the following sub-sections.

4.3.1.1 Financial stability and revenue streams

The theme of financial stability and revenue streams reflected how different types of renewable energy SMMEs manage their financial stability and revenue sources. The theme highlighted variations in revenue streams and their impact on financial health and stability across various business models. The main revenue streams identified among the SMMEs include commercial and residential projects, which present different challenges in terms of financial consistency and predictability.

Participant 4 highlighted the focus on commercial projects, stating:

“Our revenues come mainly from commercial projects. However, the variability in demand has made it challenging to predict and stabilise our income, affecting our overall financial health”.

Similarly, Participant 7 discussed the seasonal nature of the residential market and the need to diversify:

“As a small residential solar business, we’ve been experiencing fluctuating revenues. The residential market is seasonal, and we’re trying to diversify into other sectors to stabilise our income”.

The primary findings revealed that financial stability among SMMEs in the renewable energy sector was significantly influenced by the diversity and predictability of their revenue streams. SMMEs engaged in larger-scale projects, such as industrial solar installations, benefitted from more consistent revenue streams which provided greater financial stability.

As Participant 1 highlighted,

“Our major source of income is from large-scale solar installations for industrial clients, which has helped us maintain financial stability. Large projects provide a more predictable cash flow and allow us to plan our finances more effectively”.

This demonstrates how industrial projects could serve as a reliable financial base for such enterprises. Conversely, SMMEs operating in niche markets, particularly in the residential solar sector, face significant revenue variability due to seasonal demand fluctuations.

Participant 14 underscored this challenge, stating,

“Currently, we are close to liquidation. We’ve struggled with declining revenues and mounting operational costs, leading to a severe financial strain”.

This illustrates the vulnerability of businesses that rely on inconsistent revenue streams, which, when coupled with high operational costs, can severely impact financial stability.

Recent literature supports these findings. For instance, Zeng et al. (2020) emphasised the importance of diversified revenue streams in maintaining financial stability, particularly in sectors with volatile demand, as is the case with renewable energy. Companies with industrial contracts are more resilient against economic downturns (Zeng et al., 2020). Similarly, research by Bocken et al. (2019) highlighted the financial stability that larger-scale projects bring due to their predictable revenue streams.

4.3.1.2 Financial management practices

The theme of financial management practices explores the financial management strategies employed by SMMEs to maintain financial health. The theme examines how effective budgeting, financial planning, and cost management contribute to overall stability and sustainability of these enterprises.

Effective financial management practices are crucial for maintaining the financial health of SMMEs in the renewable energy sector. Strict budgeting and forecasting, cost management, and the use of financial management tools contribute significantly to financial stability (Karadag, 2015). For example, strict budgeting ensures that companies do not overspend during periods of high revenue, creating financial buffers for leaner times. Forecasting helps

businesses anticipate demand fluctuations and adjust their financial strategies accordingly (Bharadiya, 2023), which is crucial in the renewable energy sector where market demand can be unpredictable. These practices provide a framework that helps SMMEs mitigate risks, maintain liquidity, and avoid financial distress during downturns.

Participants 2 and 8 placed emphasis on budgeting and financial software, highlighting the importance of proactive financial planning. Specifically,

Participant 2 stated that:

“We focus heavily on strict budgeting and financial forecasting. Our team uses detailed financial models to project cash flow and manage expenses. This has been crucial in navigating through periods of low revenue”,

while Participant 8 added:

“We employ a financial management software that helps us track our spending and income in real-time. This allows us to adjust our financial strategies promptly and avoid unnecessary expenditure.”

Additionally, the focus of Participant 5 on cost management reflected the need for a continuous expense review to avoid financial strain. These practices help SMMEs navigate financial challenges and sustain their operations.

Participant 5 reflected this as,

“Cost management is a significant challenge for us. We constantly review our expenses and seek ways to reduce costs without compromising the quality of our projects. Efficient management of operational costs is essential for staying afloat.”

Similarly, Participant 11 emphasised the importance of forward-looking financial planning, stating,

“Financial planning has been a key area of focus. We have developed contingency plans for potential financial downturns and invest in financial training for our staff to ensure better management practices.”

Together, these strategies of careful cost management and proactive planning enable SMMEs to mitigate risks and ensure long-term financial stability.

4.3.1.3 Market demand

The theme of market demand explores how fluctuations in market demand influence the financial health of SMMEs in the renewable energy sector. Specifically, the theme highlights the challenges faced by these businesses in maintaining revenue stability and executing sound financial planning amidst varying levels of demand.

The primary market demand drivers identified by participants include wind and solar projects, both of which experience varying levels of demand due to external factors such as government incentives and broader economic conditions.

For instance, Participant 3 explained how market demand directly impacts revenue, as

“Market demand significantly impacts our revenue. During periods of high demand for wind energy projects, we see an increase in revenue. However, demand dips during off-seasons, which affects our financial stability.”

This explanation highlights how fluctuations in demand create uncertainty for SMMEs, particularly in sectors like wind energy where project volume can shift with the seasons.

Similarly, Participant 6 underscored the role of government incentives in shaping demand:

“Our financial health is closely tied to market trends. For example, government incentives and policy changes can boost demand for wind projects, but when these incentives are reduced or removed, our revenue takes a hit.”

Renewable energy SMMEs are therefore vulnerable to policy-driven demand, where financial health can quickly decline when favourable policies are rolled back.

Volatility of demand is also felt in the solar sector.

Participant 9 discussed how changes in commercial real estate development influence the volume of solar projects, stating:

“The commercial sector’s demand for solar solutions is quite volatile. We’ve noticed that changes in commercial real estate development directly influence our project volume and revenue.”

Solar-focused SMMEs thus show dependence on broader industry cycles, where demand can be unpredictable.

Participant 13 added the perspective of a new entrant in the sector, explaining how market demand fluctuations have posed challenges for business growth:

“Since we are relatively new, fluctuating market demand has been challenging. We’re still trying to find our footing and establish a stable client base, which affects our financial performance.”

Thus, emerging businesses in particular struggle with building financial stability in markets with inconsistent demand.

The findings reveal that market demand variability has a direct effect on revenue stability for renewable energy SMMEs. SMMEs reliant on demand-driven projects, especially in niche markets like wind or solar energy, must remain adaptable to maintain financial stability. As noted by Participant 3, inconsistent demand periods can negatively affect cash flow, underscoring the need for flexible financial strategies.

In support of this analysis, Díaz-Rainey and Ashton (2020) pointed out that market demand is a significant driver of financial health, with demand fluctuations leading to revenue volatility. Businesses in the renewable energy sector must adapt quickly to such changes (Díaz-Rainey & Ashton, 2020). Yildiz (2019) also identified demand fluctuations as a key challenge for financial planning, particularly for companies heavily reliant on government policies. Demand variability therefore significantly shapes financial outcomes in the renewable energy sector.

4.3.1.4 Operational costs

Operational costs as a theme examines how operational costs directly influence the financial stability of SMMEs in the renewable energy sector. The theme focuses on the critical need to manage and control expenses, particularly in capital-intensive operations like renewable energy, where costs related to equipment and labour can significantly affect profitability.

The primary operational cost drivers identified by participants include labour, materials, and equipment.

Participant 4 emphasised the impact of these costs on financial stability, stating:

“We face considerable operational costs, especially related to equipment and labour. Controlling these expenses is crucial for maintaining financial stability, especially when revenue is unpredictable.”

This challenge of balancing operational expenditure with fluctuating revenue streams is a common issue in the renewable energy sector.

