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Assessing the financial inclusion of micro-, small, and medium

enterprises (MSMEs) in South Africa:

2010 and 2020 FinScope MSME data

By

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DECLARATION

I declare that "*Assessing the financial inclusion of micro-, small, and medium enterprises (MSMEs) in South Africa: 2010 and 2020 FinScope MSME data*" is my work, that it has not been submitted for any degree or examination in any university, and that all the sources that I have used or quoted have been indicated and acknowledged by complete references.

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Date: 31 July 2023

ABSTRACT

The financial inclusion of micro-, small, and medium enterprises (MSMEs) as major stakeholders in the economy remains meagre. MSMEs are the strongest economic activity drivers worldwide, yet many researchers have studied the effect of financial inclusion on MSMEs as it has become a global priority. International and local studies have agreed that removing certain financial system constraints can improve the financial inclusion status of MSMEs. Yet, local studies focused on this concept for South African MSMEs are scarce.

The objective of this study is to assess the financial inclusion of micro-, small, and medium enterprises (MSMEs) in South Africa. This study offers the first of its kind to use FinScope MSME 2010 and 2020 surveys to assess the financial inclusion of MSMEs in South Africa and uses the Multiple Correspondence Analysis (MCA) to derive a financial inclusion index to assess the financial inclusion status of MSMEs. This study aims to fill the gap in the literature by using recent data and a different methodology to measure the financial inclusion of MSMEs in South Africa. The relationship between the computed MSME financial inclusion index and various explanatory variables is tested using the Ordinary Least Squares regression model. Thereafter, the likelihood of being financially excluded is measured by running probit regressions.

The empirical findings of this study indicate that the South African financial system became more inclusive of MSMEs by 2020 compared to 2010. By 2020, more micro-enterprises gained access to a business bank account and other financial services and products. The MSMEs' perception of their bank's services was also relatively positive. However, the regression analysis shows that micro-enterprises are likely to be financially excluded compared to their larger counterparts. It is also found that those who are aged between 16 and 24 years and Black MSME owners were more likely to be financially excluded.

The study recommends that obtaining a greater knowledge of the financial inclusion status of MSMEs could improve the outreach of policymakers and regulators in their mission to improve the financial inclusion of MSMEs.

Keywords: Financial inclusion; micro-, small, and medium enterprises (MSMEs); FinScope; South Africa; Multiple Correspondence Analysis (MCA).

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All Glory to God

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LIST OF ABBREVIATIONS

AFI	Alliance for Financial Inclusion
CA	Correspondence Analysis
CAPI	Computer-Assisted Personal Interview
CDF	Cumulative distribution function
CGAP	Consultative Group to Assist the Poor
CPS	Community, social and personal services
ECM	Error Correction Model
FAS	Financial Access Survey
FBS	Finance and business services
FCC	Fully credit-constrained
FII	Financial inclusion index
GDP	Gross domestic product
GPFI	Global Partnership for Financial Inclusion
IFC	International Finance Corporation
IMF	International Monetary Fund
JCA	Joint Correspondence Analysis
MCA	Multiple Correspondence Analysis
MCC	Maybe credit-constrained
MSME	Micro-, Small, and Medium Enterprises
NCC	Non-credit-constrained
NSB	National Small Business
NSE	National Small Enterprise
OLS	Ordinary Least Squares
PCA	Principal Component Analysis
PCC	Partially credit-constrained
SEDA	Small Enterprise Development Agency
SEFA	Small Enterprise Finance Agency

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SME	Small and medium enterprises
STC	Swedish Trade Council
TFP	Total factor productivity
WBES	World Bank Enterprise Survey

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CHAPTER ONE: INTRODUCTION

1.1 Background and Problem Statement

An inclusive financial system should meet the needs of individuals by granting them access to affordable and suitable financial services and products (Demirguc-Kunt & Klapper, 2012). Financial inclusion can generally be described as the ease of access and actual usage of appropriate regulated financial services that meet the needs of all members of an economy (Sarma & Pais, 2011; Ozili, 2018). The issues and benefits of financial inclusion have grown as the main topics on the agendas of governments and policymakers worldwide (Camara & Tuesta, 2014). In recent years, governments, banks, and financial regulators have aspired to promote financial inclusion in their countries (Siddik & Kabiraj, 2018). Globally, the World Bank and the G20 gave recognition to financial inclusion as a fundamental pillar to help eradicate poverty and inequality levels in emerging countries (World Bank, 2017; Maurer & Nelson, 2020).

Without inclusive financial systems, small businesses and the poor depend on their limited earnings and savings to invest in their future and pursue growth opportunities (Demirguc-Kunt & Klapper, 2012). By facilitating savings and providing households and businesses with better access to financial resources, financial inclusion has the potential to enhance economic growth and reduce poverty and inequality (Dabla-Norris et al., 2015). Financially inclusive systems provide the promise of deepening economic growth through job creation which affords social and economic welfare (Barajas et al., 2020; Shihadeh, 2021). This study will be concentrated on the financial inclusion of micro-, small, and medium enterprises (MSMEs).

For MSMEs as a major stakeholder of economic activity worldwide, their financial inclusion status remains meagre (Nanziri & Walmalwa, 2021). MSMEs are businesses whose assets and liabilities are relatively small in terms of their size, employees, geography, or turnover characteristics (Anga et al., 2021). It is generally argued that MSMEs embody a substantial part of the global economy and are the strongest drivers of economic development, innovation, and employment (IFC, 2017). However, the greatest limitations to the success of MSMEs are commonly related to their lower levels of access to finance from formal financial institutions, and to financial skills and markets (Ramukumba, 2014; IFC, 2018). By improving the functioning of the formal financial sector, the financing constraints faced by MSMEs can be

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reduced (Demirguc-Kunt & Klapper, 2012). Access to formal funding sources can assist MSMEs to innovate and develop their products and services, as well as allow them to invest more in resources to grow their business (Shihadeh, 2021). Given their economic significance, the financial inclusion of MSMEs has been a key area of focus for researchers and policymakers worldwide (Barajas et al., 2020). Many scholars argue that MSMEs remain vulnerable to financial constraints, especially the ones in developing countries (Buri et al., 2019; World Bank, 2019).

Many researchers have previously studied the effect of financial inclusion on MSMEs as it has become a priority worldwide. In this regard, global studies on the financial inclusion of MSME, such as Dabla-Norris et al. (2015), Karpowicz (2016), and Fouejieu et al. (2020), concluded that the MSME financial inclusion gap can be closed by improving the stability and efficiency of the financial system, lowering borrowing costs, as well as reducing collateral constraints. The results of studies by Anga et al. (2021) and Negm (2021) on the same topic provided evidence which indicated that improved financial inclusion has a positive effect on MSMEs. Furthermore, a South African study by Nanziri & Walmalwa (2021) found that removing financial sector constraints for MSMEs can result in positive spill-overs to the country's economic growth, poverty, and inequality reduction objectives. Although these studies used different methodologies, their results provide a brief overview of the positive effects that enhanced financial inclusion has on the performance of MSMEs in various unique countries.

Since the valuable contribution to the economy by MSMEs has not gone unnoticed, the South African government has established various legislation and policies to support the potential of these businesses. By 2004, the National Small Business Act of 1996 was revised to establish the Small Enterprise Development Agency (SEDA) and the Small Enterprise Finance Agency (SEFA), which are required to implement development support programmes for MSMEs (National Small Business Amendment Act, 2004). Yet, these enterprises still require support with financial access. The financial needs of MSMEs remain unmet (World Bank, 2017), which calls for an in-depth assessment of the financial inclusion status of these businesses within the South African context. The benefits of the increased financial inclusion of MSMEs affect both the enterprise itself and the economy as a whole.

Various researchers agree that MSMEs are the drivers of economic diversification and development, job creation, as well as innovation for a significant part of the world economy (IFC, 2017; Buri et al., 2019; Rasheed et al., 2019). In South Africa, almost 90 per cent of all

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employment is generated from MSMEs (Motsomi et al., 2020). Despite this role of MSMEs towards economic development, they lack access to suitable finance which has been identified as a crucial limitation for their expansion (Abraham & Schmukler, 2017; IFC, 2017; World Bank, 2020a). Thus, policies should be designed and implemented to improve the financial system to foster an inclusive and enabling economy for MSMEs in South Africa.

According to Buri et al. (2019), many MSMEs do not have access to financial services that support their specific business needs. In 2017, the IFC found that over 70 per cent of MSMEs in developing countries are less likely to use financing from formal financial institutions (IFC, 2017). The issue is that while South Africa's financial sector has progressed noticeably in the last 20 years, the financial systems have yet to sufficiently close the gap in access to financial services that exist for excluded individuals and MSMEs in the country (National Treasury, 2020). Still, about half of formal MSMEs depend on informal or internal sources of funding, such as loans from friends and family members (World Bank, 2019a), and they remain dependent on cash transactions that occur outside the formal financial economy (World Bank, 2017; National Treasury, 2020).

The main reasons for the use of informal financing or the refusal of external funding by MSMEs relate to their insufficient operating and cash flow history, limited collateral, and relatively bad credit record (SME South Africa, 2018). Yet, the majority of these businesses require access to funding or credit to improve their business performance. Several studies exist with a focus on quantifying the financial inclusion of MSMEs in emerging economies (Abraham & Schmukler, 2017; IFC, 2017; World Bank, 2020a). However, few exist with a focus on MSMEs in South Africa. For this reason, this study aims to evaluate the financial inclusion of MSMEs in South Africa by measuring their access to and usage of formal financial services and products.

The research questions that arise from the abovementioned issues include the following: What are the levels of financial inclusion of MSMEs in South Africa? Can the actual use of financial services and products improve their level of financial inclusion? Which factors are challenges to their uptake of financial services?

1.2 Research Objectives

Generally, the objective of this study is to assess the financial inclusion of micro-, small and medium enterprises (MSMEs) in South Africa, using 2010 and 2020 FinScope cross-sectional data. By doing so, this study aims to identify the specific objectives as follows:

- Analyse the levels and trends of financial inclusion of MSMEs.

- Determine whether the usage of financial services can enhance the financial inclusion of MSMEs.

- Determine which factors impede the usage of financial services among MSMEs.

1.3 Significance of the Study

This study is motivated by the surge in research on the crucial role of financial inclusion in combating inequality, unemployment, and poverty, especially in emerging economies such as South Africa. The main aim of this study will thus focus on the financial inclusion of MSMEs to determine whether the benefits of financial inclusion cater to their needs and what this effect will have on the South African economy. Moreover, the study will focus on the dimensions of MSME financial inclusion – access, usage, and quality – as variables for empirical analysis. This study also serves as one of the first to use FinScope MSME 2010 and 2020 data for South Africa. Furthermore, this study will be useful to the existing body of knowledge in that it would encourage financial inclusion policy development focused on the MSME sector since studies that exist on this topic in the context of South Africa are scarce.

1.4 Outline of the Study

This study will consist of five chapters. Chapter One will introduce the study by providing background information and the problem statement, as well as the research questions. The first chapter will then continue by presenting the research objectives and the significance of the study. Chapter Two will provide a literature review that covers the key concepts, theories, as well as past local and international empirical studies focused on financial inclusion. Chapter Three will identify the data utilised for the study and the methodology that will be followed for the study. Chapter Four will present the empirical analysis and findings of the study. Chapter Five will conclude the study with a review of the main findings of the study and policy recommendations for improving the financial inclusion of MSMEs in South Africa.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Chapter Two provides an overview of the key concepts, theories, and empirical literature relating to the financial inclusion of micro-, small, and medium enterprises (MSMEs) in South Africa. The chapter consists of five main sections. Section 2.2 provides definitions of various concepts, whereas Section 2.3 discusses theories relating to voluntary and involuntary financial exclusion and the financial inclusion of firms. Section 2.4 highlights past empirical studies that focus on financial inclusion, after which Section 2.5 concludes the chapter by stating the relevance of this study to the existing literature on the topic of financial inclusion.

2.2 Definitions of Key Concepts

This study finds it imperative to conceptualise micro-, small, and medium enterprises (MSMEs), financial exclusion, and financial inclusion, as well as how they relate in the context of South Africa since the definitions of these concepts vary across regions and research. This section provides the foundation of the definitions and concepts this research will follow.

2.2.1   Micro-, Small, and Medium Enterprises (MSMEs)

The International Finance Corporation (IFC) recognises the existence of the MSME financial inclusion gap since access to formal finance is one of the main constraints that prevent small businesses from growing and creating jobs (IFC, 2017). However, explaining the definition of MSMEs is crucial to express the extent of this existing financial inclusion gap. The term MSMEs is broadly defined by the size of the enterprises and the characteristics that determine their sizes, such as the number of total employees and annual revenue. A challenge to defining these firms is that different stakeholders typically define them according to their criteria (IFC, 2018). For instance, governments might focus on the employment potential of MSMEs thereby only concentrating on the number of total employees as an indicator of the job creation possibilities that could come from MSMEs. Whereas, financial institutions tend to be more concerned with the annual turnover of the businesses as an indication of their creditworthiness. Generally, in South Africa, the National Small Business Act No. 102 of 1996 is the most commonly used framework to define MSMEs (Abor & Quartey, 2010).

The National Small Business (NSB) Act No. 102 of 1996, defines a small enterprise according to the following proxies: (1) overall employment, (2) overall annual turnover, and (3) overall

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gross assets (National Small Business Act, 1996). Furthermore, the definition of a small business given by the 2004 amendment of the NSB Act is as follows:

> a separate and distinct business entity, together with its branches or subsidiaries, if any, including co-operative enterprises and non-governmental organisations, managed by one owner or more predominantly carried on in any sector or subsector of the economy classified as a micro-, a very small, a small or a medium enterprise (NSB Amendment Act, 2004).

In addition, the NSB Amendment Act No. 29 of 2004 only uses two of the three proxies, that is employment and turnover, and eliminates the very small enterprise size category (NSB Amendment Act, 2004). According to the Act (NSB Amendment Act, 2004), micro-enterprises employ between 0-10, small ones between 11-50, and medium-sized enterprises employ 51-250 workers. Second, the overall turnover depends on the sector or subsector in which the MSME operates. These sectors are defined in the schedule adapted from the NSB Amendment Act of 2004 as shown in Table 1.

Alternatively, FinScope defines small business owners as those who are: (1) 16 years or older and (2) generating income through small business activities and perceiving themselves as business owners (Grundling & Kaseke, 2010). The FinScope definition of MSMEs follows the same enterprise size categories as specified by the NSB Amendment Act (2004). This study will thus use the definition of MSMEs as defined by the NSB Amendment Act No. 29 of 2004.

Table 1: Characteristics of MSMEs in South Africa

Sector/subsector	Size of enterprise	Employment	Annual turnover (R millions)
Agriculture	Micro	0-10	≤ 7
	Small	11-50	≤ 17
	Medium	51-250	≤ 35
Mining and Quarrying	Micro	0-10	≤ 15
	Small	11-50	≤ 50
	Medium	51-250	≤ 210
Manufacturing	Micro	0-10	≤ 10
	Small	11-50	≤ 50
	Medium	51-250	≤ 170
Electricity, Gas, and Water	Micro	0-10	≤ 10
	Small	11-50	≤ 60

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Table 1: Continued

Sector/subsector	Size of enterprise	Employment	Annual turnover (R millions)
	Medium	51-250	≤ 180
Construction	Micro	0-10	≤ 10
	Small	11-50	≤ 75
	Medium	51-250	≤ 170
Retail, Motor trade, and Repair services	Micro	0-10	≤ 7.5
	Small	11-50	≤ 25
	Medium	51-250	≤ 80
Wholesale	Micro	0-10	≤ 20
	Small	11-50	≤ 80
	Medium	51-250	≤ 220
Catering, Accommodation, and other Trade	Micro	0-10	≤ 5
	Small	11-50	≤ 15
	Medium	51-250	≤ 40
Transport, Storage, and Communications	Micro	0-10	≤ 7.5
	Small	11-50	≤ 45
	Medium	51-250	≤ 140
Finance and Business Services	Micro	0-10	≤ 7.5
	Small	11-50	≤ 35
	Medium	51-250	≤ 85
Community, Social and Personal Services	Micro	0-10	≤ 5
	Small	11-50	≤ 22
	Medium	51-250	≤ 70

Source: Adapted from the NSB Amendment Act of 2004

In terms of the financial inclusion of MSMEs, smaller enterprises tend to suffer from financial constraints and other barriers (Beck & Cull, 2014; Barajas et al., 2020). Measuring these challenges is crucial in understanding the economic contribution of MSMEs to inequality, poverty, and growth (Nanziri & Wamalwa, 2021). In this regard, MSMEs may have different financial needs according to their size, which requires diverse solutions (Shinokazi, 2012). In general, MSME, SME, and SMME are used interchangeably. This study uses MSME to define micro-, small, and medium enterprises. Additional statistics about the landscape of MSMEs in South Africa are given in the Appendix.