Participant 8 underscored the importance of quality investments, adding: *“Operational costs are a significant concern. We invest heavily in high-quality materials and skilled labour, which increases our costs but is essential for delivering reliable solar solutions.”*

While these investments ensure the delivery of quality projects, they also heighten financial pressure, making it crucial for businesses to carefully manage their resources.

Participant 12 shared their strategy of implementing cost-saving measures to mitigate these financial pressures:

“Managing operational costs is a constant challenge. We have implemented cost-saving measures, such as optimising our supply chain and renegotiating contracts, to mitigate financial strain.”

This quote highlights the importance of efficiency and continuous review of cost structures to ensure sustainability. However, not all businesses are successful in managing these costs.

Participant 14 reflected on the severe consequences of high operational expenses, stating:

“Our high operational costs have contributed to our financial difficulties. We’ve struggled to keep up with expenses while facing declining revenues, leading to our current near-liquidation state.”

There is thus a critical need for effective cost management to avoid financial distress, particularly when revenues are declining.

These findings reveal that operational costs, particularly related to labour and materials, are a significant factor in determining the financial health of SMMs. Effective cost management strategies, such as optimising supply chains and renegotiating contracts, are crucial for maintaining financial stability. However, as seen in Participant 14’s experience, failure to control these expenses can lead to severe financial difficulties.

Supporting literature emphasises the importance of controlling operational costs in maintaining financial health. Kwon and Ryu (2021) found effective management of operational expenses to be critical for small businesses, particularly in capital-intensive industries such as renewable energy. Additionally, Bianchini et al. (2021) highlighted that reducing inefficiencies and

leveraging economies of scale are key strategies for improving financial outcomes in the energy sector. These strategies align with the experiences of the research participants, indicating that SMMEs must carefully manage operational costs to sustain financial stability.

4.3.1.5 Market conditions

The theme of market conditions examines how broader market conditions, such as economic fluctuations, regulatory changes, and sector-specific trends, affect the financial stability of SMMEs in the renewable energy sector. Market conditions, especially those tied to policy shifts and global energy price trends, can either bolster or hinder the financial health of these enterprises, often necessitating rapid adaptation.

Participants highlighted the volatility of market conditions and how this directly influences their revenue stability. For instance, Participant 3 explained how

“The market conditions have been quite volatile recently, with fluctuating energy prices and policy changes impacting our revenue. Despite having a solid business plan, external factors like sudden policy shifts and economic instability have disrupted our financial projections.”

This unpredictability in external markets makes it challenging for businesses to maintain stable revenues, despite having sound internal financial structures. Similarly, Participant 8 emphasised the impact of government policies, stating:

“We’ve seen that market conditions greatly influence our financial health. For example, changes in government incentives for solar energy have directly impacted our sales. When incentives are reduced or removed, we experience a drop in demand, which strains our finances.”

This highlights the vulnerability of SMMEs to government policy changes, especially those dependent on subsidies or incentives that support renewable energy projects.

Participant 11 underscored the difficulty of adapting to regulatory changes in the biomass sector:

“Economic downturns and changes in the biomass sector regulations have severely affected our operations. We’ve had to adapt quickly to changing regulations and market demands, which has been challenging for our financial planning and stability.”

This further illustrates the financial strain caused by shifting regulatory frameworks, requiring SMMEs to remain flexible in their financial planning. Participant 13 also discusses the influence of regional market conditions, adding:

“Being based in Johannesburg, we are subject to regional economic conditions and energy policies. Fluctuations in the local market and varying levels of government support influence our revenue and financial stability. We’ve had to be flexible and adjust our strategies to cope with these external pressures.”

Geographical and policy-specific factors that can vary greatly across regions are therefore important, which further complicated financial planning for businesses operating in diverse markets.

The findings reveal that market conditions—whether global, national, or regional—play a critical role in shaping the financial health of SMMEs in the renewable energy sector. External factors, such as policy changes, economic fluctuations, and sector-specific regulations, create significant financial instability, necessitating adaptive strategies to navigate these challenges. Supporting literature emphasises the volatile nature of the renewable energy market. Ahmad et al. (2021) asserted that fluctuations in market demand and global energy prices create significant uncertainties for SMMEs. Moreover, Miller et al. (2022) highlighted the importance of developing flexible strategies to adapt to such external market pressures. Businesses that can quickly adjust to changes in demand, government policies, and global trends are more likely to maintain financial stability, even in volatile market conditions (Miller et al., 2022). This aligns with the experiences of the participants, who emphasised the need for agility and resilience in the face of unpredictable market dynamics.

4.3.2 Access to finance for renewable energy SMMEs

The analysis identified key themes impacting financial access, including barriers to financial access, sector-specific financial challenges, alternative financing options, the role of government policies and support, and perceptions of financial institutions. Each theme is discussed in detail in the following sub-sections.

4.3.2.1 Barriers to financial access

Barriers are faced by SMMEs when attempting to secure financial resources. The main challenges identified are stringent lending criteria, high collateral requirements, and the absence of tailored financial products that meet the specific needs of renewable energy businesses.

Participant 5 shared that

“high collateral requirements set by financial institutions” are a major obstacle: “For a biomass SMME like ours, securing loans requires assets we don’t have, which limits our ability to expand or even maintain operations.”

This quote demonstrates how a lack of sufficient collateral limits the growth of SMMEs. Similarly, Participant 8 discussed the stringent criteria imposed by banks:

“Accessing finance has been difficult due to the stringent criteria banks impose. They often view renewable energy projects as high-risk and are hesitant to provide loans without substantial guarantees.”

Participant 11 noted the lack of financial products tailored to the renewable energy sector:

“The lack of financial products specifically designed for biomass energy projects makes it challenging to secure funding.”

There is therefore a need for more nuanced financial products that cater specifically to renewable energy projects. Additionally, Participant 14 shared that access to much-needed funds is delayed by,

“high-interest rates and complex loan application processes”, impacting cash flow. These operational challenges stem from the difficulty in navigating financial institutions’ requirements.

Xie and Wang (2019) agreed that the heightened risk perceptions of renewable energy projects make it difficult for SMMEs to secure capital. Suri et al. (2020) pointed out that inadequate collateral remains a significant constraint in sectors that require long-term capital commitments, like renewable energy. The above-mentioned research emphasises the need for financial institutions to develop more tailored products and reduce collateral requirements to meet the needs of these enterprises.

4.3.2.2 Sector-specific financial challenges

The theme of sector-specific financial challenges delves into financial challenges unique to the renewable energy sector, particularly those that hinder financial access for SMMEs. These challenges include long project development times, revenue uncertainty, and complex regulatory frameworks that affect the financing prospects of renewable energy projects.

The primary financial challenge for many SMMEs in renewable energy is the extended timeframe required to complete projects, which creates uncertainty for investors and makes it difficult to secure financing. As Participant 2 notes:

“In the wind energy sector, long project gestation periods create uncertainty for financial backers. The extended timeframes for project development and return on investment make it harder to attract investors and secure loans.”

This drawn-out nature of renewable energy projects complicates financing efforts, as financial backers prefer faster returns on investments. Moreover, regulatory complexities further exacerbate these challenges, as highlighted by Participant 6, who stated:

“The renewable energy sector is heavily regulated, and navigating through these regulations can be a financial burden. Compliance costs and delays in approvals impact our ability to access finance quickly and efficiently.”

Compliance with complex regulations can increase operational costs and lead to delays, thus affecting an SMME’s ability to maintain a steady cash flow and secure funding.

Revenue uncertainty is another key issue, particularly for smaller-scale businesses in the residential solar market. Participant 7 emphasised the impact of seasonal demand on financial access, stating:

“Revenue streams in the renewable energy sector can be unpredictable. For residential solar installations, seasonal demand variations create cash flow issues that make financial planning and access more difficult.”