2.2.2 Financial Exclusion

Financial exclusion is commonly recognised as the inability of individuals to access or use formal financial services and products which are suitable to their needs and can enable them to improve their standard of living (European Commission, 2008). Kodan & Chhikara (2013)

agrees that financial exclusion can hinder individuals' ability to effectively participate in the mainstream economy. In their White Paper for the G20's Global Partnership for Financial Inclusion (GPFI), the CGAP defined financial exclusion as those who do not have access to, are underserved, or do not use formal financial services (CGAP, 2012).

Many scholars believe that individuals can be voluntarily or involuntarily excluded from using formal financial services (de Koker & Jentzsch, 2013; Tita & Aziakpono, 2017; Abel et al., 2018). As shown in Figure 1 below, these authors relate voluntary exclusion to the refusal of using financial services as a result of religious and cultural beliefs, a lack of interest or need for financial services, or a lack of trust in financial institutions. On the other hand, involuntary exclusion includes barriers to accessing the financial system, such as the inability to afford financial services, the failure to meet the eligibility criteria of financial institutions for funding, and the unsuitable design of the available financial services and products (Abel et al., 2018). Involuntary exclusion is believed to increase poverty and income inequality (Tita & Aziakpono, 2017).

Figure 1: Financial Inclusion vs Financial Exclusion
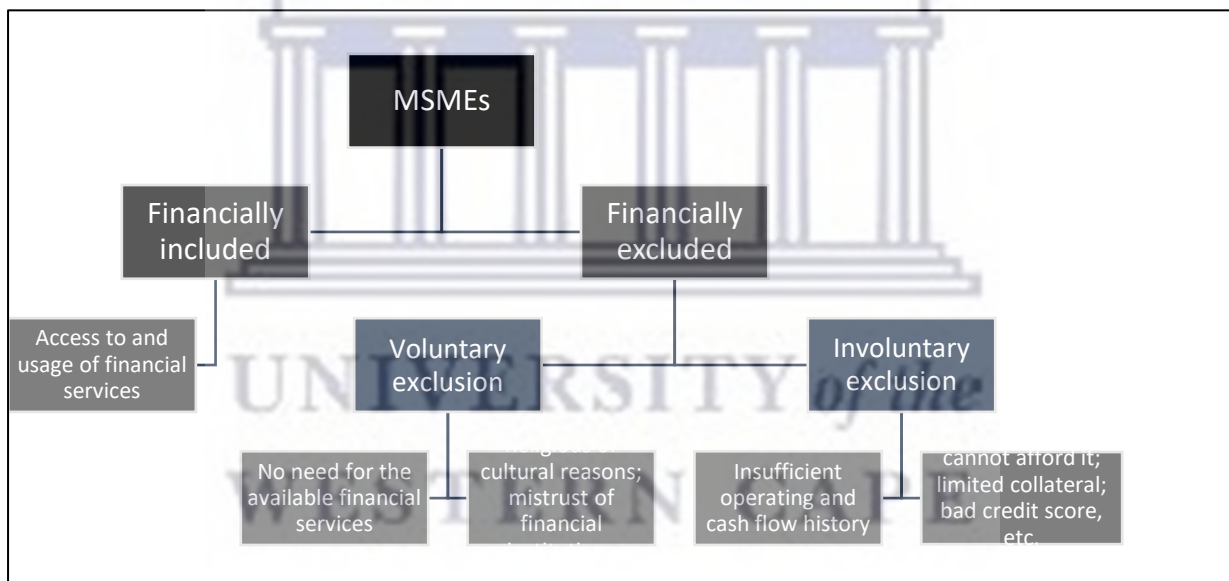
Source: Author's adaptation.

According to Fatoki & Odeyemi (2010), around 75 per cent of all bank credit applications by new SMEs are rejected, which could indicate that these businesses tend to be more involuntarily excluded. Grundling & Kaseke (2010), on the other hand, define the financially excluded as those who manage without the use of formal financial services or products and rely

upon internal sources of funding. For MSMEs, the benefits of financial inclusion can ease their financial constraints, which could contribute to poverty alleviation and economic growth (Barajas et al., 2020). As stated by Brixiova et al. (2020), smaller firms are more likely to be financially constrained and less likely to have access to formal finance, compared to larger ones. Leboea (2017) established that MSMEs in South Africa face a higher failure rate since they are unable to obtain access to finance. Many small businesses remain excluded from access to finance from credit markets (World Bank, 2009).

Still, in 2022, the share of bank lending to MSMEs continues to decline with less than four per cent having or using formal credit in the form of bank loans or credit facilities (IMF, 2022). The consequences of financial exclusion for MSMEs can cost them in various ways, such as (1) irregular cash flows since these businesses usually depend on or transact in cash, (2) the risk that comes with holding and storing their money, (3) a lack of financial planning and security for the future, (4) a loss of growth opportunities, and (5) the overall loss of welfare for the country as financial exclusion is often a cause of poverty and compromised living standards (Kodan & Chhikara, 2013). Financial inclusion seeks to mitigate the issues presented by financial exclusion (Ozili, 2021).

2.2.3   Financial Inclusion

Financial inclusion is deemed a multifaceted concept with many dimensions which cannot be directly defined (AFI, 2010; Tita & Aziakpono, 2017; Abel et al., 2018). Yet, the broad consensus on the concept of financial inclusion is that it refers to the availability and actual usage of appropriate regulated financial services that meet the needs of all members of an economy, especially the financially excluded members such as MSMEs (Sarma & Pais, 2011; Ozili, 2018; Rasheed et al., 2019, Shipalana, 2019). For MSMEs, financial inclusion can grant them access to investments, capital markets, and competent staff to ensure the expansion of their business (Anga et al., 2021).

Motsomi et al. (2020) define the financially included as follows: (1) formally served MSMEs who have or use formal financial services or products, (2) those who have or use informal financial services or products are considered as informally served, and (3) those who have or use both formal and informal financial services or products. The formally served group includes those who have or use financial services or products offered by commercial banks or other formal financial institutions such as retail credit providers or regulated micro-finance institutions (Motsomi et al., 2020). On the other hand, in 2010, around 15.3 per cent of MSMEs

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were informally served which almost doubled to about 28 per cent in 2020 (Grundling & Kaseke, 2010). These statistics could indicate that more MSMEs depend on internal funding or financing from family and friends, or they do not require external or formal funding. Figure 1 provides an overview of the difference between financial inclusion and financial exclusion.

Furthermore, as the definition of financial inclusion proposes, various dimensions are used to define it. The Alliance for Financial Inclusion (AFI) defines three MSME financial inclusion dimensions as (1) access, (2) usage, and (3) quality, with a focus on access to credit (AFI, 2015). Various studies that focus on MSME financial inclusion relate each dimension to different variables and most do not include all of the dimensions as defined by the AFI in their analysis. For instance, a study by Fouejieu et al. (2020) only used the two basic dimensions, that is access and usage, to construct an SME financial inclusion index. In their study, the variables used to explain the access dimension included the proportion of firms with some form of credit from a financial institution or a bank loan, or the percentage of firms with a savings or cheque account. This study will follow the dimensions of MSME financial inclusion as defined by the AFI (2015) as follows:

Access: Generally, this dimension refers to using the available financial services and products from formal financial institutions for purposes such as receiving transfers, storing money, and making payments (AFI, 2010). The AFI (2015) expresses access indicators for MSMEs as the proportion of SMEs required to provide collateral on any existing loans and the geographic distribution of financial services access points relative to the number of MSMEs within the area. These indicators relate to the availability of access points and the tightness of credit conditions experienced by MSMEs.

Usage: Usage refers to the actual consumption of financial products and services, which focuses more on the permanent use of the financial service or product. Usage can be determined by the frequency and patterns of use over time, including the combination of services or products used at a time (AFI, 2010). For MSMEs, the AFI (2015) designates the usage dimension according to the proportion of MSMEs with a deposit account or with an outstanding line of credit or loan from a regulated financial institution. These indicators intend to explain the usage of loan facilities and deposit accounts by MSMEs.

Quality: The quality dimension considers the relevance of the financial product or service to the needs of the end-user. Quality includes the customers' experience, confirmed in their perceptions towards the financial services and products that they currently have access to. This

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dimension of financial inclusion measures the nature of the relationship between the user and the financial service and products available to them (AFI, 2010). The quality indicators for MSMEs include loan guarantees as a share of MSME loans in terms of value, the difference between the average MSME loan rate and the average business loan rate, as well as the share of non-performing MSME loans to total loans. These quality indicators explain the extent of public support for MSME finance, the risk premium charged on MSME loans, and the creditworthiness of MSMEs compare to other businesses.

Table 2: Summary of MSME financial inclusion indicators

Dimension	Indicator	Measurement
Access	Access points	Physical access
	Percentage of MSMEs with at least one access point	Distribution of access points
	Collateral on existing loans	Tightness of credit conditions
Usage	Usage of a deposit account at a regulated financial institution	Usage of accounts to indicate formally banked MSMEs
	An outstanding line of credit or loan at a regulated financial institution	Usage of loan facilities by MSMEs
Quality	Loan guarantees for MSMEs as a percentage of MSME loans	The extent of public support for MSME finance
	Difference between the average MSME loan rate and the average business loan rate	Risk premium charged on MSME loans
	The proportion of non-performing MSME loans	Creditworthiness of MSMEs

Source: Author's adaptation from AFI (2015)

In their Financial Inclusion Policy, the National Treasury of South Africa deemed that financial inclusion can improve the productive capacity of MSMEs (National Treasury, 2020). The benefits of the increased financial inclusion of MSMEs affect both the enterprise itself and the economy. The use of external finance can help start-up firms survive beyond the first year, it allows existing firms to take advantage of investment and growth opportunities, and it makes it possible for firms to acquire more productive assets (Barajas et al., 2020).

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2.2.4 Financial Inclusion and Micro-, Small, and Medium Enterprises (MSMEs)

There is a broad consensus that the economic activities of MSMEs are an important factor in social and economic development in emerging countries (Abor & Quartey, 2010). Many studies have proven the significance of MSMEs to the growth and development of economies around the world (IFC, 2017; Buri et al., 2019; Rasheed et al., 2019). In South Africa, MSMEs represent the most businesses in the economy, which can be proven by their 90 per cent contribution to overall employment in the country (Motsomi et al., 2020). Yet, various researchers agree that MSMEs are more financially constrained than their larger counterparts (Abraham & Schmukler, 2017; IFC, 2017; World Bank, 2020a). Emerging countries, such as South Africa, should encourage the growth and sustainability of MSMEs to reduce the high levels of unemployment and poverty in the country.

Access to formal finance such as a business loan, an equity investment, or a bank overdraft can allow MSMEs access to new markets, purchase assets, and enable their ability to create more jobs (IFC, 2020). Shihadeh (2021) agrees that formal funding sources can assist MSMEs to innovate, develop their products and services, and invest more in technologies that could improve their business performance. The financial inclusion of MSMEs through the improved allocation of financial resources has been argued and proven to deepen economic growth and reduce poverty through job creation (Bajaras et al., 2020), as well as improve living standards (Shihadeh, 2021), which affords for social and economic welfare.

However, one of the main challenges faced by MSMEs in gaining access to finance from financial institutions or banks in the form of credit is the high transaction costs of processing, monitoring, and enforcing loans for these businesses (Ayyagari et al., 2017). Yet, financial institutions can benefit from the increased access to credit offered to businesses since this could diversify their loan portfolios (Mehrotra & Yetman, 2015). Similarly, a study by Morgan & Pontines (2014) agrees that an increased number of SMEs as borrowers from financial institutions can be associated with a decrease in non-performing loans and a lower probability of loan defaults by those institutions. However, on the other hand, businesses may prefer using internal sources of finance since it does not require collateral, are usually interest-free, and the MSME owner or manager has ownership of all financial decision-making (Onubedo & Yusuf, 2018).

Yet, the benefits of promoting the sustainability of MSMEs in a country such as South Africa should be met with the equal benefit of improved access to finance from formal financial

institutions in the country. By using external finance, MSMEs may have access to more funds required for long-term investment and cash flow should any financing issues arise (Onubedo & Yusuf, 2018). Studies such as Triki & Faye (2013) and Msomi & Olarewaju (2021) believe that access to finance is a prerequisite for the growth of MSMEs and can improve their sustainability. In the end, enhanced financial inclusion can significantly improve the survival rates of MSMEs by allowing them to exploit investment and growth opportunities that they could not do before (Bajaras et al., 2020).

2.3 Core Theories

Many theories exist that aim to explain attitudes toward achieving financial inclusion objectives (Ozili, 2020). Ozili (2020) also believes that theories of financial inclusion are necessary to achieve consensus between the objectives and outcomes of financial inclusion. In this regard, there are numerous reasons why individuals and owners or managers of businesses use or do not use financial services, which can relate to voluntary and involuntary financial exclusion. The theories relating to financial exclusion attempt to explain the reasons for the inadequate inclusion of potential consumers of financial services. Justifying the reasons for their financial exclusion provides better insight into why these businesses use or do not use external financial services. This distinction could make it easier for policymakers to design and implement beneficial financial inclusion policies to cater to all MSMEs' needs in terms of access to credit.

Furthermore, other theories exist that use access to credit by businesses to explain their financial inclusion status. These theories are based on how businesses use finance in their operations by using a mix of debt and equity obtained from financial institutions or banks (Fatoki & Smit, 2011). In addition, theories exist that are based on the principles of the access to and use of external funding and the reasons related to whom these funding opportunities should be provided. Financial inclusion theories, in this regard, aim to identify who the ultimate beneficiaries of financial inclusion are and who should assist in providing finance to them (Ozili, 2020). This study recognises the necessity of identifying the financially excluded to provide an overview of theories toward their financial inclusion. The following theories aim to explain the financial exclusion and inclusion of MSMEs as actors in a stable financial system.

2.3.1   Credit Rationing Theory

Stiglitz & Weiss (1981) argued that potential debtors can be excluded from receiving financing in the form of loans or credit from formal financial institutions such as banks. Their theory relates to concerns by banks about the risk level of the loan and the interest rate they will receive on the loan. Initially, the riskiness of the loan is associated with the creditworthiness of the potential debtor, which relates to the various probabilities of repaying the loan. Eventually, the repayment of the loan justifies the expected return to the bank by means of interest rates. In this regard, the theory suggests that there exists an interest rate that maximises the expected return to the bank, an equilibrium. This notion proposes that demand for loans and a supply of funds exist as a function of the interest rate.

Moreover, the basis of this theory simply relates to the argument that banks and other financial institutions may increase the cost of credit available to MSMEs based on the perceived riskiness of MSME finance (National Treasury, 2020). The formulation of the credit rationing theory relies on the premise that among loan applications that might be indistinguishable, some people from identical groups might receive credit while others do not or some may only obtain it at a much higher interest rate (Fatoki & Smit, 2011). The main argument here is that credit suppliers may offer different interest rates that could hinder certain potential borrowers, such as MSMEs, ability to access credit. This serves as one reason for the lack of formal financial services that are available for MSMEs.

Similarly, SME South Africa (2020) agree that because of their high risk of defaulting on loans resulting from limited collateral, and insufficient operating and cost information, most MSMEs rarely meet the eligibility criteria for formal financing from banks or other financial service providers. Studies such as Morgan & Pontines (2014), Ramukumba (2014), and IFC (2017), argue that MSMEs are continuously credit-constrained which constitutes a challenge to the success of MSMEs. These reasons relate to the involuntary financial exclusion of MSMEs.

2.3.2   Pecking Order Theory

The pecking order theory argued by Myers & Majluf (1984) states that businesses will choose how to finance their businesses based on the tendency to rely on internal sources of finance and will only choose external financing if required. This theory is based on a specific preference order for financing since firms will usually first rely on internal funds and then when external funding is required, use debt options over equity. This premise relates to arguments that the

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majority of MSMEs depend on internal funding or cash, instead of formal financial services (World Bank, 2017; World Bank, 2020). This assumption of this theory suggests that firms have more information about their business value than potential investors (Myers & Mahluf, 1984). In other words, it is difficult for financial institutions to identify the economic activities and needs of MSMEs, since the methods that they use to conduct transactions usually occur outside the formal financial sector (World Bank, 2017; Buri et al., 2019).

This theory indicates that MSMEs will only seek external funding once their internal sources are exhausted and tend to seek the safest source of external finance first. The pecking order theory argues that by choosing not to access external financing in the form of debt or equity, MSMEs are forgoing opportunities to expand their business through external investment opportunities, which makes it difficult to financially include them (Myers, 1984). This theory relates to voluntary financial exclusion since it emphasises that firms will not seek external financing since they see no need for it. In addition to not needing external funding, studies such as Abel et al. (2018) and Barajas et al. (2020) also relate this behaviour to the lack of trust in financial service providers and cultural barriers. Financial inclusion strategies should thus attempt to provide more appealing financial services to MSMEs and encourage the benefits of using these services.

2.3.3 Systems Theory of Financial Inclusion

Studies such as Demirguc-Kunt & Klapper (2012), Barajas et al. (2020), and Shihadeh (2021) have agreed that an inclusive financial system is one where all the members of it have access to affordable and beneficial financial services. A stable financial system is thus one that favours the financial inclusion of all its members. The system theory of financial inclusion as argued by Ozili (2020) justifies that financial inclusion objectives in a country depend on the stability of its existing economic, social, and financial systems (sub-systems) or structures. This theory states that the systems can benefit from greater financial inclusion of all of its members and that a considerable change in any part of the financial system can greatly affect the projected financial inclusion outcome.

The basic assumptions of the systems theory include (1) financial inclusion can improve the functionality of the sub-system that it relies on, (2) the success or failure of the financial inclusion objective is determined by the efficacy of its sub-system, and (3) financial inclusion ultimately benefits the systems in a country. In this regard, this theory agrees that financially inclusive systems can promote economic growth through greater financial inclusion. On the

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other hand, this theory considers that the existing systems in a country may not function properly and could hinder the path towards achieving financial inclusion results. In addition, the systems theory ignores external factors that could affect the outcome of the financial inclusion initiatives as it only relies on the functioning of the sub-systems.

However, the belief that an inclusive system promotes financial inclusion has been argued by many. Formal financial services are typically obtained from banks and regulated financial institutions (Matsebula & Yu, 2020) which act as agents in the economic and financial system. Without an inclusive and stable financial system supported by those who render formal financial services, the poor and MSMEs remain excluded and are more susceptible to missing growth opportunities (Demirguc-Kunt & Klapper, 2012). The systems theory supports the regulation of economic representatives and providers of financial services in an attempt to align their interests with their consumers' needs. The economic and financial system should thus be encouraged to offer suitable and affordable financial services without price discrimination and the exploitation of its users. A stable and financially inclusive system can foster economic and social welfare (Shihadeh, 2021).

2.3.4 Public Money Theory of Financial Inclusion

Governments play a major role in promoting access to formal financial services as they are the rule makers in economic systems (Ehrbeck et al., 2012). Many studies argue that governments can play a crucial role in supporting and sometimes directly providing financial services to MSMEs in an attempt to close the MSME financial inclusion gap (Fatoki & Odeyemi, 2010; Fatoki & Smit, 2011; Ayyagari et al., 2017; IFC, 2017). For this matter, this theory argues that financial inclusion initiatives should be government-funded (Ozili, 2020). This theory caters to closing the financial inclusion gap as taxes enforced by governments upon the rich can generate funds for various financial inclusion programmes. In this regard, wealth will be reallocated to the poor and financially excluded, such as MSMEs. Another advantage of this theory relates to the low cost of generating public capital to fund financial inclusion initiatives. The role of the government in this regard is to provide direct interventions to close the MSME finance gap such as state-owned bank lending to MSMEs or risk-sharing loans to encourage banks to lend to MSMEs (IFC, 2017).

However, the role of public investment in MSME development has its costs. The public money theory relates the inefficiency of the government to realise financial inclusion objectives to the lack of appropriate planning, unnecessary delays in reaching those who are excluded,

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insufficient funds, and the improper allocation of authority for financial inclusion initiatives. Yet, public finance for greater financial inclusion has been encouraged compared to private funding since governments tend to have agency as policymakers. For MSME finance, governments have been urged to improve financial systems and funding infrastructure to lower the constraints faced by MSMEs (IFC, 2013).

The abovementioned theories provide an overview of the behaviour of MSMEs and financial systems towards the financial inclusion and exclusion of MSMEs but are not limited to these theories. Although many other theories exist, this study aims to offer the interrelated nature of financial exclusion as it relates to financial inclusion. Thus, the theories mentioned above identify that the financial inclusion of MSMEs depends on an inclusive financial system and governments to support and foster financial inclusion objectives. In terms of internal factors towards their financial inclusion, MSMEs are generally involuntarily excluded from using formal financial services which ripples down to the external factors that are defined by the nature of financial institutions toward MSME financing. To understand how to achieve the financial inclusion of MSMEs, the reasons why they have been or are excluded should be considered.

2.4   Empirical Literature Review

Countless empirical studies focus on the connection between financial inclusion on economic growth and development, poverty, and income inequality (CGAP, 2012). Other studies of financial inclusion include those that measure its effect on financial stability and productivity. Most of these studies use variables relating to the access to and usage of credit or external finance provided by banks or other financial institutions to determine the factors that may delay the growth of businesses. The following studies provide an overview of the literature that concentrates on measuring the determinants and effects of the financial inclusion levels of MSMEs across countries using different empirical approaches.

2.4.1   International Studies

Studies that have examined the financial inclusion of MSMEs are extensive in the international context. These studies tend to relate the influence of access to external finance or credit on the growth of MSMEs and attempt to determine the effect of certain access to finance variables on the financial inclusion status of MSMEs. First, the study by Shinozaki (2012) examined the impact of external funding on the development of SMEs in several Asian countries, such as

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Vietnam, Indonesia, the Philippines, and the Lao People's Democratic Republic. The study used the 2009 World Bank Enterprise Survey (WBES) data to conduct an Ordinary Least Squares (OLS) regression. The regression model was prepared to assess the impact of formal finance on the growth of SMEs, which expressed the firm's growth as a function of the value of approved loans and lines of credit. The study found that increasing the accessibility of formal financial services, such as credit, to SMEs can improve their profitability. Shinozaki (2012) argued that enhancing access to formal finance for SMEs can aid the achievement of sustainable economic growth.

The study by Beck & Cull (2014) used WBES data to analyse the state of MSME finance in sub-Saharan Africa by examining their probability of having a formal loan. The study explored the variation in the use of financial services by firms in Africa. The study used a probit regression model and its marginal effects to relate the access to finance by MSMEs to the various firm- and country-specific characteristics. The dependent variable of the model is indicated by whether a firm has a loan from a formal financial institution. The explanatory variables include (1) the firm's characteristics such as firm size, age and ownership type, gender of the owner, and the organisational type, (2) the sector in which the business operates, (3) the country, and (4) the features of the country's banking system. The regression results indicate that large firms were 66 per cent more likely to have a formal loan than MSMEs. When referring to the banking system, the study found that an inefficient banking system can limit access to external finance for African firms.

Onubedo & Yusuf (2018) examined the impact of access to internal and external finance on African firms' productivity using WBES data for the period from 2006-2016. They assume having an overdraft, a loan, or a checking or savings account measures a firm's productivity. Their findings show that a lack of access to finance based on these measures negatively affects a firm's productivity. First, increasing debt negatively affects MSMEs' labour productivity since these firms relatively have low labour productivity to begin with. Second, the results of the model using total factor productivity (TFP) indicate that firms with no overdraft and those who indicated access to finance as an obstacle experienced a greater decline in productivity. However, for MSMEs, a lack of a checking or savings account presents a greater negative effect on their productivity compared to larger firms. Finally, the Stochastic frontier Cobb-Douglas and translog model show that those without an overdraft, credit or loan facility lowered their firms' productivity. The study also found that a firm's productivity is dependent

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on the financial system in which it operates which substantiates the systems theory of financial inclusion discussed in Section 2.3.3.

Fouejieu et al. (2020) used the WBES and the Financial Access Survey (FAS) data from 2006-2017 to construct an SME financial inclusion index for countries in the MENAP and CCA regions. The variables used for the index relate to the access and usage dimensions of financial inclusion using the financing conditions of banks. The study used the principal component analysis (PCA) approach to construct an SME financial inclusion index to capture macroeconomic fundamentals that are relevant to the MSME sector. The results of the study indicate that increased investment positively affects economic growth which benefits SMEs such that their demand for finance increased. Whereas, increased inflation has the inverse effect on SME financial inclusion since it could indicate economic instability. On the other hand, their share of employment variables shows a negative relationship with SME financial inclusion since the SME sector in the observed countries tends to be more financially constrained. Further results of the study demonstrate that institutions and the financial sector play a key role in SME access to finance. Ultimately, the study found that improving macroeconomic and institutional policies, such as the credit information of SMEs and the quality of services provided to SMEs, can help close the SME financial inclusion gap of countries in the MENAP and CCA regions.

Anga et al. (2021) employed the Error Correction Model (ECM) to assess the effect of financial inclusion on SMEs in Nigeria using time series data from the statistical bulletin published by the central bank of Nigeria. The empirical model of the study uses the ECM bound testing technique for co-integration using the following variables: (1) access to banks, (2) access to deposit or savings accounts, and (3) access to credit, to explain the measure of credit available to SMEs by commercial banks. The results of the co-integration analysis indicated a long-run relationship between SMEs' access to credit from commercial banks and their financial inclusion. Impeded access to credit, according to the study, shows a declining effect on the growth of SMEs.

Although using different empirical approaches and datasets, the above studies agree that increased access to credit can accelerate MSMEs' growth. The studies also imply that as the majority of businesses in economies are MSMEs, facilitating their financial inclusion can aid the achievement of economic growth. However, this can only be done by improving the financial and banking system in which these businesses operate. Various other studies exist

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that argued that the increased financial inclusion of MSMEs can improve the financial stability of the system in which it operates (Morgan & Pontines, 2014; Siddik & Kaniraj, 2018; Negm, 2021).

2.4.2   Local Studies

The following studies focus on variables that delay the development of MSMEs in South Africa. First, Olawale & Garwe (2010) used the PCA approach to examine the obstacles that may hinder the progress of new SMEs in the Eastern Cape province of South Africa. The results indicate that the financial component, which captures internal variables, held the highest eigenvalues and variance percentages of the five clusters. Whereas, the infrastructure component which captures external variables held the lowest contribution. Based on the variables of the financial component, the lack of access to finance held the highest factor with the lack of collateral and crime holding second and third place, respectively. These results indicate that these variables are the greatest obstacles to the growth of MSMEs. Other internal variables included in the financial component include the lack of owners' equity contribution, bad credit record, high production costs, inadequate market research, and the lack of information technology. These results indicate that the internal factors, which are variables that are mainly controllable by the firm, tend to have a greater impact on the firm's sustainability.

Another study by Cant et al. (2014) assessed the obstacles experienced by SMEs in South Africa's financial sector. The data employed for the study was obtained using a web-based questionnaire of which a total of 25 questionnaires were used for analyses. The results show that a lack of funding or financial support was ranked as the most severe constraint faced by SMEs, which is indicated by 78.5 per cent of the respondents who specified that they have not received financial support in the past. However, the study also indicates that SMEs are not sufficiently utilising the various external sources of finance since they lack the knowledge and assistance in obtaining finance. Yet, not all individuals who start SMEs have collateral or require external funding. On the other hand, retaining and attracting customers, high transport costs, and high input costs were also identified as constraints, among others.

In contrast to Olawale & Garwe (2010) and Cant et al. (2014), Ramukumba (2014) assessed the success factors that could aid the sustainability of SMEs in the Western Cape province of South Africa. The study used a sample of SMEs who were interviewed by the Swedish Trade Council (STC) and SEDA in 2012. The study found that the SME owners ranked the following success factors in order of importance to them and their business: (1) the ability to attract repeat

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customers, (2) the ability to generate cash, and (3) product performance. The results show that SME owners find that repeat customers provide stability to their business which is linked to their product performance, which could relate to Cant et al. (2014) findings that retaining customers is a constraint to many SMEs. On the other hand, by generating enough cash, the results of Ramukumba (2014) conclude that the businesses would be able to meet their financial obligations and be able to invest in new and better-quality products, which could boost their sustainability.

On the other hand, Kuntchev et al. (2014) used WBES data from 119 countries, including South Africa, to measure the credit-constrained status of businesses based on their ability to use credit and their ability to obtain new credit. At a regional level, their results show that firms in sub-Saharan Africa, South Asia, Pacific, and East Asia regions are more likely to be credit-constrained, which is indicated by the low proportion of firms who accessed external finance within the previous financial year. This result also comprises MSMEs that have applied for credit but were rejected. Their main finding is that MSMEs have a higher likelihood of being credit-constrained compared to their larger counterparts. This indicates a negative relationship between firm size and credit status. In other words, the smaller the firm, the higher its credit-constrained status. Furthermore, their findings agree that MSMEs rely less on formal credit and more on informal sources and trade credit, compared to large firms. However, the majority of firms in South Africa (49.9 per cent) were non-credit constrained (NCC) based on the 2007 WBES data used in the study, which implies that they are financially included. Yet, the sub-Saharan Africa region held the largest use of informal credit proportion of the population of the data used.

In terms of the use of informal credit, a study by Makina et al. (2015) used 2010 FinScope Small Business Survey data to evaluate the impact of access to formal and informal credit on firm size in South Africa. The study only includes data for sole proprietorships and licensed businesses and used the principal component analysis (PCA) approach to reduce the variables to eight components. Based on the results of the OLS, according to the respective factor scores per component, 97 per cent of the firms in South Africa's MSME sector at the time were micro-enterprises and very small firms who had no access to credit. The OLS results indicate that access to formal credit has a statistically significant positive effect on firm size and thus can significantly contribute to the firm's growth. Whereas, access to informal credit had the inverse effect since firms mostly use informal finance for daily financial obligations instead of

expansion. The main contribution of this study is that access to formal finance or credit can accelerate firms' growth faster than those with access to only informal finance. Financial constraints tend to impact smaller firms more than larger ones, which implies that most of the smaller firms in South Africa experience financial exclusion (Makina et al., 2015).