Volatile revenue streams deter financial institutions from investing in such projects, making it harder for SMMEs to obtain loans or other financing options. Similarly, Participant 3 described how changes in government policy, especially regarding subsidies and incentives, directly impact financial access:

“Government regulations and policy shifts frequently impact our financial access. Changes in subsidies or incentives for wind energy projects often lead to delays and financial instability, affecting our ability to secure funding.”

SMMEs must therefore be adaptable to frequent policy shifts in order to manage financial stability.

The findings suggest that sector-specific financial challenges, such as extended project timelines, regulatory hurdles, and unpredictable revenue streams, significantly affect the ability of SMME to access necessary funding. Research by Bocken et al. (2021) supported these insights, stating that the long development timelines in renewable energy projects can deter investors due to delayed returns. Similarly, Chen and Lee (2018) highlighted how complex regulatory frameworks impose additional financial burdens on renewable energy businesses, limiting their ability to attract capital. These challenges necessitate more targeted financial products and government policies to address the unique needs of the renewable energy sector, thus enhancing financial access for SMMEs.

4.3.2.3 Alternative financing options

Alternative financing options as a theme examines the potential of alternative financing options, such as venture capital, crowdfunding, and green bonds, to help SMMEs in the renewable energy sector secure necessary funds. These options offer diverse routes to obtaining financial support, yet each comes with its own unique challenges.

A key alternative financing option explored by participants is venture capital. However, as Participant 3 noted:

“We’ve explored venture capital as an alternative financing option. While it has provided some funding, the process can be lengthy and demanding. It’s not always easy to find investors who are willing to commit to renewable energy projects.”

This highlights how time-consuming and resource-intensive venture capital funding can be, making it less accessible for smaller businesses that may not have the capacity to engage with the complex requirements of venture capitalists. Crowdfunding offers another potential avenue for funding, although it is not without challenges. Participant 9 reflected on its limited effectiveness:

“Crowdfunding has been somewhat effective for us. We’ve managed to raise some capital through online platforms, but it requires significant marketing efforts and doesn’t always provide enough funding for large projects.”

Thus, while crowdfunding can generate some capital, the marketing demands, and relatively small sums typically raised make it less viable for SMMEs aiming to scale their operations or finance large renewable energy projects.

Green bonds, an increasingly popular financing tool for environmentally focused projects, present another option. However, Participant 12 highlighted difficulties as:

“We’ve looked into green bonds, but the application process is complex and requires substantial documentation. While it’s a promising option, the barriers to entry are quite high for small businesses like ours.”

This emphasises how the bureaucratic and regulatory hurdles associated with green bonds can be prohibitive for smaller SMMEs, despite the appeal of securing long-term, lower-cost funding through this method. Finally, some SMMEs rely on more traditional forms of funding, such as personal savings or informal loans. Participant 15 discussed this approach, stating:

“Our family business has tried using personal savings and informal loans from family members. Although this has helped us get started, it’s not a sustainable long-term solution for scaling our solar business.”

This reflects the reliance of some smaller SMMEs on personal networks for initial funding, which, while useful for start-up capital, does not offer a scalable or sustainable financial solution as a business grows.

The findings demonstrate that, while alternative financing options provide valuable avenues for securing funding, they can bring significant challenges. Venture capital, crowdfunding, and green bonds each have potential, but their respective complexities and barriers to entry can limit their effectiveness, particularly for smaller SMMEs. Harrison and Baldock (2019) discussed how venture capital has emerged as an important funding route for high-risk sectors like renewable energy but emphasised that this option is typically reserved for businesses with strong growth potential. Similarly, Agrawal et al. (2020) noted that crowdfunding has become a popular method for raising capital; however, it is often constrained by the need for broad public visibility and trust, making it more challenging for businesses without established

reputations. Lastly, Smith and Roberts (2023) highlighted the opportunities and limitations of green bonds, acknowledging that while they provide access to large sums of capital for sustainable projects, the regulatory burden can be overwhelming for smaller businesses.

4.3.2.4 Government policies and support

The theme of government policies and support explores how government policies and support mechanisms either facilitate or hinder financial access for SMMEs in the renewable energy sector. Incentives, subsidies, and other forms of government intervention can be critical in fostering growth and sustainability. However, the effectiveness of these measures often depends on the consistency and accessibility of the programs, which can be hampered by bureaucratic challenges and frequent policy changes.

Government incentives, while beneficial, can also present challenges. As Participant 4 noted:

“Government incentives have been crucial for our commercial solar projects. However, frequent policy changes create uncertainty and complicate our financial planning. Consistent and predictable support would greatly enhance our ability to secure financing.”

These fluctuating policies can disrupt long-term planning, even when incentives are present. The lack of consistency creates uncertainty, making it difficult for businesses to strategise effectively. Moreover, bureaucratic inefficiencies in application and approval processes can delay access to vital funds. As Participant 8 pointed out:

“We’ve benefited from some government programs aimed at supporting renewable energy businesses. Still, the application processes are often cumbersome and time-consuming, which delays access to necessary funds.”

Thus, while support mechanisms exist, their slow and complex processes can undermine their effectiveness, potentially stalling the growth of SMMEs that rely on these funds to sustain operations.

Additionally, instability in government policies can be a deterrent for long-term financial planning, as indicated by Participant 11:

“While government subsidies have provided some relief, the lack of clear and stable policies makes long-term financial planning difficult. Frequent changes in policy create instability and can deter potential investors.”

This statement reflects the broader issue of policy volatility, which discourages investment by creating an unpredictable environment for SMMEs. Stability in policy frameworks is crucial for maintaining investor confidence and supporting the growth of renewable energy businesses.

The challenges of delays in government support were further echoed by Participant 13, as:

“Government support is essential, but we often face delays in receiving funds from programs. This affects our cash flow and ability to execute projects on time, impacting our overall financial health.”

The dependency on government funds coupled with administrative delays places additional strain on the financial health of these businesses, especially in a sector that relies on timely financial support to execute capital-intensive projects.

The findings suggest that, while government policies and incentives play a vital role in supporting the financial sustainability of SMMEs in the renewable energy sector, their effectiveness is often compromised by policy inconsistencies and bureaucratic inefficiencies. For these programs to fully benefit SMMEs, there must be greater consistency in policy and more efficient administrative processes.

Supporting literature aligns with these findings, as Mazzucato and Semieniuk (2018) stated that government policies are crucial for stimulating investment in renewable energy projects, but frequent changes in policy can introduce uncertainty, making it difficult for businesses to maintain long-term financial stability. Similarly, Brown and Warner (2020) emphasised the importance of consistent and streamlined support mechanisms, stating that inefficiencies in the administration of government programs can deter businesses from fully capitalising on available incentives. Furthermore, Jones et al. (2022) highlighted the need for stable and transparent policy frameworks that support not only financial access, but also the overall financial resilience of SMMEs.

4.3.2.5 Perceptions of financial institutions

This theme explores how SMMEs in the renewable energy sector perceive financial institutions and the challenges they face in securing financial support. Many SMMEs experience difficulties in establishing trust and obtaining favourable financial terms from these institutions. The perception of risk surrounding renewable energy projects coupled with the conservative approach of financial institutions often acts as a barrier to funding.

Participant 2 shared the view that financial institutions lack sufficient understanding of renewable energy projects:

“We find that many financial institutions lack a deep understanding of renewable energy projects. They often view them as high-risk, which affects their willingness to provide funding or favourable terms.”

When institutions perceive renewable energy projects as inherently risky, SMMEs face more challenges in accessing necessary funds. Additionally, the conservative nature of financial institutions is noted by Participant 6:

“Financial institutions tend to be conservative in their approach to renewable energy projects. They require extensive documentation and high levels of assurance before committing funds, which can be frustrating for SMMEs.”

The extensive documentation requirements and assurance demanded by these financial institutions make it particularly difficult for smaller businesses in the sector to meet the criteria for financial support, limiting their access to capital. Participant 10 expressed a broader industry sentiment as,

“There’s a general perception that banks and other financial institutions are not fully supportive of renewable energy initiatives. They seem more inclined to invest in more traditional sectors where they feel there is less risk.”

This statement underscores a prevailing notion among SMMEs that financial institutions favour more traditional sectors, where risks are more easily quantifiable, rather than investing in the relatively new and evolving renewable energy sector.

Lastly, Participant 14 articulated the challenge of trust between SMMEs and financial institutions:

“The lack of trust between us and financial institutions is evident. We often face challenges in negotiating favourable loan terms because financial institutions are hesitant to commit to our sector.”

The broader issue of distrust, where financial institutions may be reluctant to fully engage with renewable energy SMMEs, results in less favourable loan terms or outright rejection of funding requests.

The perception of financial institutions as unsupportive of renewable energy initiatives affects the ability of SMMEs to secure essential financing. This is consistent with Brown and Rocha (2021) who found that financial institutions tend to be sceptical of sectors like renewable energy, which involve longer-term and less predictable returns. Brown and Rocha (2021) highlighted the need for financial institutions to adapt their risk assessment models to accommodate the unique characteristics of renewable energy projects. Furthermore, Luthi et al. (2020) believed that educating financial institutions about the benefits and potential of renewable energy investments can reduce the perceived risk, thereby fostering a more supportive financial environment for SMMEs.

Recent studies underscored the importance of closing the knowledge gap between SMMEs and financial institutions. For instance, Brown and Smith (2023) suggested that by improving engagement and understanding between financial institutions and SMMEs, financial institutions could offer more favourable terms and support for renewable energy projects. Therefore, fostering closer collaboration and better education between financial institutions and SMMEs is crucial for unlocking better financial outcomes in the renewable energy sector.

4.3.3 Strategies and recommendations

This theme explored the various strategies employed by SMMEs in the renewable energy sector to improve their access to financial resources and enhance financial sustainability. A variety of approaches were identified by the participants as effective strategies, such as diversifying revenue streams, exploring alternative financing options, and leveraging government programs.

Participant 1 emphasised the importance of diversification:

“To improve our financial access, we’ve diversified our revenue streams and established partnerships with large industrial clients. This approach has helped us secure better financing terms and reduce dependency on any single revenue source.”

The strategy of establishing partnerships and branching into various markets reduces the risks associated with a single income source and enhances the company’s ability to secure favourable financial terms. Similarly, Participant 7 underscored the role of alternative financing mechanisms:

“We’ve explored alternative financing options such as crowdfunding and green bonds. While these options have not been a complete solution, they have provided some relief and enabled us to pursue smaller-scale projects that generate steady income.”

These alternative financing methods help smaller SMMEs bypass traditional banking barriers, although they may not always be sufficient for larger-scale projects.

Government-backed programs are another viable strategy, as illustrated by Participant 10:

“Engaging with government-backed financing programs has been effective for us. We actively participate in incentive programs and grants available for renewable energy projects. This strategy has improved our cash flow and allowed us to invest in new technologies”.

Government initiatives often provide critical financial support and enable investment in the latest technologies, driving both innovation and sustainability for these businesses.

In addition to these strategies, Participant 12 highlighted the importance of financial management practices:

“We’ve implemented strict financial management practices, including regular budgeting and forecasting. These practices have helped us manage our resources better and plan for financial challenges, improving our overall financial stability”.

Effective financial management ensures that resources are optimally allocated, creating buffers to absorb financial shocks and enhancing long-term stability.

Research by Nguyen and Pham (2021) suggested that SMMEs which diversify their revenue streams are better able to withstand market volatility. Miller et al. (2022) highlighted that

alternative financing options, such as crowdfunding and green bonds, provide additional financial avenues, particularly for smaller enterprises. Additionally, Agrawal et al. (2020) emphasised the importance of regular financial forecasting in maintaining operational efficiency and avoiding financial distress. By adopting these diversified strategies—whether through revenue diversification, alternative financing, government support, or sound financial management—SMMEs in the renewable energy sector can significantly improve their access to financial resources and enhance their overall sustainability.

4.3.3.1 Support mechanisms and initiatives

The theme of support mechanisms and initiatives investigates the role of government programs, industry networks, and tailored financial support in fostering financial stability and growth of SMMEs in the renewable energy sector. These support mechanisms provide crucial resources, mentorship, and financial relief, which enable businesses to navigate industry complexities.

Participant 3 highlights the importance of government incentives:

“Government incentives such as tax credits and subsidies have been invaluable for our operations. These initiatives have made it easier to manage costs and invest in new technologies that improve efficiency.”

Government subsidies reduce the operational burden on SMMEs, enabling them to invest in innovative solutions and maintain financial health. Industry networks also play a significant role, as noted by Participant 8:

“Industry networks and associations play a significant role in providing support. They offer valuable resources, networking opportunities, and information about funding options that we would not have access to otherwise.”

Such networks provide vital access to knowledge, resources, and opportunities that may otherwise be unavailable to smaller enterprises, allowing them to remain competitive.

Participant 9 identified the need for more tailored financial support:

“We believe that more tailored financial support programs specifically designed for solar businesses would greatly benefit us. Having programs that understand the unique needs of our sector could improve our financial stability and growth prospects.”

Tailored financial products allow businesses to meet their sector-specific needs, which can differ from those of more established industries.

Furthermore, local business development programs offer mentorship and practical advice, as mentioned by Participant 13:

“We’ve seen positive impacts from local business development programs that offer mentorship and financial advice. These programs help us navigate the complexities of funding and financial management more effectively”.

Mentorship and guidance from these programs can significantly impact the ability of a business to manage financial challenges and leverage available resources.

In support of these findings, Mazzucato and Semieniuk (2018) believed consistent and well-structured government support is critical in driving investment and sustaining growth in renewable energy. Brown and Wilson (2023) also emphasised that industry-specific support networks help businesses access necessary funding by providing knowledge and resources tailored to their needs. Additionally, Harrison and Baldock (2019) attested that simplified processes and tax incentives can improve financial access, especially for small businesses in capital-intensive sectors like renewable energy. Together, these support mechanisms—government incentives, industry networks, tailored financial programs, and mentorship—create a supportive ecosystem that promotes the financial health and growth of SMMEs in the renewable energy sector.

4.3.3.2 Collaboration with financial institutions

Collaboration with financial institutions as a theme explores the importance of collaboration between SMMEs and financial institutions in improving access to funding and enhancing financial sustainability in the renewable energy sector. The participants emphasised the critical role of building relationships with banks and investors, negotiating favourable terms, and establishing trust to secure better financial conditions.

Participant 4 underscored the value of maintaining open communication with financial institutions:

“Building strong relationships with financial institutions has been crucial for us. By maintaining open communication and demonstrating our project’s potential, we’ve managed to secure better financing terms and more favourable conditions.”

Strong communication enables SMMEs to clearly present their value proposition, which helps banks feel more confident about their investments and offer better financing options. Similarly, Participant 11 highlighted the benefits of specialised financing products designed for renewable energy projects:

“We’ve engaged in partnerships with banks that offer specialised financing products for renewable energy projects. These collaborations have helped us access funding more easily and with better conditions compared to traditional loans.”