Nanziri & Wamalwa (2021) utilised a micro-economic-related general equilibrium model to analyse how SME financial inclusion can impact GDP, TFP, and inequality in South Africa. The study used data for South Africa from the WBES, the International Financial Statistics database and the World Development Indicators. The study examined the impact of decreasing financial constraints on business owners' decisions to join the credit market. Their results show that accelerated economic growth and inequality reduction can come from relaxing these financial constraints for SMEs. They provide evidence that by increasing access to credit for human capital development of SMEs, TFP can increase which contributes to GDP by the increase in the firm's productivity. However, some SMEs might avoid credit even when collateral constraints are relaxed, which proves the pecking order theory argued by Myers & Majluf (1984) in that these businesses might choose to use their finance instead of formal credit. Finally, the study indicates that this self-exclusion can hinder their achievement of financial inclusion benefits.

Based on the overview of local studies, the results are mixed when referring to access to external finance or credit by MSMEs. On the one hand, findings by Olawale & Garwe (2010), Cant et al. (2014) and Nanziri & Wamalwa (2021) agree that the lack of access to finance is the main obstacle to the growth of MSMEs, which Makina et al. (2015) also prove in their finding that access to formal credit contributes more to their growth than informal credit. However, although informal credit is largely used by MSMEs in sub-Saharan Africa, Kuntchev et al. (2014) argue that most of these businesses tend to be non-credit constrained. Whereas, Ramukumba (2014) puts it forward that SMEs listed the ability to generate cash for financial obligations and investments as the second most severe constraint.

These results provide the need for further exploration of the actual financial inclusion status of MSMEs in South Africa and the consideration of different variables that could affect it. This study will use 2010 and 2020 FinScope MSME South Africa data and will use variables relating to the three dimensions of MSME financial inclusion as defined by AFI (2015) to provide an updated perspective of the subject. In addition, the use of FinScope MSME data is scarce and

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affords the opportunity to fill a research gap by using this dataset in investigating the financial inclusion of MSMEs in South Africa.

2.5 Conclusion

The above review of relevant literature expressed that financial exclusion and financial are two sides of the same coin and both are multifaceted concepts. For policymakers to design and implement sustainable financial inclusion policies focused on MSMEs in South Africa, they should consider the reasons why these businesses are initially financially excluded. Financial exclusion relates to reasons why people do not use financial services, whereas financial inclusion relates to the access and usage of those financial services, and many variables exist that are used to determine these concepts.

MSMEs contribute largely to South Africa's employment rate but remain vulnerable to financial constraints. However, albeit the numerous potential benefits of using external funding, theories such as the credit rationing and pecking order theory aim to examine firms' behaviour towards external finance which relates to their involuntary or voluntary financial exclusion. On the other hand, many studies agree that the financial system and governments that MSMEs operate in can contribute to their ability to access finance or credit, which theories such as the systems theory and public money theory of financial inclusion attempt to explain. Although various other theories of financial inclusion exist, the main finding of the reviewed studies relates to an increase in formal finance or credit as a key contribution to MSMEs success, whereas mixed results were shown for local studies. This study aims to provide another approach to assessing the MSME financial inclusion gap relative to these studies.

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CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter provides an overview of the data and empirical methods employed to examine the impact of financial inclusion on micro-, small, and medium enterprises (MSMEs) in this study. Section 3.2 explains the data used for the study, namely the 2010 and 2020 FinScope MSME South Africa surveys. Section 3.3 discusses the methodology, whereas section 3.4 identifies the limitations of the study. Section 3.5 concludes this chapter.

3.2 Data

This study will utilise the 2010 and 2020 FinScope MSME South Africa surveys to assess the financial inclusion of MSMEs in South Africa. FinScope is a research tool established by the FinMark Trust in 2002. The purpose of the FinMark Trust is to promote the financial inclusion and regional financial integration of the poor and MSMEs (Makina et al., 2015). FinScope is a nationally representative survey of individuals' and MSMEs' perceptions of financial services.

The 2010 survey is the first of its kind focusing on South African MSMEs. The 2020 survey serves as a follow-up survey using the 2010 results as its benchmark to track progress toward the financial inclusion of MSMEs and introduces the digitalisation of financial services and products, as well as the impact of the Covid-19 pandemic on small business operations.

In terms of financial inclusion, FinScope focuses on the use of and demand for financial products and services by MSMEs with the following objectives:

- To determine the levels of financial access of MSMEs;
- To describe the landscape of financial access for MSMEs; and
- To specify and describe the drivers of and the obstacles to the usage of financial services and products by MSMEs.

The FinScope MSME surveys were developed to expand the role that the financial sector and its participants can play in the development of MSMEs. The challenge with the FinScope MSME survey is that records of all small businesses do not exist in most countries. For this reason, the FinScope survey methodology is as follows:

- Identifying the geographically representative areas (enumerator areas) at national, urban-rural, and regional levels of the country where the survey will be conducted.

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- Identifying a list of all small businesses per geographical area per demographic details.
- Drawing a random sample of small business owners to be interviewed per the predefined geographical area.

For the 2010 FinScope MSME survey, data from 1 075 areas was collected and 5 676 interviews were conducted. For the 2020 FinScope MSME survey, the number of face-to-face completed interviews amounted to 4 897 and covered 400 geographical areas. This indicates that the FinScope MSME surveys provide cross-sectional data on the MSME landscape.

The in-depth approach of the FinScope MSMEs surveys makes it appropriate for this study since it covers the size and scope of the small business sector in South Africa by addressing the financial inclusion status of small business owners in the country. The information gathered from the FinScope MSME questionnaire includes the demographics of the MSME owners, their capacity to grow, the nature of their business, and their risk profile, as well as the financial inclusion status of the business.

The demographics segment captures the age, gender, race, and position of the small business owner in the household. The capacity to grow segment includes the level of education of the small business owner, their skills training, motivation, and attitude towards their business, as well as their attitude towards money and money management. Other information captured under the capacity to grow segment includes the obstacles to growth and the sources of information, advice, and support, which capture the level of awareness of organisations and networking groups that offer support for MSMEs. Furthermore, the nature of the business section provides information on the size of the business based on the number of total employees, the age of the business, the geographical distribution of MSMEs in South Africa, the services or products that they provide, business registration, and their operating location.

Moreover, the risk profile section provides an overview of income stability, attitudes toward risk, perceived risks to income, and risk mitigation characteristics of MSMEs. Whereas, finally, the financial inclusion segment is based on the usage of financial products by small business owners. This section divides the MSME population into financially included and financially excluded based on certain criteria. The levels of financial inclusion of small business owners here are categorised by whether they are formally served, banked, served by other formal or informal financial service providers, or not served (financially excluded).

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Since this study follows the MSME dimensions of financial inclusion as proposed by the AFI (2015), the use of FinScope MSME data affords comprehensive information on all dimensions. First, the access dimension captures the variables that explain whether the MSMEs use the available formal financial services and products for business use. The data comprises of constraints to accessing financial products for businesses such as lack of documentation, affordability, and firm size. Secondly, the usage dimension refers to the actual consumption of the available financial services and products offered to MSMEs by banks and formal financial institutions. The indicators of this dimension include whether the MSME is using formal accounts or has an outstanding line of credit or loan to indicate whether they are formally banked. Data from the FinScope MSME surveys for the usage dimension relates to whether the MSME has ever used various financial products, such as a credit card, an overdraft facility, or a business loan, among other things. Finally, the quality dimension of MSME financial inclusion considers the relevance of the financial services provided to MSMEs and their perceptions of these services that are available to them. According to AFI (2015), the quality dimension refers to the extent of public support for MSME finance in terms of MSME loan guarantees and the loan rate provided to MSMEs in relation to the average business loan rate, as well as the creditworthiness criteria for MSMEs. From the FinScope MSME data, the opinions of MSMEs about the financial services they use or do not use are provided. The questions regarding the quality dimension relate to the difficulty of opening a bank account, whether financial institutions explain how things work, whether these institutions offer financial services and products that cater to the needs of MSMEs, and whether MSME trust banks, among other things.

The abovementioned information provided by the FinScope MSME surveys allows for descriptive analysis of the financial inclusion of MSMEs and the ability to construct an MSME financial index and regression models for empirical analysis, which will be covered in the next section. FinScope data has been used by many researchers and has been noted to be of high quality for academic research purposes (Makina et al., 2015) and is thus deemed appropriate for this study.

3.3 Methods

Sarma (2012) stated that financial inclusion is measured depending on how the concept is defined. The empirical approach of this study intends to measure the financial inclusion of MSMEs in South Africa as defined by the three dimensions of MSME financial inclusion

proposed by AFI (2015). This section thus seeks to provide the empirical models and techniques used to achieve the research objectives of the study.

This study will use descriptive statistics from the 2010 and 2020 FinScope MSME South Africa datasets to analyse the financial inclusion status of MSMEs in South Africa. As the name implies, descriptive statistics entails the process of describing the data provided by the FinScope surveys. The use of these statistics closely seeks valuable relationships in the information or models, specifically those that can be used to anticipate or predict future events (McCue, 2007). Using descriptive statistics will entail the interpretation of the MSMEs' characteristics and perceptions to examine their usage of financial services. The descriptive analysis will provide a platform to test the probability that an MSME is financially included or excluded. For that reason, an MSME financial inclusion index will be constructed to include the three MSME dimensions of financial inclusion.

3.3.1 Constructing the MSME Financial Inclusion Index (FII)

The use of a multidimensional index is necessary to determine the interaction of several causal variables on financial inclusion (Camara & Tuesta, 2014). A financial inclusion index comprises information on various factors of financial inclusion such as the availability and usage of the services and products offered by formal financial systems (Sarma & Pais, 2011). This study will attempt to quantify the financial inclusion of MSMEs using the Multiple Correspondence Analysis (MCA) approach to construct an MSME FII, instead of the Principal Components Analysis (PCA) method frequently used by many other empirical studies that measured this multidimensional concept, such as studies by Mahalika et al. (2020)[1] and Matsebula & Yu (2020)[2].

By using the PCA approach, Mahalika et al. (2020) stated that the PCA method is commonly used to find fewer variables from a large dataset to explain most of the variance in the dataset. On the other hand, studies by Tidjani (2020) and Trang Vo (2022) preferred MCA based on its ability to accommodate both qualitative and categorical data, in contrast to PCA. In this regard, the difference between the PCA and MCA methods stems from the type of variables used. For PCA, the method is commonly used for time series or continuous variables. Whereas, MCA enables the analysis of categorical variables (Peña et al., 2014). Yet, the Correspondence

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[1] Mahalika, Matsebula, & Yu (2020) investigated the relationship between financial inclusion and poverty in South Africa using the PCA method.

[2] Matsebula & Yu (2020) provided an analysis of financial inclusion in South Africa using PCA.

Analysis (CA) method, which is the basis of MCA, stems highly from the categorical data adaptation of the PCA method. In this case, MCA is thus seen as an extension of CA, and thus PCA, which allows the analysis of patterns present in relationships of several categorical dependent variables. The MCA method has many advantages in relation to the standard CA or PCA, such as the ability and ease to analyse and interpret larger datasets, as well as the lower number of constraints imposed on the data (Mahdiyasa & Pasaribu, 2019).

Peña et al. (2014) used the MCA to analyse financial inclusion using savings and credit products as independent variables. Their study found that current accounts and credit cards held the highest weight in the financial inclusion indicator, which indicated that their respondents relied more on loans and lines of credit from banks. To avoid information loss, Peña et al. (2014) chose MCA since they used multiple variables in their analysis instead of a certain set of indicators that limits the concept of financial inclusion to specific factors.

Ultimately, The MCA method is considered for this study since it can accommodate variables that are categorical. The variables extracted from the surveys are categorical in nature since it includes certain indicators per chosen financial inclusion service or product. For instance, the credit usage indicator can include different liabilities such as a business loan from a bank or an overdraft facility. MCA thus allows for the distinction between the chosen categorical variables to determine the financial inclusion of MSMEs using a large dataset such as the FinScope MSME surveys.

To provide a holistic yet simple process for assessing the financial inclusion of MSMEs, this study will apply the MCA approach using the Burt matrix method for empirical analysis purposes. The use of the Burt matrix allows for a less time-consuming technique for computing a large data set since the Burt matrix is symmetrical and squared and encompasses all tables resulting from the combination of all variables two by two ($= Z^T Z$) (Mahdiyasa & Pasaribu, 2019). Since this study aims to determine whether a business is financially included or financially excluded, each variable in the MCA is coded by levels as a binary variable (Abdi & Valentin, 2007). In other words, if the categorical variable is sources of capital, one of the nominal variables such as internal sources of money can be determined by two levels, such as own savings or salary. The pattern for this variable in the matrix will thus be 0 1 for savings and 1 0 for salary such that the complete data table for this variable encompasses binary columns with only one column taking the value of 1 per nominal variable (Abdi & Valentin, 2007). In addition, this study will thus apply this MCA approach using the Burt matrix method

to determine the financial inclusion status of MSMEs using the following three dimensions of MSME financial inclusion: access, usage, and quality as defined in Section 2.2.3. The computation of the MCA for this purpose is given by Peña et al. (2014) as follows:

Firstly, the simple MCA uses indicator matrix X to record the presence of each element of X as a binary number. To overcome the capacity issue of the simple MCA, the Burt matrix B is defined by a cross-tabulation from X including its categorical variables (Mahdiyasa & Pasaribu, 2019). The transformation of matrix X is required to ensure that the dimensions of matrix B are suitable for graphical interpretation. For this purpose, Peña et al. (2014) firstly divide matrix B into the total sum of its elements, $b = \sum_{i,j} b_{i,j}$, to obtain the matrix of correspondences, $P = \frac{1}{b} B$. This is how the mass of rows r_i and columns r_j are computed.

Secondly, to visualise the relationship between the rows and columns by obtaining their respective coordinates, the decomposition in singular values is used, $S = \frac{(p_{i,j} r_i r_j)}{\sqrt{r_i r_j}}$. This decomposition creates the vectors (u_k) and the eigenvalues (λ_k) in the k dimension. Thirdly, the standard coordinates of the rows (i) and columns (j) are computed as follows:

$$rows: a_{ik} = \frac{v_{ik}}{\sqrt{r_i}} \text{ and } columns: b_{jk} = \frac{v_{jk}}{\sqrt{r_j}}$$

By using these equations given for the rows and columns, the principal coordinates for both are calculated as follows:

$$rows: c_{ik} = \alpha_{ik}\lambda_k \text{ and } columns: d_{jk} = \gamma_{jk}\lambda_k$$

Next, the principal adjusted variances are computed from the results given from the above computations. The principal inertias here are adjusted to better estimate the total variance of the variables. This is done to correct the inflated total inertia and underestimated principal inertias of the Burt matrix (Tidjani, 2020) by applying the Joint Correspondence Analysis (JCA) to the computed MCA. The principal variance, λ_k, is given by the sum of the weighted squares of the principal coordinates in the k dimension. The total variance is thus the sum of the eigenvalues, $\sum_{k=1}^{k} \lambda_k$, which is used to explain the observed variance ratios of each dimension. This final value of the JCA adjusted MCA allows the ability to decide the number of dimensions to use for the overall analysis.

Finally, the contributions of the i row and j column in the k dimension are the ultimate components of the variance, such that $i = \frac{r_i f_{i\,k}^2}{\lambda_k}$ and $j = \frac{r_i g_{i\,k}^2}{\lambda_k}$. This computation allocates endogenous weights to each variable category and generates individual scores. These scores are used to construct the MSME financial inclusion index (FII), such that the aggregated equation is as follows:

$$MSMEFI_{it} = \frac{1}{K} \sum_{k=1}^{K} \sum_{j_k}^{J_k} W_{j_k}^k I_{i,j_k}^k$$

(1)

The first equation (1) captures the sub-indices for the retained dimensions (t). For this equation, K represents the overall number of variables; $W_{j_k}^k$ is the normalised score of the jth category on each of the retained axes; I_{i,j_k}^k represents an indicator variable taking 1 if the business owner i chooses category jk and 0 otherwise. The overall MSME FII is shown below.

$$MSMEFI_i = \frac{(\sum_t^p \lambda_t)(MSMEFI_{it})}{\sum_t^p \lambda_t}$$

(2)

Equation (2) sums the sub-indices from equation (1) to form the MSME FII. Where p denotes the overall number of the axes preserved for the analysis and λ_t their respective eigenvalues.

The MSME FII intends to ascertain that the optimal usage of financial services can improve the financial inclusion of MSMEs, to some degree, considering many potential determinants. On the other hand, the indicators aim to establish factors or characteristics that are hindering the improvement in the financial inclusion status of MSMEs. The use of the three dimensions of MSME financial inclusion thus intends to provide an extensive view of the various factors that can impact the degree of financial inclusion of MSMEs in South Africa, which will be estimated by using the following econometric models.

3.3.2   Econometric Models

For this study, econometric models will be used to test for the relationship between the MSME FII described in the previous section and the explanatory variables derived from the three dimensions of MSME financial inclusion using the OLS method, as well as for testing the

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probability of an MSME being financially included or excluded using a probit regression model.

Firstly, the effect of financial inclusion on MSMEs will be estimated by regressing the equation for each dimension of MSME financial inclusion - access, usage, and quality - as given by the OLS model below:

$$FI_i = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \cdots + \alpha_i X_i + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots(3)$$

Where subscript i denotes the firm by size – micro-, small and medium. FI_i is the dependent variable measured by the variables used to define each dimension of MSME financial inclusion, and ε_i is the error term. Equation (3) implies that an OLS model will be run using the firm size and demographics of the MSME owners. The OLS regressions will be used to test for the relationship between the MSME FII and the explanatory variables to find variables that is most suitable for the study.

Lastly, a probit model will be regressed using the same variables as the OLS regression model. Probit regression models are used for binary response variables that have probabilities of being zero or one (Woodridge, 2012). The use of the probit model is fitting for this study since the variables used to define MSME financial inclusion are qualitative and binary. According to Carpena (2016), the probit model is given as follows:

$$P(Y = 1|X) = \theta(\alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \cdots + \alpha_i X_i \qquad (4)$$

Where θ is the standard normal CDF, which is always between zero and one. Similarly, Gujarati (2004) expresses the probit model for multivariate regression model as follows:

$$P(Y = 1|X_1, X_2, X_3, \dots, X_i) = P(I_i^* \leq I_i) = P(Z_i \leq \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \cdots +$$
$$\alpha_i X_i + \varepsilon_i) = F(\alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \cdots + \alpha_i X_i + \varepsilon_i) \qquad (5)$$

Where F is the probit model. $P(Y = 1|X_1, X_2, X_3, \dots, X_i)$ is the probability that an event occurs given the values of the explanatory variables, X. In this case, this can relate to the probability that the MSME is 'financially included' given 'the use of a credit card' and/or 'use of a business loan'. To facilitate the probit model, the assumption is that the inclusion or exclusion of the MSME depends on an unobservable index I_i, that could also be determined by one or more independent variables in such a way that the business is more likely to be financially included when the index is greater in value. Thus, I_i can be expressed as $I_i = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \cdots + \alpha_i X_i + \varepsilon_i$, where X_i are the explanatory variables chosen to indicate the financial

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inclusion of the MSME, and where α_0 is the constant and α_i the coefficient of the explanatory variables.

This study will thus use equation (5) for empirical analysis purposes to test whether MSMEs are $FI = 1$, "the MSME is financially excluded", or $FI = 0$, "the MSME is financially included". The general probit model is thus given below:

$$P(FI_{Di}) = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \cdots + \alpha_i X_i + \varepsilon_i \qquad (6)$$

For this study, the probit regressions run using Stata will test whether "financially excluded = 0' and 'financially included = 1' if the respondent specified that they do not use credit

to test for their financial inclusion likelihood, as described in Section 3.2:

$$P(FI_{Di}) = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \cdots + \alpha_i X_i + \varepsilon_i \qquad (7)$$

Where the use of the 'do not use credit' variable here refers to the business owner's lack of access to finance or financial products from banks or formal financial institutions.

The explanatory variables used for the regression analyses are given below.

- Gender (reference category: male)
- Age (reference category: 55 years and above)
- Race (reference category: white)
- Educational attainment (reference category: post-matric qualification)
- Province (reference category: Western Cape)
- Marital status (reference category: married)
- Firm size

Conclusions made by this study will thus depend on the statistical significance of the coefficients of the explanatory variables sourced from the 2010 and 2020 FinScope dataset used in the models defined above. Ultimately, the probit models will be used to test the probability that an enterprise is financially included or excluded.

3.4 Limitations

Firstly, the representative sample and areas covered across the two years, 2010 and 2020, differs in size and the methodology used. In 2010, the questionnaire was designed by TNS Research Surveys which was conducted during the period April to May 2010. By the end of

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the survey, 5 676 face-to-face interviews were conducted in 1 075 enumerator areas. Whereas, in 2020, the questionnaire was administered using a Computer Assisted Personal Interview (CAPI) where 4 897 interviews were completed in only 400 enumerator areas during the period October 2020 to January 2021. Secondly, in 2020, the impact of the Covid-19 pandemic and the introduction of digital financial services were included in the questionnaire.

Although the 2020 survey uses the 2010 one as a benchmark to provide an updated assessment of any factors and changes, the abovementioned differences pose discrepancies in terms of the interpretation of the results achieved in the next chapter. These discrepancies will not affect the results since the findings of the two periods will be compared to each other to examine the changes, if any, in the explanatory variables used. This is accounted for by the use of the same explanatory variables from both datasets.

3.5 Conclusion

This chapter discussed the use of FinScope MSME 2010 and 2020 South Africa data to construct an MSME financial inclusion index (FII) using the MCA technique. It provided an overview of the descriptive statistics extracted from the FinScope MSME datasets, that is the demographic and the capacity to grow characteristics of MSMEs. Furthermore, this chapter described the econometric regression model that will be used to assess the likelihood of an MSME being financially included or financially excluded. The data limitations were also highlighted in this chapter. The following chapter aims to use the data and methods defined by this chapter.
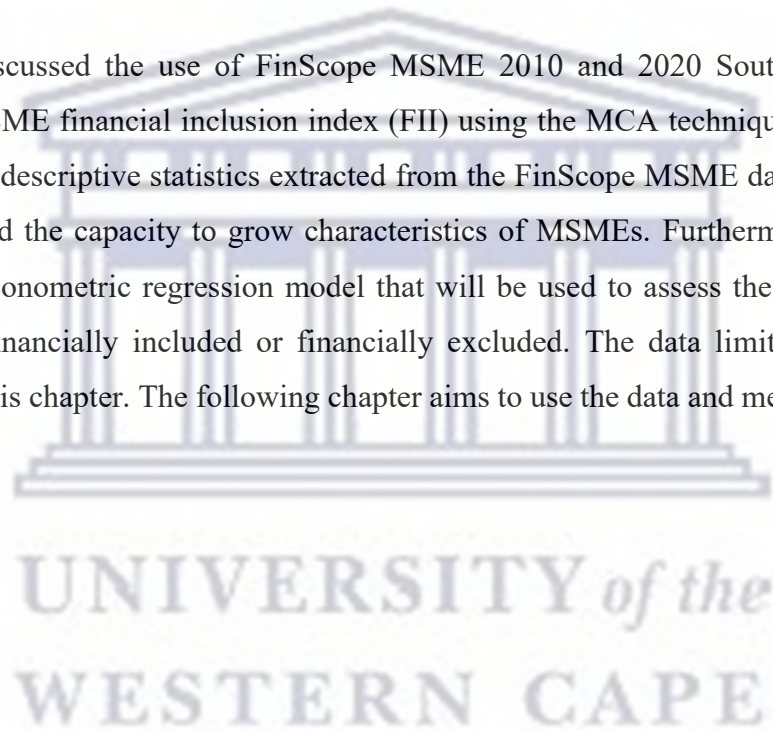
CHAPTER FOUR: EMPIRICAL FINDINGS

4.1 Introduction

This chapter aims to provide an in-depth empirical analysis of financial inclusion for micro-, small, and medium enterprises (MSMEs) in South Africa. It highlights the multifaceted nature of the dimensions of MSME financial inclusion based on the information provided by the 2010 and 2020 FinScope MSME datasets. Section 4.2 firstly examines the descriptive statistics on the demographic variables and financial inclusion dimensions – access, usage, and quality – per micro-, small, and medium enterprise. Section 4.3 provides the computation of the MSME financial inclusion index (MSMEFII). Section 4.4 then estimates simple OLS and probit models to firstly test for relationships between the estimated MSME financial inclusion index and the financial inclusion variables, and then to test the probability that an enterprise is financially included or excluded. Section 4.5 concludes the chapter.

4.2 Descriptive Statistics Analysis

Since this study focuses on the size of each enterprise and follows the definition of small businesses as described by the NSB Amendment Act No. 29 of 2004, the total number of employees variable from the 2010 and 2020 datasets is used to calculate whether the enterprise is micro-, small, or medium in size. In other words, a micro-enterprise employs 0 to 10 employees, a small enterprise employs 11 to 50, and a medium-sized enterprise employs 51 to 250 as discussed in Chapter 2.

Table 3 shows that most of the MSMEs from the two cohorts are micro-enterprises, that is, 98.66% in 2010 and 84.38% in 2020. Whereas, small enterprises comprise 1.22% of the dataset in 2010 and 13.91% in 2020. Finally, medium enterprises contribute the least to the overall number of MSMEs in the sample with 0.12% in 2010 and 1.72% in 2020. The statistics given in Table 3 show that businesses have grown in size over time, which is shown by fewer micro-enterprises and more small and medium enterprises in 2020. For the purpose of this study, the descriptive statistics described in the following section are computed based on the distribution per firm size given in Table 3.

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Table 3: Firm size distribution of the final sample

	2010		2020	
	Frequency	**Percent**	**Frequency**	**Percent**
Micro	5 600	98.66	4 132	84.38
Small	69	1.22	681	13.91
Medium	7	0.12	84	1.72
Total	5 676	100.00	4 897	100.00

4.2.1   Demographic Characteristics of MSME Owners

The demographic characteristics of the MSME owners emphasised in this study are gender, age, race, education, marital status, and province. In addition to the commonly used demographic characteristics, the province variable is considered to illustrate the location of the owners of the MSMEs. In addition, the marital status of the MSME owner is included since it can impact their access to finance. A study by Nguli & Odunga (2019) found that married business owners were less likely to access financial services. The mentioned demographic characteristics are discussed below based on the information from the 2010 and 2020 FinScope MSME surveys.

Table 4 below shows that, in terms of gender, male ownership of micro-enterprises (2010: 41.41%; 2020: 52.15%) and medium enterprises (2010: 28.27%; 2020: 71.67%) increased from 2010 to 2020. Whereas, their small enterprise ownership declined from 66.08% in 2010 to 60.78% in 2020. In contrast, female ownership of micro-enterprises (2010: 58.59%; 2020: 47.58%) and medium enterprises (2010: 71.73%; 2020: 28.33%) declined, whereas their small enterprise ownership increased over the two years from 33.92% in 2010 to 39.22% in 2020. These findings indicate that, overall, males obtained a greater share of MSME ownership by 2020 compared to females, which contrasts with the 2010 results where females owned a larger share of MSMEs. The 2020 result agrees with studies cited in this paper, such as Beck & Cull (2014) and IFC (2017) who found that female ownership of MSMEs is generally less and their firm size is smaller than their male-owned counterparts.

With reference to the age cohort, young MSME owners reported the lowest proportion of the overall sample for both years, besides those who refused to provide their age. This demonstrates that there are fewer youth-owned MSMEs, as the greatest share of MSME owners are aged between 35 and 54 years. From the 2010 dataset, 50.17% of the owners were aged between 35 to 54 years, which increased to 54.80% in 2020. According to Makina et al. (2015), the owner's age is linked to the size of their businesses since older business owners tend to

have better entrepreneurial skills that were developed through experience. This is proven by the significant increase in the ownership of medium enterprises from 28.22% in 2010 to 55.36% in 2020 by owners aged between 35 to 54 years.

When looking at the population group results, Black MSME ownership held the highest share of the overall sample for both years. The greatest increase in Black ownership was of medium enterprises which rose from 4.57% in 2010 to 51.12% by 2020. Table 4 also illustrates that most of the MSME owners had the opportunity to obtain secondary education in the form of some high school in 2010 (43.08%) and by 2020 most of them obtained matric (41.70%). However, the share of those who obtained a university degree increased from 2010 (7.66%) to 2020 (25.70%) for all firm sizes. Lastly, most of the MSME owners operate in Gauteng and are married.

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Table 4: Demographic characteristics of the final sample (%)

	2010				2020			
	Micro	**Small**	**Medium**	**Overall**	**Micro**	**Small**	**Medium**	**Overall**
Gender								
Male	41.41	66.08	28.27	**41.56**	52.15	60.78	71.67	**53.57**
Female	58.59	33.92	71.73	**58.44**	47.85	39.22	28.33	**46.43**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Age								
16 – 24 years	11.09	0.00	0.00	**11.00**	7.94	0.91	5.74	**6.89**
25 – 34 years	22.01	11.70	46.01	**21.96**	27.44	18.41	22.21	**26.08**
35 – 54 years	50.21	47.41	28.22	**50.17**	52.31	69.20	55.36	**54.80**
55 and above	16.51	33.04	25.77	**16.63**	12.31	11.48	16.69	**12.23**
Refused to answer	0.18	7.85	0.0	**0.23**	0.00	0.00	0.00	**0.00**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Race								
Black	83.97	23.72	4.57	**83.55**	83.78	60.55	51.12	**80.13**
Coloured	5.23	5.09	0.00	**5.22**	4.12	5.53	5.21	**4.33**
Asian/Indian	3.56	5.69	0.00	**3.57**	4.77	12.59	11.55	**5.96**
White	7.24	65.49	59.43	**7.66**	5.27	20.65	31.79	**7.73**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Education								
No education	2.96	0.00	0.00	**2.93**	3.00	0.28	0.33	**2.58**
Incomplete primary school	8.52	0.00	0.00	**8.46**	2.25	0.38	0.59	**1.96**
Completed primary school	12.02	1.68	0.00	**11.94**	2.80	0.17	0.00	**2.40**
Incomplete high school	43.33	9.50	6.81	**43.08**	21.42	4.82	10.88	**18.91**
Matric	24.44	33.94	70.19	**24.54**	44.28	27.64	25.69	**41.70**
Post-matric qualification	7.37	50.81	23.00	**7.66**	20.14	56.45	52.74	**25.70**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Province								
Eastern Cape	14.88	12.57	0.00	**14.85**	10.86	6.14	2.35	**10.10**
Free State	8.03	5.57	0.00	**8.01**	4.04	8.92	6.26	**4.77**
Gauteng	22.70	52.62	63.43	**22.93**	39.88	45.26	71.09	**40.91**
KwaZulu-Natal	13.87	3.86	1.54	**13.80**	20.04	32.44	9.68	**21.77**
Limpopo	9.82	0.92	28.22	**9.78**	8.75	2.10	0.26	**7.71**
Mpumalanga	6.93	5.45	6.81	**6.92**	2.33	0.41	0.00	**2.03**
North West	12.94	5.08	0.00	**12.87**	4.65	0.97	4.18	**4.11**
Northern Cape	2.76	3.31	0.00	**2.76**	2.22	0.61	5.53	**2.01**
Western Cape	8.07	10.60	0.00	**8.08**	7.22	3.16	0.65	**6.58**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Marital status								
Married	49.00	90.89	91.65	**49.30**	37.89	61.31	62.20	**41.50**
Single/Never married	35.28	7.12	1.54	**35.07**	47.75	27.89	21.15	**44.64**
Not married	7.13	0.70	0.00	**7.08**	9.42	6.64	8.96	**9.01**
Divorced	1.60	0.50	0.00	**1.60**	1.59	2.56	7.27	**1.77**
Widowed	6.34	0.79	6.81	**6.31**	2.44	1.00	0.42	**2.21**
Separated	0.65	0.00	0.00	**0.64**	0.92	0.61	0.00	**0.87**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**

Source: Author's computation using the FinScope MSME 2010 and 2020 datasets.