When financial institutions provide sector-specific financial solutions, it opens up more tailored and supportive funding avenues for SMMEs.

Working with knowledgeable investors is also a crucial aspect, as mentioned by Participant 13:

“Working closely with investors who understand the renewable energy sector has been beneficial. Their expertise and willingness to invest have provided us with the capital needed for growth and development.”

Investors who have an in-depth understanding of renewable energy are more likely to support long-term projects, giving SMMEs opportunities to expand. Even when facing financial challenges, Participant 14 highlighted the importance of trust-building and clear business planning:

“Although our financial struggles have been significant, we’ve learned that negotiating with financial institutions and presenting a clear business plan can sometimes lead to more flexible financing solutions. It’s about building trust and proving the viability of our projects.”

These insights are supported by research that emphasises the role of strong partnerships and communication in securing favourable funding. Garcia et al. (2022) found that developing close relationships with financial institutions leads to more favourable financial conditions for SMMEs. Similarly, Patel and Zhao (2021) underscored the need for collaboration between banks and SMMEs, as these partnerships can enable businesses to secure necessary capital on more flexible terms. Fostering collaboration with financial institutions is essential for improving financial access in the renewable energy sector. By maintaining open

communication, building trust, and presenting a clear business case, SMMEs can secure more favourable financing options and ensure long-term financial sustainability.

4.3.3.3 Policy recommendations for financial sustainability

This theme examines policy recommendations aimed at improving financial access and sustainability for SMMEs in the renewable energy sector. Participants highlighted the need for flexible funding options, tax incentives, regulatory support, and tailored programs to address the specific needs of the sector.

Participant 6 emphasised the importance of accessible funding mechanisms, stating:

“We believe that introducing more flexible and accessible funding options specifically for renewable energy projects would be beneficial. Policies that reduce the barriers to entry and provide easier access to capital could support the growth of SMMEs in this sector.”

Flexible funding models are essential for encouraging growth in the renewable energy space, particularly for small businesses that face challenges with high initial costs. Similarly, Participant 9 highlighted the benefits of tax incentives and grants, explaining:

“Policy changes that offer tax incentives and grants for renewable energy businesses would greatly enhance our financial stability. These measures would help offset some of the initial costs and make it easier to invest in long-term projects.”

Tax incentives can play a vital role in reducing the financial burden on SMMEs, making renewable energy projects more viable by offsetting upfront investment costs.

Additionally, Participant 12 called for a regulatory environment that supports innovation:

“There needs to be more emphasis on creating a regulatory environment that supports innovation and investment in renewable energy. Simplifying regulations and offering more support for new entrants could improve the financial health of SMMEs.”

Streamlining regulations and fostering innovation would ensure that SMMEs can navigate complex bureaucratic processes and focus more on business growth. Participant 15 recommended that policymakers reduce the cost of financing, particularly for smaller enterprises:

“We recommend that policymakers focus on reducing the cost of financing and providing more targeted support for small businesses. Tailored programs that address the specific needs of emerging solar companies could make a significant difference in our financial sustainability.”

Tailored support programs for small businesses are crucial to address the unique challenges they face, helping them to secure the financial resources necessary to scale.

The need for flexible funding, tax incentives, and regulatory simplifications aligns with Brown and Wilson (2023), who found that targeted government support is crucial for ensuring long-term financial sustainability in the renewable energy sector. Additionally, O’Connor and Murray (2022) emphasised that a stable and clear regulatory framework is essential for promoting investment, reducing financial barriers, and creating a more supportive environment for SMMEs in renewable energy. Furthermore, Mazzucato and Semieniuk (2018) advocated for the introduction of financial products that are tailored to the specific needs of the renewable energy sector, while also stressing the importance of clear and simplified regulatory processes to reduce bureaucratic obstacles for small businesses. In summary, these policy recommendations, focusing on accessible funding options, tax incentives, and regulatory improvements, are essential for fostering the growth and financial sustainability of SMMEs in the renewable energy sector. Supportive policies will enable these businesses to overcome the unique financial challenges they face and ensure their long-term viability.

4.3.3.4 Lessons learned and best practices

This theme focuses on the practical lessons and best practices learned by SMMEs in the renewable energy sector to improve financial access and sustainability. The insights shared by participants highlight the importance of government incentives, the need for more streamlined processes, and the challenges posed by regulatory frameworks.

Participant 7 emphasised the importance of government incentives in sustaining their business, as:

“Government incentives such as tax breaks and grants have been crucial for our residential solar business. However, the frequent changes in policy and the lack of consistency in these incentives have created uncertainty, making it difficult to plan long-term investments.”

Stable and consistent government support is thus important in creating a predictable environment for long-term financial planning. Similarly, Participant 9 pointed out challenges faced when accessing government subsidies:

“We’ve benefited from some government subsidies aimed at supporting commercial solar projects. But the application process is often cumbersome and lengthy, which delays access to the funds we need. More streamlined processes would make a significant difference.”

Streamlining these processes would help SMMEs access crucial funding more efficiently, reducing the financial strain caused by delayed access to capital.

Participant 12 highlighted another common challenge as,

“Regulatory frameworks are sometimes contradictory, creating confusion. While there are incentives for renewable energy, the complexity and frequent updates in regulations can deter investors and financial institutions from committing to projects.”

This underscores the need for clearer and more consistent regulations to foster investor confidence and facilitate smoother financial access for SMMEs. Finally, Participant 13 shared their experience with local government incentives, stating:

“In Johannesburg, local government incentives have helped our large solar projects. However, there is a lack of coordination between different levels of government, which can lead to inconsistent support and create barriers to accessing finance.”

Better coordination across government levels could reduce these barriers, making financial access smoother for SMMEs.

The lessons learned by these SMMEs are consistent with the literature, which emphasises the critical role of clear and stable policy frameworks in fostering financial sustainability. The OECD (2020) stressed the importance of well-designed government incentives and simplified processes to improve financial access in the renewable energy sector. Mazzucato (2018) also highlighted that effective policy frameworks not only provide direct financial support but also help reduce uncertainty, thereby encouraging more investment in the sector. These best practices, such as leveraging government incentives, seeking clarity in regulatory frameworks, and advocating for streamlined processes, can serve as valuable strategies for SMMEs looking to improve their financial sustainability.

4.4 Conclusion

The analysis in this chapter provided valuable insights into the financial and operational realities of SMMEs in the renewable energy sector. The thematic analysis highlighted differences in financial stability, revenue sources, and cost management practices across various types of renewable energy businesses. In addition, the analysis emphasised the impact of external factors, such as economic conditions and regulatory changes on financial performance. By connecting these findings with relevant literature, the chapter offered a clear understanding of the sector's financial landscape and set the foundation for recommendations to support the resilience and growth of SMMEs.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides conclusions and recommendations based on the study findings. The analysis synthesised insights derived from both the primary data collected through interviews with SMMEs in the renewable energy sector, and the relevant literature. By evaluating the financial status, challenges, and strategies of these enterprises, the chapter aims to offer a cohesive understanding of their operational dynamics and provide actionable recommendations for enhancing their financial stability and growth. The findings are framed within the broader context of existing research, highlighting key areas of alignment and divergence with previous studies.