4.2.2   MSME Financial Inclusion Dimensions

Figures 2 and 3 present the overall banked status for MSMEs in 2010 and 2020, respectively. The result illustrates that more micro-enterprise owners obtained a bank account which increased from 45.16% in 2010 to 68.42% in 2020. On the other hand, the share of banked small and medium slightly declined by 1.97% in 2010 and 2.62% in 2020. However, overall, the results are favourable in terms of access to financial services. Ownership of a bank account is the basis for access to other formal financial services (Mahalika et al., 2020). To determine why MSMEs do not have a business account, those who answered 'no' will be allowed to answer the questions related to the access and quality dimensions of MSME financial inclusion.

Figure 2: Overall banked status 2010

Source: Author's computation using the FinScope MSME 2010 data.

Figure 3: Overall banked status 2020
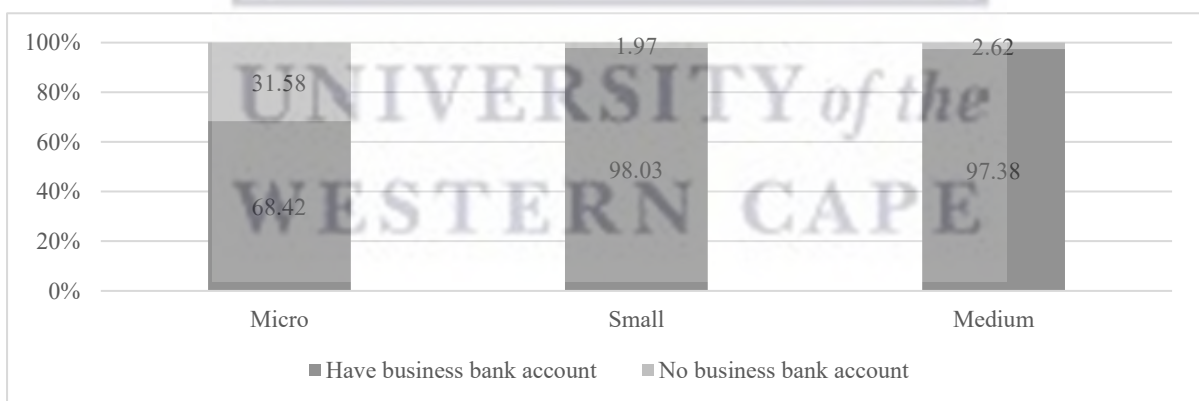
Source: Author's computation using the FinScope MSME 2020 data.

Table 5 presents the results of the access dimension of MSME financial inclusion for all firm sizes. Overall, the results indicate that access to financial services improved from 2010 to 2020.

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In 2010, most of the MSMEs indicated that they do not have a business bank account because their business/income is too small or because they did not have enough money from their business. All the 'yes' responses are from micro-enterprises. However, by 2020 the results of the two mentioned reasons significantly declined to 0.64%, respectively. Similarly, those who indicated that they did not qualify for a business bank account declined from 4.98% in 2010 to 0.17% in 2020. This result could indicate that banks are loosening eligibility criteria for formal financial services offered to MSMEs. An SME South Africa (2018) report argued that MSMEs rarely meet the eligibility criteria for access to formal finance from banks because of various reasons, yet by 2020, 99.83% of MSMEs indicated that this is not the reason why they do not have a bank account. The remaining reasons such as cannot afford the minimum balance and do not need a business bank account further prove that MSMEs' access to financial services improved meaningfully by 2020.

Table 5: Access dimension statistics of MSME financial inclusion (%)

	2010				2020			
	Micro	**Small**	**Medium**	**Overall**	**Micro**	**Small**	**Medium**	**Overall**
Reason: no business bank account – business/income too small								
Yes	19.65	0.00	0.00	**19.50**	0.73	0.15	0.00	**0.64**
No	8.04	100.00	100.00	**80.50**	99.27	99.85	100.00	**99.36**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Reason: no business bank account – do not qualify								
Yes	5.02	0.00	0.00	**4.98**	0.21	0.00	0.00	**0.17**
No	94.98	100.00	100.00	**95.02**	99.79	100.00	100.00	**99.83**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Reason: no business bank account – cannot afford the minimum balance								
Yes	3.17	0.00	0.00	**3.15**	0.08	0.00	0.00	**0.07**
No	96.83	100.00	100.00	**96.85**	99.92	100.00	100.00	**99.93**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Reason: no business bank account – not enough money from the business								
Yes	14.62	0.00	0.00	**14.51**	0.76	0.00	0.00	**0.64**
No	85.38	100.00	100.00	**85.49**	99.24	100.00	100.00	**99.36**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Reason: no business bank account – do not need one								
Yes	4.67	0.00	0.00	**4.63**	0.36	0.00	0.00	**0.30**
No	95.33	100.00	100.00	**95.37**	99.64	100.00	100.00	**99.70**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**

Source: Author's computation using the FinScope MSME 2010 and 2020 datasets.

The results in Table 6 present the usage dimension statistics of MSME financial inclusion per firm size. In general, the usage of financial products increased from 2010 to 2020. In terms of account usage, the use of a savings account held the largest share of 'yes' responses in 2010,

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which increased from 39.10% to 42.86% in 2020. Although, the usage of a savings account by medium enterprises declined to around 28% in 2020 from 56.5% in 2010. Onubedo & Yusuf (2018) found that firms with access to a savings account had higher productivity rates which implies that micro- and small enterprises were more productive by 2020 compared to medium enterprises. The results in Table 6 also show that the use of a deposit account increased significantly from 4.81% in 2010 to 21.92% by 2020 with the most significant increase in usage by micro- and medium enterprises. According to the AFI (2015) MSME financial inclusion indicators, the percentage of MSMEs with a deposit account at a regulated financial institution is one of the main indicators of financial inclusion under the usage dimension (see Table 2). The indicator is used to measure the usage of accounts by MSMEs to indicate whether they are formally banked. In addition, in terms of bank cards, micro-enterprises enjoyed greater usage thereof by 2020, whereas the usage of a debit or credit card by small and medium enterprises declined in the later period. Overall, fewer MSMEs indicated that they do not use a bank card.

Another noteworthy indicator is that of a business loan account, which shows meagre results as the majority of the MSMEs indicated that they do not use a business loan account. Yet, by 2020, those who indicated 'yes' increased from 0.66% in 2010 to 7.33% in 2020. In terms of firm size, the majority of those who specified that they have a business loan account were small enterprise owners. This contrasts with a study by Beck & Cull (2014) who found that larger firms have a higher likelihood of obtaining a formal loan account compared to smaller firms. When looking at other loan facilities such as a bank overdraft, more small and medium enterprises indicated that they do not use an overdraft facility by 2020 compared to 2010. Overall, the usage of an overdraft facility increased from 1.71% in 2010 to 7.22% in 2020. A report by IFC (2020) stated that access to a bank overdraft allows MSMEs access to new markets and the purchasing of assets. The increase in the usage of overdraft facilities thus paints a favourable picture for the growth of MSMEs.

Concerning external and internal sources of borrowing and saving, overall, most of the MSMEs indicated that they do not borrow from a bank, yet they prefer to save their money at a bank. However, at a firm size level, most of them indicated that they borrowed from a bank by 2020. The most significant result is that of medium enterprises which rose from zero per cent in 2010 to 31.12% by 2020. This could suggest that some MSMEs have enjoyed greater access to credit by 2020 since the overall proportion of MSMEs who borrow from a bank increased from 1.13% in 2010 to 9.77% in 2020. On the other hand, only 2.61% of MSMEs borrowed from friends

or family in 2020, which increased from 1.43% in 2010. In general, the findings imply that MSMEs opt to borrow from external sources compared to internal sources which contrasts the pecking order theory by Mailuf & Myers (1984) cited in this study.

Additionally, the indicator with the greatest share of 'yes' responses in 2020 is the savings at a bank variable. By 2020, 58.74% of all MSMEs specified that they use a savings instrument from a bank. This result increased from 30.43% in 2010. Whereas, the majority of MSMEs specified that they do not save at home. This also demonstrates that MSMEs prefer to use external sources to save money instead of internal sources. Furthermore, the usage of additional financial services such as business insurance or a savings book showed noteworthy increases across all firm sizes. Ultimately, the usage of formal financial services by MSMEs has improved which suggests that the MSMEs are financially included.

Table 6: Usage dimension statistics of MSME financial inclusion (%)

	2010				2020			
	Micro	**Small**	**Medium**	**Overall**	**Micro**	**Small**	**Medium**	**Overall**
Use a savings account								
Yes	39.07	41.66	56.50	**39.10**	42.91	43.32	28.64	**42.86**
No	60.93	58.34	43.50	**60.90**	57.09	56.68	71.36	**57.14**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Use a deposit account								
Yes	4.61	34.99	6.81	**4.81**	20.61	29.31	25.95	**21.92**
No	95.39	65.01	93.19	**95.19**	79.39	70.69	74.05	**78.08**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Use a debit card								
Yes	14.09	79.08	70.24	**14.56**	21.19	35.00	30.39	**23.28**
No	95.91	20.92	29.76	**85.44**	78.81	65.00	69.61	**76.72**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Use a credit card								
Yes	4.60	63.85	50.31	**5.02**	11.00	31.59	35.19	**14.19**
No	95.40	36.15	49.69	**94.98**	89.00	68.41	64.81	**85.81**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Use a business loan account								
Yes	0.63	4.20	0.00	**0.66**	6.28	13.45	6.43	**7.33**
No	99.37	95.88	100.00	**99.34**	93.72	86.55	93.57	**92.67**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Use savings book								
Yes	2.05	3.60	6.81	**2.06**	11.62	22.60	19.79	**13.29**
No	97.95	96.40	93.19	**97.94**	88.38	77.40	80.21	**86.71**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**

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Use overdraft facility								
Yes	1.43	38.54	51.28	**1.71**	5.41	17.42	12.47	**7.22**
No	98.57	61.46	48.72	**98.29**	94.59	82.58	87.53	**92.78**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Use business insurance								
Yes	1.86	36.52	17.61	**2.10**	7.45	56.25	80.36	**15.15**
No	98.14	63.48	82.39	**97.90**	92.55	43.75	19.64	**84.85**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Borrow from bank								
Yes	1.04	16.23	0.00	**1.13**	6.84	25.62	31.12	**9.77**
No	98.96	83.77	100.00	**98.87**	93.6	74.38	68.88	**90.23**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Borrow from friends or family								
Yes	1.39	7.66	0.00	**1.43**	2.37	3.95	3.40	**2.61**
No	98.61	92.34	100.00	**98.57**	97.63	96.05	96.60	**97.39**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Savings at a bank								
Yes	29.99	89.93	100.00	**30.43**	53.36	88.31	88.52	**58.74**
No	70.01	10.07	0.00	**69.57**	46.64	11.69	11.48	**41.26**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Savings at home								
Yes	0.01	0.00	0.00	**0.01**	0.16	0.12	0.00	**0.15**
No	99.99	100.00	100.00	**99.99**	99.84	99.88	100.00	**99.85**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**

Source: Author's computation using the FinScope MSME 2010 and 2020 datasets.

Table 7 below shows the statistics on the quality dimensions of MSME financial inclusion per firm size. As previously mentioned, the results are from those who indicated that they do not have a business account. The overall results show that perceptions of MSMEs about bank services are relatively positive since the overall statistics for all reasons increased from 2010 to 2020. However, the findings suggest that banks should improve the service they offer MSMEs and explain how things work to improve their service delivery of financial services to MSMEs.

Table 7: Quality dimension statistics of MSME financial inclusion (%)

	2010				2020			
	Micro	**Small**	**Medium**	**Overall**	**Micro**	**Small**	**Medium**	**Overall**
Reason: no business bank account – banks do not offer suitable services for MSMEs								
Yes	5.74	10.53	0.00	**5.77**	20.24	14.06	4.86	**19.22**
No	94.26	89.47	100.00	**94.23**	79.76	85.94	95.14	**80.78**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**
Reason: no business bank account – banks do not provide adequate financial advice								
Yes	15.46	31.09	0.00	**15.55**	21.55	16.87	20.95	**20.86**
No	84.54	68.91	100.00	**84.45**	78.45	83.13	79.05	**79.14**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**

Table 7: Continued

Reason: no business bank account – banks do not explain how things work								
Yes	15.84	41.80	1.54	**16.00**	31.90	73.97	83.22	**38.45**
No	84.16	58.20	98.46	**84.00**	68.10	26.03	16.78	**61.55**
	100.00	100.00	100.00	**100.00**	100.00	100.00	100.00	**100.00**

Source: Author's computation using the FinScope MSME 2010 and 2020 datasets.

4.2.3 MSME Financial Inclusion Index

This section discusses the financial inclusion status of MSMEs based on the derived MSME financial inclusion index shown in Tables 8 and 9 below. As discussed in the previous chapter, the JCA method on the MCA corrects the inflated total inertia of the initial MCA and is therefore used to compute the MSME financial inclusion index. The initial MCA computations are shown in the Appendix by Tables A and B. Table 8 below shows that the first two dimensions of the JCA are retained since they cumulatively contribute 96.24% to the total inertia in the 2010 dataset. Whereas, Table 9 shows that 90.05% of the total inertia in the 2020 dataset is explained by the first two dimensions. Unlike the PCA, the MCA extracts dimensions to allow for two-way cross-tabulation and graphical representation on a two-dimensional map. However, for the purpose of this study, the first principal coordinates of the JCA method of the MCA will be interpreted like the PCA to simplify the results. The detailed results of the MCA are given in the Appendix in Table C.

Table 8: JCA estimation of MCA - 2010

```
Multiple/Joint correspondence analysis        Number of obs    =       5,676
                                              Total inertia    =   .03757971
         Method: Joint (JCA)                  Number of axes   =           2

                      principal               cumul
         Dimension    inertia      percent    percent

             dim 1    .032699      87.01      87.01
             dim 2    .0034658      9.22      96.24

             Total    .0375797     100.00
```

Source: Author's computation using the FinScope MSME (2010) dataset.

Table 9: JCA estimation of MCA - 2020

```
Multiple/Joint correspondence analysis        Number of obs    =       4,897
                                              Total inertia    =    .03861852
    Method: Joint (JCA)                       Number of axes   =           2

                    principal               cumul
    Dimension        inertia     percent    percent

        dim 1       .0306637      79.40      79.40
        dim 2       .0041142      10.65      90.05

        Total       .0386185     100.00
```

Source: Author's computation using the FinScope MSME (2020) datasets.

As with the PCA, positive results of the components are favourable for the dimensions of financial inclusion, whereas, negative components are not desirable. Table 10 below presents the first principal coordinates of the first dimension of the JCA since this dimension explains the greatest inertia in the datasets for both periods. Firstly, under the access dimension, those who answered 'yes' to having a business bank account enjoyed greater access than those who do not have an account. For both years, the principal coordinates for the overall banked status category are positive for those who have a business bank account (0.4541 and 0.1959). In contrast, the coordinates are negatively correlated with the other access categorical variables when the response is 'yes' in that category. This suggests that when one of these variables increases, then the other variables will increase as well, except for the 'have a business bank account' variable. Having a business bank account thus is the main measurement of access to financial services.

Furthermore, the 'yes' responses in all the categories under the usage dimension are positive, which means that all the categories are favourable to the usage dimension. These coordinates should be positive to conform to theory which is justified by the results in Table 6. Categories with the greatest share of 'yes' responses in 2010 include the use of an overdraft facility (0.75), the use of business insurance (0.71), borrowing from a bank (0.64), using a credit card (0.64), and using a deposit account (0.61). Yet, the overdraft facility category remains the only variable that increased in 2020 from the mentioned categories. On the other hand, by 2020, the first principal coordinates of other categories such as the use of a business loan and a savings book showed noticeable increases. Since the coordinates for the usage categories are positive besides the savings at home variable, when one increases, all of them will increase.

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When looking at the quality dimension of MSME financial inclusion, if the answer is 'yes', the principal coordinates are expected to be negative. However, Table 10 shows that the coordinates are positive for all 'yes' responses. This demonstrates that the variables have a negative effect on the quality dimension. In 2010, the 'banks do not offer suitable services for MSMEs' variable was the greatest in value, whereas, the 'banks do not explain how things work' variable was the largest in value in 2020. Finally, approximately 87.01% of the total variance is explained by the first principal coordinates in 2010 which decreased slightly to 79.40% in 2020.

Table 10: First principal coordinates of the MSME financial inclusion index

Categories	2010	2020
Access		
Overall banked status		
Yes	0.4541	0.1959
No	-0.3800	-0.5290
Business/income too small		
Yes	-0.3624	-0.1035
No	0.0878	0.0007
Do not qualify		
Yes	-0.3446	-0.0595
No	0.0181	0.0001
Cannot afford the minimum balance		
Yes	-0.3845	0.0369
No	0.0125	-0.0000
Not enough money from the business		
Yes	-0.3609	0.0082
No	0.0613	-0.0000
Do not need one		
Yes	-0.3295	-0.1185
No	0.0160	0.0004
Usage		
Use a savings account		
Yes	0.4561	0.2460
No	-0.2928	-0.1845
Use a deposit account		
Yes	0.6121	0.4672
No	-0.0309	-0.1311
Use a debit card		
Yes	0.5291	0.4132
No	-0.0902	-0.1254
Use a credit card		
Yes	0.6383	0.6133
No	-0.0337	-0.1015
Use a business loan		
Yes	0.5768	0.8052
No	-0.0038	-0.0637

Table 10: Continued

Use savings book		
Yes	0.5337	0.6131
No	-0.0112	-0.0939
Use overdraft facility		
Yes	0.7476	0.8419
No	-0.0130	-0.0655
Use business insurance		
Yes	0.7145	0.3831
No	-0.0154	-0.0684
Borrow from a bank		
Yes	0.6441	0.3828
No	-0.0074	-0.0415
Borrow from friends or family		
Yes	0.5951	0.3388
No	-0.0086	-0.0091
Savings at a bank		
Yes	0.4599	0.2134
No	-0.2012	-0.3038
Savings at home		
Yes	0.6068	-0.9829
No	-0.0000	0.0002
Quality		
Banks do not offer suitable services for MSMEs		
Yes	0.4636	0.1783
No	-0.0284	-0.0424
Banks do not provide adequate financial advice		
Yes	0.4496	0.1731
No	-0.0828	-0.0456
Banks do not explain how things work		
Yes	0.4606	0.2193
No	-0.0877	-0.1369
Proportion (%) of the variation explained by first principal coordinates	87.01%	79.40%

Source: Author's own calculation using FinScope MSME 2010 and 2020 datasets.

4.2.4 MSME Financial Inclusion Status

Table 11 presents the financial inclusion likelihood of MSMEs by demographic characteristics. The results show that, in 2010, 46% of all MSMEs were financially included while 54% were excluded. By 2020, the financial inclusion status of MSMEs rose significantly to 72% being included and only 28% excluded. With reference to firm size, micro- enterprises were the only firms that were deemed excluded in 2010. By 2020, the financial inclusion status of micro- enterprises improved greatly and rose by over 20%. The overall findings illustrate that the financial inclusion of MSMEs improved significantly by 2020.

Furthermore, in terms of gender, females enjoyed an improvement in their financial inclusion status of over 30% from 2010 to 2020. Likewise, the share of males who were financially

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included rose to almost 70% by 2020 compared to 50% in 2010. When looking at the age cohort, in 2010, close to 70% of MSME owners aged between 16 to 24 years were financially excluded. However, their financial exclusion status decreased to 41% by 2020. Overall, all age cohorts experienced a higher level of financial inclusion from 2010 to 2020. This finding is in contrast to a study by Nguli & Odunga (2019) who found that the level of access to and usage of financial services declines as age increases.

Furthermore, although they represent the majority of the sample, Black MSME owners experienced lower levels of financial inclusion in 2010 compared to White owners. Overall, Whites consistently enjoyed the greatest level of inclusion over both periods (2010: 81%; 2020: 95%). This result agrees with studies by Makina et al. (2015) and Mhlanga & Denhere (2020) who found that white-owned MSMEs are more likely to be larger in size and have a higher probability to use financial products compared to the MSME owners of other races such as Coloureds, Blacks, and Indians/Asians. However, by 2020, Black MSME owners' inclusion share increased to almost 70% in 2020.

Looking at other characteristics, the inclusion share for Gauteng was the highest in 2010 (61%), followed by the Northern Cape (51%), while the Free State suffered the lowest level of inclusion in the same period at 33%. In stark contrast, by 2020, Kwa-Zulu Natal enjoyed the greatest improvement of all provinces (2010: 35%; 2020: 85%) although all provinces' level of inclusion increased. Moreover, those who were widowed or not married were less likely to be included in 2010, whereas the share of widowed or unmarried MSME owners improved greatly in 2020. The results also show that being divorced is associated with the greatest chances of financial inclusion in both 2010 (61%) and 2020 (81%).

Finally, the last indicator in the table shows the relationship between the financial inclusion index quintiles and inclusion. The results indicate that, in 2010, the lowest quintiles had no possibility of being included, whereas the highest quintile was 100% likely to be included. On the other hand, in 2020, the lower quintile 2 enjoyed a significant increase in inclusion likelihood from 0% to 89.95% in 2020.

Table 11: Financial inclusion likelihood by demographic characteristics (%)

	2010			2020		
	Included	**Excluded**	**Overall**	**Included**	**Excluded**	**Overall**
All						
All MSMEs	45.60	54.40	**100.00**	71.78	28.22	**100.00**
Firm size						
Micro (0 – 10 employees)	45.20	54.80	**100.00**	67.06	32.94	**100.00**
Small (11 – 50 employees)	100.00	0.00	**100.00**	97.83	2.17	**100.00**
Medium (51 – 250 employees)	100.00	0.00	**100.00**	95.43	4.57	**100.00**
Gender						
Male	50.57	49.43	**100.00**	69.74	30.26	**100.00**
Female	42.06	57.94	**100.00**	74.14	25.86	**100.00**
Age						
16 – 24 years	30.62	69.38	**100.00**	58.99	41.01	**100.00**
25 – 34 years	45.12	54.88	**100.00**	70.11	29.89	**100.00**
35 – 54 years	50.76	49.24	**100.00**	74.27	25.73	**100.00**
55 and above	39.92	60.08	**100.00**	71.42	28.58	**100.00**
Refused to answer	91.06	8.94	**100.00**	N/A		
Race						
Black	42.64	57.36	**100.00**	69.70	30.30	**100.00**
Coloured	43.43	56.57	**100.00**	79.79	20.21	**100.00**
Asian/Indian	41.67	58.33	**100.00**	75.45	24.55	**100.00**
White	81.16	18.84	**100.00**	95.40	4.60	**100.00**
Education						
No education	9.19	90.81	**100.00**	32.11	67.89	**100.00**
Incomplete primary school	26.78	73.22	**100.00**	42.21	57.79	**100.00**
Completed primary school	23.39	76.61	**100.00**	35.95	64.05	**100.00**
Incomplete high school	45.54	54.46	**100.00**	56.01	43.99	**100.00**
Matric	54.70	45.30	**100.00**	76.44	23.56	**100.00**
Post-matric qualification	83.87	16.13	**100.00**	82.08	17.92	**100.00**
Province						
Eastern Cape	41.31	58.69	**100.00**	67.61	32.39	**100.00**
Free State	33.33	66.67	**100.00**	72.75	27.25	**100.00**
Gauteng	61.04	38.96	**100.00**	72.08	27.92	**100.00**
KwaZulu-Natal	35.23	64.77	**100.00**	85.82	14.18	**100.00**
Limpopo	36.98	63.02	**100.00**	51.21	48.79	**100.00**
Mpumalanga	41.38	58.62	**100.00**	55.64	44.36	**100.00**
North West	47.11	52.89	**100.00**	48.52	51.48	**100.00**
Northern Cape	51.20	48.80	**100.00**	74.56	25.44	**100.00**
Western Cape	44.12	55.88	**100.00**	71.91	28.09	**100.00**
Marital status						
Married	50.71	49.29	**100.00**	74.20	25.80	**100.00**
Single/Never married	42.12	57.88	**100.00**	68.41	31.59	**100.00**
Not married	33.93	66.07	**100.00**	75.89	24.11	**100.00**
Divorced	60.58	39.42	**100.00**	81.71	18.29	**100.00**
Widowed	33.28	66.72	**100.00**	69.13	30.87	**100.00**
Separated	54.73	45.27	**100.00**	73.25	26.75	**100.00**

Table 11: Continued

	2010			2020		
	Included	**Excluded**	**Overall**	**Included**	**Excluded**	**Overall**
Financial inclusion index quintile						
Quintile 1	0.00	100.00	**100.00**	0.00	100.00	**100.00**
Quintile 2	0.00	100.00	**100.00**	89.85	10.15	**100.00**
Quintile 3	100.00	0.00	**100.00**	100.00	0.00	**100.00**
Quintile 4	100.00	0.00	**100.00**	100.00	0.00	**100.00**
Quintile 5	100.00	0.00	**100.00**	100.00	0.00	**100.00**

Source: Author's own calculation using FinScope MSME 2010 and 2020 datasets.

Ultimately, the findings presented in Table 11 suggest that small and medium enterprises are more likely to be financially included and the demographic characteristics associated with greater financial inclusion likelihood of the small or medium enterprise owner are as follows: the owner would typically be included if they are a white male individual who is between the ages of 35 to 54 years. The person would have obtained at least a post-matric qualification such as an undergraduate degree, would be residing in either Gauteng or the Northern Cape, and would be divorced.

4.3 Econometric Analysis

This section focuses on analysing the econometric findings of this study. Table 12 presents the findings of the OLS regression on the MSME financial inclusion index, regressing on the demographic characteristics described in the previous section. On the other hand, Table 13, displays the estimates of the probit regression to test for the likelihood of an MSME being financially excluded using the same demographic variable as the OLS regressions. The results are interpreted per explanatory variable if all other explanatory variables are held constant.

4.3.1   OLS regression results

The OLS regression results presented in Table 12 demonstrate a positive and significant relationship between firm size and the financial inclusion index for both periods (2010: 0.7955; 2020: 0.4862). This implies that larger firm sizes are associated with higher levels of financial inclusion. However, it is worth noting that the positive figure in 2020 is lower than that of 2010. Nevertheless, the results indicate that as firm size increases, the level of financial inclusion also tends to increase. This finding aligns with previous research on financial inclusion, which suggests that larger firms have better access to financial services compared to

smaller firms (Beck & Cull, 2014; Kuntchev et al., 2014; Makina et al., 2015; Abraham & Schmukler, 2017; Brixiova et al., 2020).

Regarding the age cohort analysis, the OLS regression results reveal that MSME owners aged between 16 and 24 years compared to the other age groups experienced a significant decrease in their financial inclusion index, with values of -0.3094 in 2010 and -0.1552 in 2020. These coefficients suggest that MSMEs owned by individuals in this age group experience a higher rate of financial exclusion. Interestingly, these findings contrast with the results presented in Table 11 of the previous section, which suggest that in 2020, MSMEs owned by individuals aged between 16 and 24 years achieved higher levels of financial inclusion.

Furthermore, in terms of gender, the OLS results show that the financial inclusion status of female-owned MSMEs has improved over the period from 2010 to 2020 compared to their male counterparts. In 2010, the coefficient for female-owned MSMEs was -0.1335, indicating lower financial inclusion compared to male-owned firms. However, by 2020, the coefficient for female-owned MSMEs increased to 0.0673, suggesting a higher level of financial inclusion compared to male-owned firms as the reference category.

Regarding race, only the Black dummy is statistically significant with a negative sign for both periods (2010: -0.4472; 2020: -0.3885), meaning Black MSME owners tend to suffer from a higher level of financial exclusion compared to other races. With respect to educational attainment, the results with the most significance are that of those MSME owners with no formal education. The result illustrates negative and statistically significant coefficients for those with no schooling, which suggests that lower or no educational attainment is associated with a drastically lower financial inclusion index. In other words, if an MSME owner has no schooling, their financial inclusion index declines by 0.7344 when referring to 2020 results. On the other hand, if the respondent indicated that they have a post-matric qualification, such as a university degree, their financial inclusion index increased by 0.3967 based on the 2020 results. This result implies that higher educational attainment is associated with greater financial inclusion, which agrees with Nguli & Odunga (2019) who also found that a higher level of education is indicative of a higher probability to access to and usage of financial services.

Furthermore, in relation to the Western Cape as the reference category, the only statistically significant provincial dummies in 2010 are the Free State and Gauteng. For those residing in the Free State, their financial inclusion index decreased by 0.2234 in 2010. Whereas, by 2020,

their financial inclusion status increased by 0.1510. However, those in Gauteng enjoyed a positive financial inclusion index of 0.1975 in 2010, which declined to 0.099 in 2020. On the other hand, by 2020, the only statistically significant result is for the Kwa-Zulu Natal provincial dummy, which shows that those who reside in this province are associated with a positive financial inclusion index of 0.2905, which increased from -0.0523 in 2010. In other words, by 2020, if the MSME owner resided in Kwa-Zulu Natal their financial inclusion level increased by 0.2905.