5.2 Summary of Findings

The financial status of SMMEs in the renewable energy sector is greatly influenced by the scale and type of project being handled. Enterprises involved in large-scale projects, such as industrial solar installations, often experience stable financial conditions due to consistent and substantial revenue streams. In contrast, those operating in niche markets, for example residential solar installations, face significant revenue variability due to seasonal demand and market uncertainties, leading to greater financial instability. Effective cost management plays a crucial role in maintaining financial health, with those SMMEs implementing stringent expense controls being better positioned to manage financial pressures. Additionally, external factors such as economic fluctuations and regulatory changes can disrupt revenue streams and increase costs, further affecting financial stability. Overall, while some SMMEs achieve stability through large contracts and robust cost management, others struggle with revenue variability and external market pressures.

Stewart and Morris (2020) stated that strong financial management practices are essential for navigating economic challenges and ensuring long-term sustainability. Small businesses using financial forecasting tools were found to be better equipped to handle fluctuating revenues: a key issue in the renewable energy sector (Stewart & Morris, 2020). Moreover, Brown et al. (2021) emphasised that cost management, especially in capital-intensive industries like renewable energy, is critical for avoiding financial distress.

Several key barriers affect financial access for SMMEs in the renewable energy sector. Access to funding is often hampered by a high perceived risk by financial institutions, stringent lending criteria, and inadequate collateral. Regulatory complexities and long project gestation periods further exacerbate these challenges. Some SMMEs explore alternative financing options, such as venture capital and government grants, with varying success. The impact of government policies and regulations is mixed, with some providing essential support while others create additional hurdles. SMMEs often perceive a disparity in financial access between themselves and larger corporations, who benefit from better terms and greater leverage. Cultural and socio-economic factors, including limited financial literacy and economic instability, also influence access to finance, making it challenging for smaller enterprises to secure necessary funding.

Effective strategies for improving financial access and sustainability include enhancing financial literacy among SMME owners, diversifying revenue streams, and fostering stronger collaboration with financial institutions and government agencies. Building robust relationships with stakeholders and exploring innovative financing options can provide additional support and resources. Government policies should be tailored to reduce barriers to funding, simplify regulatory requirements, and provide targeted support for smaller enterprises. Additionally, implementing best practices in financial management, such as rigorous cost control and risk management, can help SMMEs navigate financial challenges more effectively. By addressing these areas, SMMEs in the renewable energy sector can improve their financial stability and access to funding, ultimately contributing to their long-term success and growth.

5.3 Research Conclusions

This research into the financial status and challenges of SMMEs in the renewable energy sector provides a comprehensive view of the sector's dynamics, highlighting several key conclusions. The analysis indicates that financial stability within the renewable energy sector is significantly influenced by the nature of revenue streams. SMMEs involved in large-scale projects, such as industrial solar installations, benefit from predictable and steady income, which contributes to greater financial stability. This finding aligns with existing literature that underscores the advantages of substantial contracts in mitigating financial volatility. In contrast, SMMEs focusing on niche markets, such as residential solar installations, face greater revenue variability due to seasonal demand and market uncertainties. This variability can lead to

pronounced financial instability, underscoring the need for diversification in revenue sources to buffer against market fluctuations.

Cost management emerged as a crucial determinant of financial health for SMMEs. Effective control over expenses and optimisation of resources are essential for sustaining operations, particularly when revenue streams are unstable. This conclusion is supported by the literature, which highlights the importance of stringent cost management practices in maintaining financial stability and navigating economic pressures. External factors, including economic fluctuations and regulatory changes, also play a significant role in shaping the financial landscape for SMMEs. Both the primary findings and literature point to the disruptive impact of these external pressures on revenue and operational costs. SMMEs must therefore adopt flexible strategies and robust risk management practices to remain resilient against such external challenges. The literature further supports this view, emphasising the need for adaptability and proactive risk management to sustain financial stability amidst changing economic and regulatory conditions.

Finally, the research highlights the persistent challenges faced by SMMEs when accessing financial resources. Despite various financial mechanisms and government programs, SMMEs often struggle to secure necessary funding due to the unique characteristics of the renewable energy sector, including long project gestation periods and regulatory complexities. This challenge is corroborated by the literature, which emphasises the need for targeted financial support and innovative financing solutions to address the specific needs of SMMEs in this sector. In summary, the combined insights from the primary findings and relevant literature underscore the importance of diversified revenue streams, effective cost management, adaptability to external factors, and improved access to financial resources in enhancing the financial stability and sustainability of SMMEs in the renewable energy sector.

5.4 Recommendations

Based on the findings from this research, several recommendations are made to enhance the financial stability and growth of SMMEs in the renewable energy sector. Firstly, SMMEs should focus on diversifying their revenue streams to mitigate the impact of market fluctuations and revenue variability. Engaging in a mix of large-scale and niche projects can provide a buffer against income instability. Diversification can also involve exploring new market segments or

adopting innovative technologies that offer additional revenue opportunities. This approach not only enhances financial stability but also positions SMMEs to capitalise on emerging trends and demands in the renewable energy sector.

Secondly, effective cost management is crucial for maintaining financial health. SMMEs should implement rigorous expense control measures and optimise their resource allocation to manage operational costs more efficiently. This cost management includes adopting cost-effective technologies, renegotiating supplier contracts, and improving operational efficiencies. By focusing on cost management, SMMEs can better withstand periods of financial strain and maintain their competitive edge in a challenging market.

Furthermore, SMMEs should develop flexible strategies and robust risk management practices to navigate external pressures such as economic fluctuations and regulatory changes. This involves creating contingency plans for economic downturns, staying informed about regulatory developments, and engaging in proactive risk assessment. By preparing for potential disruptions, SMMEs can enhance their resilience and adapt more effectively to changes in the external environment.

In addition, there is a need for improved access to financial resources. SMMEs should seek to build stronger relationships with financial institutions and explore alternative financing options such as venture capital, crowdfunding, and government grants. Financial institutions should, in turn, consider developing tailored financial products and support mechanisms specifically designed for the renewable energy sector. Enhanced access to financing can help SMMEs secure the capital required for growth and innovation.

Lastly, fostering collaborations with industry stakeholders, including government agencies, financial institutions, and other businesses, can provide valuable support and resources for SMMEs. Collaborative efforts can lead to shared knowledge, increased access to funding, and collective problem-solving, which are essential for overcoming the financial challenges faced by SMMEs in the renewable energy sector. By working together, stakeholders can create a more supportive ecosystem that promotes the sustainability and growth of SMMEs.

5.5 Areas for Further Research

Further research can significantly advance an understanding of the challenges and opportunities facing SMMEs in the renewable energy sector. Based on the findings of this study, several potential research avenues can be explored. Firstly, investigating the impact of specific government incentives and programs on the financial performance of SMMEs in the renewable energy sector could yield valuable insights. While this study touched on the role of government support, a more detailed examination of how various incentives—such as tax breaks, subsidies, or grant programs—affect the financial stability and growth of SMMEs would be beneficial. This research could include a comparative analysis of SMMEs that have successfully utilised these incentives versus those that have not, offering a clearer picture of their effectiveness.

Secondly, further research could focus on the role of technological innovation in improving financial outcomes for SMMEs. While diversification of revenue streams was identified as a crucial strategy, there is a need to explore how adopting new technologies or business models can enhance financial stability and operational efficiency. Studies could investigate how innovations such as advanced energy storage systems, smart grid technologies, or digital platforms impact the financial performance of SMMEs, and whether they offer new opportunities for revenue generation.

Another important area for further investigation is the development of tailored financial products and support mechanisms for SMMEs in the renewable energy sector. Research could examine the needs and preferences of SMMEs in terms of financing, and how financial institutions can better cater to them. This research could involve evaluating the effectiveness of existing financial products and exploring new models, such as blended finance or impact investing, that could better support SMMEs in this sector. Additionally, examining the effects of external economic factors and regulatory changes on SMMEs in greater depth would provide a more comprehensive understanding of their financial challenges. Studies could be included on how global economic trends, changes in energy policy, or shifts in environmental regulations affect the financial stability and growth prospects of SMMEs.

Lastly, exploring the experiences and strategies of SMMEs in other emerging markets or countries with similar renewable energy contexts could offer valuable comparative insights. Such research could identify best practices and successful models from different regions that could be adapted to the South African context, potentially providing new strategies for overcoming financial challenges and leveraging opportunities in the renewable energy sector.

By addressing these areas, future research can contribute to a deeper understanding of the factors influencing the financial success of SMMEs in the renewable energy sector and help develop more effective strategies and policies to support their growth and sustainability.

5.6 Conclusion

The study provided a comprehensive understanding of the financial dynamics faced by SMMEs in the renewable energy sector, highlighting a spectrum of challenges and strategies for stability. It revealed that SMMEs engaged in large-scale projects generally benefit from more stable financial conditions due to predictable revenue streams. In contrast, those focusing on niche markets encounter significant financial volatility due to variable demand and seasonal fluctuations. Effective cost management is crucial for maintaining financial health, as those enterprises that rigorously control expenses and optimise resources are better positioned to weather financial instability. Additionally, external factors such as economic downturns and regulatory changes further impact financial stability, emphasising the need for flexible strategies and robust risk management. The findings reinforce existing literature on the importance of diversified revenue streams and effective cost management, while highlighting the necessity for SMMEs to adapt to external pressures to achieve long-term financial stability and growth.

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APPENDIX A: RESEARCH INSTRUMENT

Section A: Demographic Details

1. What is your gender? Please tick the appropriate box (✓)

	Tick ✓
Male	
Female	
Prefer not to say	

2. What is your age group? Please tick the appropriate box (✓)

	Tick ✓
Below 30	
31 – 40 years	
41 – 50 years	
Above 50 years	

3. Which type of renewable energy technology are you involved with? Please tick the appropriate box (✓)

	Tick ✓
Solar	
Wind	
Biomass	
Other (please specify)	

4. How many years have you been in the industry? Please tick the appropriate box (✓)

	Tick ✓
Less than 2 years	
3 – 5 years	
6 – 10 years	
More than 10 years	

5. What is the primary market or customer base for your renewable energy products/services?
Please tick the appropriate box (√)

Item	Tick √
Residential	
Commercial	
Industrial	
Governmental/Institutional	

6. How do you perceive the current regulatory environment for renewable energy in South Africa? Please tick the appropriate box (√)

Item	Tick √
Supportive	
Neutral	
Restrictive	

7. Are there any specific government incentives or programs that your company has benefited from in the renewable energy sector? Please tick the appropriate box (√)

Item	Tick √
Yes	
No	
Not sure	

Section B: To assess the current financial status of small and medium-sized enterprises (SMMEs) engaged in the renewable energy sector in South Africa.

1. Can you provide an overview of your company's current financial status in the renewable energy sector?

2. How do you evaluate the financial health and stability of your business within the renewable energy sector?

3. What are the primary sources of revenue for your company's operations in the renewable energy sector?

4. How do you manage expenses to ensure financial sustainability within the renewable energy sector?

5. Have you encountered any financial challenges or constraints in the past while operating in the renewable energy sector? If so, what were they?

6. How do you measure the success or performance of your financial strategies specifically within the context of the renewable energy sector?

Section C: To identify and analyze the factors influencing financial access for SMMEs operating within the renewable energy value chain in South Africa.

1. What are the main barriers or challenges you encounter in accessing financial resources for your business?

2. Are there specific factors within the renewable energy sector that affect your ability to secure financing?

3. Have you explored alternative financing options? If so, what were they and how successful were they?

4. How do government policies and regulations impact your access to finance within the renewable energy sector?

5. Do you perceive any differences in financial access between SMMEs and larger corporations within the industry?

6. Are there any cultural or socio-economic factors that influence financial access for SMMEs in this sector?

Section D: To formulate effective strategies and recommendations aimed at improving financial access and sustainability for SMMEs in the renewable energy sector in South Africa.

1. Based on your experiences, what strategies have you found effective in improving financial access for your business?

2. What are the support mechanisms or initiatives that you believe would benefit SMMEs in the renewable energy sector?

3. How important do you think collaboration with other stakeholders, such as financial institutions or government agencies, is in improving financial access?

4. What recommendations would you offer to policymakers or industry stakeholders to enhance financial sustainability for SMMEs in the renewable energy sector?

5. What are some of the lessons learned or best practices that you would like to share with other SMMEs operating in similar contexts?

End time of interview

Thank you for your participation

APPENDIX B: INTERVIEW CONSENT FORM



Master of Commerce in Development Finance

INTERVIEW/SURVEY CONSENT FORM

Participant name:

I volunteer to participate in a research project conducted by **Nwabisa Mali** as partial fulfilment of the requirements for the **Master of Commerce in Development Finance Degree** at the UCT Graduate School of Business. I understand that the research is designed to gather information about **An Exploratory Study of Financial Access Along the Renewable Energy Sector Value Chain: The Case of SMMEs in South Africa** and that I will be one of approximately twelve people being interviewed for this research.

Objective(s) of the research

There are 3 main objectives for this research:

1. To assess the current financial status of small and medium-sized enterprises (SMMEs) engaged in the renewable energy sector in South Africa.
2. To identify and analyse the factors influencing financial access for SMMEs operating within the renewable energy value chain in South Africa.
3. To formulate effective strategies and recommendations aimed at improving financial access and sustainability for SMMEs in the renewable energy sector in South Africa.

Ethics approval

The ethical clearance for this study was approved by the UCT GSB Research and Ethics Committee on 6th June 2024.

Participation and confidentiality

I understand that my participation in this research is voluntary, that I will not be compensated and that I may withdraw at any time. The interview will take approximately 60 - 75 minutes to complete and will be audio recorded.

I understand that I will not be identified by name in any reports using information obtained from this interview and that my confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions.

Should you have any questions or concerns please contact me bwxnwa001@myuct.ac.za or my supervisor at latif.alhassan@uct.ac.za

Consent

I consent to participate in this interview, based on the terms outlined above and subject to the following additional condition of my own (if any).

Signed by interviewee

Date

.....

.....

Signed by student

Date

APPENDIX C: ETHICAL CLEARANCE



UNIVERSITY OF CAPE TOWN
FACULTY OF COMMERCE
 Igniting Knowledge and Opportunity



Commerce Faculty Ethics in Research Application Form

Any person planning to undertake research in the Faculty of Commerce at the University of Cape Town is required to obtain ethical clearance. This form is intended for undergraduate students, honours students, PD Dip students and Masters students whose research component is less than 90 credits.

Once this form is completed it should be sent via email to your departmental ethics representative. Your supervisor will be able to provide you with the contact details.

It is assumed that the researcher has read the UCT Code for Research involving Human Subjects (Available at <http://web.uct.ac.za/depts/educate/download/uctcodeforresearchinvolvinghumansubjects.pdf>) in order to be able to answer the questions in this form. Students must include a copy of the completed form with the dissertation/thesis when it is submitted for examination.

1. PROJECT DETAILS		
Project title: An Exploratory Study of Financial Access Along the Renewable Energy Sector Value Chain: The Case of SMMEs in South Africa		
Principal Researcher/s: Nwabisa Mali	Email address(es):	BWXNWA001@myuct.ac.za
Research Supervisor: Abdul Latif Alhassan, Ph.D	Email address(es):	latif.alhassan@uct.ac.za
Co-researcher(s):	Email address(es):	
Department: Graduate School of Business, University of Cape Town		
Brief description of the project: The transition towards renewable energy sources is a major focus for countries, with small and medium-sized enterprises (SMMEs) playing a crucial role in driving innovation and sustainability. In South Africa, SMMEs are key players in the renewable energy value chain, contributing to job creation, economic growth, and environmental sustainability. However, they face challenges in accessing financial resources, which is crucial for their success. This study aims to address this gap by exploring the financial access challenges faced by SMMEs in South Africa, proposing strategies for improvement and providing valuable insights for policymakers, investors, and industry stakeholders. The findings could inform targeted interventions to empower SMMEs to overcome financial barriers and contribute to a more sustainable energy future.		
Data collection: (please select)		
<input checked="" type="checkbox"/> Interviews <input type="checkbox"/> Questionnaire <input type="checkbox"/> Experiment <input type="checkbox"/> Secondary data <input type="checkbox"/> Observation <input type="checkbox"/> Other (please specify): _____		
Have you attached a research proposal OR a literature review with research methodology? (please select) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Com Ethics_V5_May2017

2. PARTICIPANTS

2.1 Does the research discriminate against participation by individuals, or differentiate between participants, on the grounds of gender, race or ethnic group, age range, religion, income, handicap, illness or any similar classification?	YES	<input type="radio"/> NO
2.2 Does the research require the participation of socially or physically vulnerable people (children, aged, disabled, etc.) or legally restricted groups?	YES	<input type="radio"/> NO
2.3 Will you be able to secure the informed consent of all participants in the research? (In the case of children, will you be able to obtain the consent of their guardians or parents?)	<input checked="" type="radio"/> YES	<input type="radio"/> NO
2.4 Will any confidential data be collected or will identifiable records of individuals be kept?	YES	<input type="radio"/> NO
2.5 In reporting on this research is there any possibility that you will not be able to keep the identities of the individuals involved anonymous?	YES	<input type="radio"/> NO
2.6 Are there any foreseeable risks of physical, psychological or social harm to participants that might occur in the course of the research?	YES	<input type="radio"/> NO
2.7 Does the research include making payments or giving gifts to any participants?	YES	<input type="radio"/> NO

If you have answered **YES to any of these questions**, please describe how you plan to address these issues (append to form):

Affiliations of participants: *(please select)*

- Company employees
 Hospital employees
 General public
 Military staff
 Farm workers
 Students
 Other (please specify): _____

Race / Ethnicity:

Are you asking a question about race/ethnicity in your questionnaire?

- Yes
 No

Which race categories have been used?

Have you included the option: "Prefer not to answer" as part of your race/ethnicity question?

3. PROVISION OF SERVICES

Does your research involve the participation of or provision of services to communities?

If your answer is YES, please complete below:

3.1 Is the community expected to make decisions for, during or based on the research?	YES	<input checked="" type="radio"/> NO
3.2 At the end of the research will any economic or social process be terminated or left unsupported, or equipment or facilities used in the research be recovered from the participants or community?	YES	<input checked="" type="radio"/> NO
3.3 Will any service be provided at a level below the generally accepted standards?	YES	<input checked="" type="radio"/> NO

If you answered YES to any of these questions, please describe below how you plan to address these issues.

3. ORGANISATIONAL PERMISSION

If your research is being conducted within a specific organisation, please state how organisational permission has been/will be obtained:

Have you attached the letter from the organisation granting permission? (please select)

Yes No, but this **will be** obtained before commencing the research Not applicable

Are you making use of **UCT students** as respondents for your research? (please select)

Yes No

If **yes**, have you contacted Executive Director: Student Affairs for permission? (please select)

Yes No

Was approval granted? (please select)

Yes No Awaiting a response

Are you making use of **UCT staff** as respondents for your research? (please select)

Yes No

If **yes**, have you contacted Executive Director: Human Resources for permission? (please select)

Yes No

Was approval granted? (please select)

Yes No Awaiting a response

Contact Emails: Executive Director: Human Resources (Miriam.Hoosain@uct.ac.za)
Executive Director: Student Affairs (Moonira.Khan@uct.ac.za)

4. INFORMED CONSENT

What type of consent will be obtained from study participants?

- Oral Consent
 Written Consent
 Anonymous survey questionnaire (covering letter required , no consent forms needed)
 Other (Please Specify)

How and where will consent/permission be recorded?

Have you attached an informed consent form to your application? Yes No

5. SPONSORSHIP OF RESEARCH

If your research is sponsored, is there any potential for conflicts of interest? Not Applicable
If your answer is YES, please complete below

4.1 Is there any existing or potential conflict of interest between a research sponsor, academic supervisor, other researchers or participants?	YES	NO
4.2 Will information that reveals the identity of participants be supplied to a research sponsor, other than with the permission of the individuals?	YES	NO
4.3 Does the proposed research potentially conflict with the research of any other individual or group within the University?	YES	NO

If you have answered **YES** to any of these questions, please describe how you plan to address these issues (append to form)

6. RISK TO PARTICIPANTS

Does the proposed research pose any physical, psychological, social, legal, economic, or other risks to study participants you can foresee, both immediate and long range? (please select)

Yes No

If yes, answer the following questions:

1. Describe in detail the nature and extent of the risk and provide the rationale for the necessity of such risks
2. Outline any alternative approaches that were or will be considered and why alternatives may not be feasible in the study
3. Outline whether and why you feel that the value of information to be gained outweighs the risks

1.

2.

3.

I certify that I have read the Commerce Faculty Ethics in Research policy
 (<http://www.commerce.uct.ac.za/Pages/ComFac-Downloads>)

I hereby undertake to carry out my research in such a way that

- there is no apparent legal objection to the nature or the method of research; and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.


Signed by:

	Full name and signature	Date
Principal Researcher/Student:	Nwabisa Mali <div style="border: 1px solid black; padding: 2px; display: inline-block;">Signed by candidate</div>	16/05/2024

This application is approved by:

Supervisor	Prof. Latif Alhassan	20th May 2024
Departmental Ethics Rep		6/6/2024

Questionnaire checklist on next page

CHECKLIST	SELECT
A full copy of a research proposal or a literature review with methodology is attached in a separate file	<input checked="" type="checkbox"/>
Interview schedules / cover letters / questionnaires / forms and other materials used in the study are attached in separate files	<input checked="" type="checkbox"/>
Organisational consent letter / UCT student or staff approval letter	<input type="checkbox"/>
<p>On your cover letter to your questionnaire have you included the following?</p> <p>1. The following UCT Logo </p> <p>2. A sentence explaining the aim of the research</p> <p>3. Sentences of a similar nature to below must be included in the cover letter or consent form:</p> <p>This research has been approved by the Commerce Faculty Ethics in Research Committee.</p> <p>Your participation in this research is voluntary. You can choose to withdraw from the research at any time.</p> <p>The questionnaire will take approximately X minutes to complete</p> <p>You will not be requested to supply any identifiable information, ensuring anonymity of your responses.</p> <p>Due to the nature of the study you will need to provide the researchers with some form of identifiable information however, all responses will be confidential and used for the purposes of this research only.</p> <p>Should you have any questions regarding the research please feel free to contact the researcher (insert contact details).</p> <p>4. Have you scanned in your signature for the last section of the form?</p>	<p>NA <input type="checkbox"/></p> <p><input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/></p> <p>OR</p> <p><input type="checkbox"/></p> <p><input checked="" type="checkbox"/></p> <p><input checked="" type="checkbox"/></p>