Lastly, in terms of marital status, in 2010 (-0.2367) those who were not married had a lower financial inclusion index compared to 2020 (0.0209). These coefficients indicate that MSME owners who were not married in 2020 had a better financial inclusion status than those in 2010. The results of the other marital status categories are not statistically significant in this study. Overall, the results for financial inclusion are favourable for those who operate larger firms and are 24 years and older. In addition, female owners were also proven to be more financially included compared to the male reference category. Yet, those who are Black and with little or no educational attainment remain financially excluded.
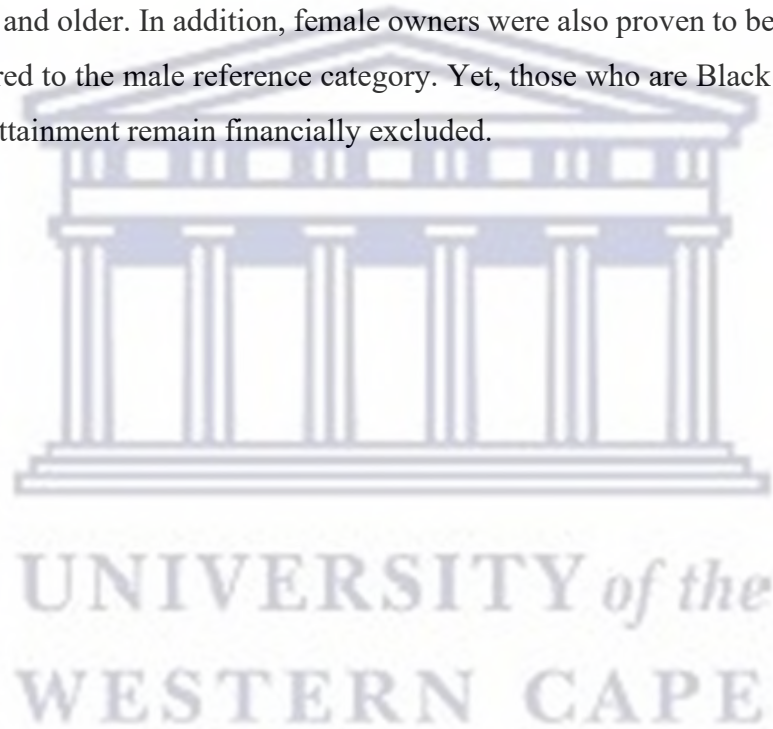
Table 12: OLS regressions on MSME financial inclusion index

Dependent variable: MSME financial inclusion index		
	2010	**2020**
Gender: Female	-0.1335**	0.0673
Age: 16-24 years	-0.3094**	-0.1552
Age: 25-34 years	-0.0519	-0.1269
Age: 35-54 years	0.1129***	-0.1034
Population group: Black	-0.4472*	-0.3885*
Population group: Coloured	-0.5089*	0.1571
Population group: Asian/Indian	-0.6342*	-0.1991
Educational attainment: no schooling	-1.2646*	-0.7344*
Educational attainment: incomplete primary school	-1.0423*	-0.5645*
Educational attainment: primary school completed	-1.1290*	-0.6834*
Educational attainment: incomplete high school	-0.6835*	-0.3334*
Educational attainment: matric	-0.5000*	-0.0427
Educational attainment: other	-0.3742	0.3967**
Province: Eastern Cape	-0.1258	-0.2528
Province: Free State	-0.2234**	0.1510
Province: Gauteng	0.1975**	0.099
Province: KwaZulu-Natal	-0.0523	0.2905*
Province: Limpopo	-0.7173	-0.1015
Province: Mpumalanga	-0.0090	-0.0086
Province: North West	0.4120	0.1035
Province: Northern Cape	-0.0307	-0.1490
Marital status: Single/Never married	-0.0517	-0.1131
Marital status: Not married	-0.2367**	0.0209
Marital status: Divorced	0.1272	0.1812
Marital status: Widowed	-0.1075	-0.0092
Marital status: Separated	0.1673	0.2655
Firm size	0.7955*	0.4862*
Constant	0.4105***	-0.1260
Number of observations	5 676	4 897
F-statistic	27.05	20.77
Prob. > F-statistic	0.0000	0.0000
R-squared	0.2002	0.1839
Adjusted R-squared	0.89631	0.90594
*Significance at 1%; **Significance at 5%; ***Significance at 10%		
Reference categories: **Gender**: Male; **Age**: Over 55 **Population group**: White; **Educational attainment**: University degree **Province**: Western Cape; **Marital status**: Married		

Source: Author's own calculation using FinScope MSME 2010 and 2020 datasets.

4.3.2 Probit regression results

The results of the probit regressions in Table 13 show that, firstly, the marginal effects of the firm size variable are negative and statistically significant at 1% for both periods at -0.1236 in 2010 and -0.3503 in 2020. This result correlates to the OLS regression finding of the firm size variable since it indicates that an increase in the firm size lowers the likelihood of financial exclusion. As previously mentioned, this result is in agreement with studies such Brixiova et al. (2020) who found that smaller firms are more likely to be financially excluded compared to larger ones. Similarly, another study by Makina et al. (2015) that used 2010 FinScope MSME data also found that smaller firms are less likely to be financially included since financial constraints tend to increase as firm size decreases.

Furthermore, with reference to the age cohort, the marginal effects of the 16 to 24 years dummy variable are both positive and statistically significant for both periods. This means that MSME owners' financial exclusion status increased by 0.1639 in 2010 and 0.1876 in 2020 if they were aged between 16 and 24 years. These coefficients reveal that MSME owners aged between 16 and 24 years had a higher probability of being financially excluded in 2020 compared to 2010.

Additionally, in terms of gender, the probit regression results relate to the OLS results since the coefficient and marginal effect for 2020 show that females were more likely to be financially included compared to the 2010 results. For instance, if the MSME owner indicated that they are female, their probability of being financially excluded declined by 0.0585 in 2020. These results indicate that female MSME owners were more likely to be included in 2010 compared to 2020 since the coefficient declined from 0.0262 in 2010 to -0.0585 in 2020 in relation to the male reference category. Although, a study by Beck & Cull (2014) found that female MSME owners are more likely to own smaller firms than males, they also found that female-owned MSMEs are more likely to be financially included than males, which is proven by the probit regression results of this study.

With reference to race, the Black dummy is positive for both periods of the probit regressions, which could indicate that MSMEs owned by Black people are less likely to be financially included compared to the White reference category. Many studies have proven that Blacks have a higher probability of being financially excluded compared to their white counterparts (Mahalika et al., 2020; Matsebula & Yu, 2020). Furthermore, the results of the educational attainment variable agree with the OLS results. In this regard, the no schooling dummy has the highest positive figures compared to the other education dummies. This indicates that MSME

owners with no schooling had a higher likelihood of being financially excluded. For instance, if the MSME owner had no schooling, their financial exclusion probability would increase by 0.4762 and 0.4625 based on the 2010 and 2020 results, respectively. Limited access to and usage of financial services and products is also attributed to lower or no educational attainment, among other things (Ndaba et al., 2022).

With reference to the provincial variable, the statistically significant marginal effects are from the Free State and Gauteng dummies in 2010 and from the Kwa-Zulu Natal, Limpopo, and Northern Cape dummies in 2020. The 2010 results of the probit regression are in agreement with the OLS results for the same period. In this case, the probit results show that MSME owners residing in the Free State experienced an increase in their financial exclusion likelihood of 0.1088. Whereas, those residing in Gauteng enjoyed a decline in their financial exclusion probability of 0.1216 in 2010. Similarly, when compared to the OLS results, the 2020 probit results also indicate that those residing in the Kwa-Zulu Natal province were more likely to experience a lower likelihood of financial exclusion of -0.1327. Yet, those in the Limpopo and the Northern Cape had a higher probability of being financially excluded at an increase of 0.1413 and 0.1753 based on the 2020 probit results, respectively. Studies such as Makina et al. (2015) have also found that small businesses in Gauteng and Kwa-Zulu Natal were more likely to have access to finance.

Finally, when looking at the marital status of MSME owners, significant results are from the not married and separated dummies. Based on the 2010 probit results, those who indicated that they are not married had a higher probability of being financially excluded compared to the 2020 results. For instance, if the MSME owner was not married, their financial exclusion likelihood would have increased by 0.1022 in 2010 and declined by 0.0684 in 2020. These results are also in agreement with the OLS results which proved that those who were not married suffered a lower financial inclusion index in 2010 compared to 2020. In addition, unlike the OLS results, the probit found that those who indicated that they are separated enjoyed a higher probability of being included in 2010 compared to 2020.

Ultimately, the results of the probit regressions indicate that MSME owners with a lower likelihood of being financially excluded operate larger firms and are older than 24 years. Similar to the OLS results, female MSME owners were also proven to experience lower financial exclusion probability compared to males, whereas Black owners and those with no schooling remain under the likelihood of higher financial exclusion.

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Table 13: Probit regressions on the financial exclusion likelihood of MSMEs

	Coefficient		Marginal effect	
	2010	**2020**	**2010**	**2020**
Gender: Female	0.0656	-0.1915**	0.0262	-0.0585***
Age: 16-24 years	0.4204**	0.5358*	0.1639**	0.1876*
Age: 25-34 years	0.035	0.2159	0.0141	0.0687
Age: 35-54 years	-0.1634	0.1776	-0.0655	0.0542
Population group: Black	0.4043*	0.2661	0.1591*	0.0768
Population group: Coloured	0.4209*	-0.0029	0.1633*	-0.0009
Population group: Asian/Indian	0.9303*	0.2349	0.3265*	0.0772
Educational attainment: no schooling	1.7999*	1.2442*	0.4762*	0.4625*
Educational attainment: incomplete primary school	1.1493*	0.8763*	0.3899*	0.3245*
Educational attainment: primary school completed	0.1311*	1.0856*	0.4351*	0.4048*
Educational attainment: incomplete high school	0.7489*	0.5837**	0.2913*	0.1991**
Educational attainment: matric	0.5422*	0.8163	0.2113*	0.0252
Educational attainment: other	0.5812**	-0.08264	0.2190***	-0.0247
Province: Eastern Cape	-0.099	0.0482	-0.0396	0.0150
Province: Free State	0.2760**	0.0093	0.1088**	0.029
Province: Gauteng	-0.3066*	0.0639	-0.1216*	0.0197
Province: KwaZulu-Natal	-0.0217	-0.4825*	-0.0086	-0.1327*
Province: Limpopo	-0.0076	0.4136**	-0.0030	0.1413**
Province: Mpumalanga	0.0325	0.2525	-0.0129	0.084
Province: North West	-0.0466	-0.1296	-0.0186	-0.0380
Province: Northern Cape	-0.1663	0.5004**	-0.0661	0.1753**
Marital status: Single/Never married	-0.0206	0.0023	-0.0082	0.0007
Marital status: Not Married	0.2590**	-0.2405	0.1022**	-0.0684
Marital status: Divorced	-0.1878	-0.3669	-0.0746	-0.0975
Marital status: Widowed	0.0235	0.01293	0.0094	0.0040
Marital status: Separated	-0.5325**	0.0459	-0.2037**	0.1431
Firm size	-0.3098*	-1.1408*	-0.1236*	-0.3503*
Constant	-0.8353*	0.1042	N/A	
Number of observations	5 676	4 897	5 676	4 897
Chi-squared statistic	289.10	294.79	289.10	294.79
Prob. > Chi-squared statistic	0.0000	0.0000	0.0000	0.0000
Pseudo R-squared	0.1708	0.1590	0.1708	0.1590
Observed probability	0.5440	0.2822	0.5433	0.2822
Predicted probability	0.5058	0.2347	0.5459	0.2347
*Significance at 1%; **Significance at 5%; ***Significance at 10%				
Reference categories: **Gender**: Male; **Age**: Over 55 **Population group**: White; **Educational attainment**: University degree **Province**: Western Cape; **Marital status**: Married				

Source: Author's own calculation using FinScope MSME 2010 and 2020 datasets.

4.4 Conclusion

Based on the descriptive statistics discussed in this chapter, the results conclude that most of the MSME owners are unmarried Black males aged between 35 and 54 years. Most of these individuals held a matric certificate as their highest qualification and reside in Gauteng. In addition, the descriptive statistics of financial inclusion likelihood illustrate that firm size plays a major role in the financial inclusion status of MSMEs as small and medium enterprises tend to have a higher probability of being included than micro-enterprises, although micro-enterprise comprises most of the respondents for each dataset. The financial inclusion status results, however, show tremendous improvements in the likelihood of MSMEs being included. By 2020, 71.78% of all MSMEs were deemed financially included from 45.60% in 2010. This result is proven by the increased usage of financial products shown by section 4.2.2.

The regression analyses prove the findings given by the descriptive analyses. Based on the OLS regression, larger firms have a higher financial inclusion index and a greater likelihood to be financially included. The regression results also prove that younger MSME owners are less likely to be included or have a lower financial inclusion index. In addition, although they comprise most of the sample, Black owners tend to remain financially excluded. This result remains consistent with existing past empirical studies that focused on financial inclusion. Ultimately, the results of the OLS and probit are constant with theory and existing literature.

CHAPTER FIVE: CONCLUSION

5.1 Introduction

This chapter concludes the study by discussing the key findings and policy recommendations based on the empirical analysis provided in the previous chapter. Initially, this study questioned whether micro-, small, and medium enterprises in South Africa are financially included with the objective to analyse the levels and trends, if any, of MSMEs' usage of financial services. The main objective was to determine whether the access to formal financial services by MSMEs was hindered and, if so, deduce the factors that impede the level of financial inclusion of small businesses in South Africa. The following findings represent the main results in reaching the objectives of this study.

5.2 Review of Key Findings

Initially, an in-depth literature review of the key concepts was discussed, including distinguishing between what a micro-, small, and medium enterprise is and its role in the South African financial sector. In addition, the distinction between financial inclusion and financial exclusion was made, and how these two multifaceted concepts affect MSMEs in South Africa was discussed. Most importantly, the financial inclusion dimensions of MSMEs were defined, as this provided a basis for the rest of the study. The study found that financial inclusion is basically the usage of formal financial services and products by all individuals in an economy. For businesses, the definition slightly differs in terms of the financial services and products that they would use to classify them as being financially included. Therefore, this study follows the financial inclusion dimension defined by the Alliance for Financial Inclusion (AFI) as they pertain solely to businesses.

Furthermore, this study is built on four key economic theories for financial inclusion. The theories are the credit-rationing theory, the pecking order theory, the systems theory of financial inclusion, and the public money theory of financial inclusion. These theories assisted the discussion on why businesses might be voluntarily or involuntarily excluded from a financial system. This study also reviewed past international and local studies on the financial inclusion of MSMEs and found no other study that used the same dataset and methodology as this study.

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By using the FinScope MSME 2010 and 2020 data for South Africa, this study computed a comprehensive index relevant to small businesses. The Multiple Correspondence Analysis was applied to construct a MSME financial inclusion index and the 40th percentile of the index in 2010 was used to distinguish the financially excluded MSME owners in both 2010 and 2020. OLS regressions were run to determine the explanatory variables with the greatest effect on the MSME financial inclusion index and lastly, probit regressions were computed to determine the financial exclusion likelihood of MSMEs in South Africa for 2010 and 2020. Ultimately, the empirical findings proved that small businesses in South Africa are relatively financially included. However, micro-enterprises tend to be less included.

The results of the descriptive analysis of the financial inclusion dimensions showed that most of the MSMEs had a bank account that they used for business purposes. Of those who indicated that they do not have a business bank account, the access dimension variables failed to justify the earlier arguments about the financial exclusion of MSMEs. Initially, the study mentioned that factors such as exclusive formal financial structures, collateral constraints, and high borrowing costs, among other things, were specified as hindering factors toward the inclusion of MSMEs. Yet, the results of the financial inclusion dimensions showed that small businesses in South Africa generally have access to financial services and if they do not, it is because they prefer not to use them. The main finding here is that MSMEs are mostly voluntarily excluded from the formal financial system, however, they do prefer to use some formal financial services and products as indicated by the usage dimension of MSME financial inclusion.

Ultimately, the main finding of the empirical analysis was that larger firms are more likely to be financially included. This result agrees with various past empirical studies. The main contributors towards a higher financial inclusion index, besides the firm size, were found to be from most of the demographic characteristics besides province and marital status.

5.3 Policy Recommendations

Based on the findings of this study, financial constraints to accessing and using formal financial services are more likely to impact micro-enterprises than larger ones. In addition, when referring to demographic characteristics, the findings indicate that younger MSME owners, those who are Black and those without formal education tend to suffer from a lower level of financial inclusion. Policies aimed at improving MSME participation in the South African economy should thus focus on these areas of concern. In this regard, the South African government can play a crucial role in supporting and promoting the financial inclusion of

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MSMEs as expressed by the public money theory of financial inclusion described in Section 2.3.4 of this study. In relation to the public money theory of financial inclusion, studies such as Fatoki & Smit (2011) and Ayyagari et al. (2017) have agreed that government agencies can assist MSMEs by providing training programmes or directly providing them with financial services that they struggle to access.

In terms of policy recommendations, the South African government should collaborate with banks and other formal financial institutions to ensure that smaller enterprises have access to financial services on the same level as larger businesses. This could improve equality within the financial system and ensure that the products offered to micro-enterprises are tailored to their needs. For instance, in Bangladesh, the Bangladesh Bank collaborated with their government to establish the SME and Special Programmes Department aimed at increasing the financial inclusion of MSMEs by increasing the flow of credit to the MSME sector (Madan, 2020). By doing so, more MSMEs were included in their financial system through long-term funding options, start-up capital, and training and upskilling of the MSME owners (Madan, 2020). This was achieved by the financial and regulatory policy strategy implemented by the Bangladesh Bank which included the establishment of dedicated government agencies and refinancing schemes, as well as relaxing provisioning requirements for MSMEs. By following this example, the South African government can also facilitate the collaboration between banks and MSMEs by providing incentives for banks to focus some of their resources on smaller businesses and customise finance options to cater to the needs of MSMEs.

When focusing on the demographic characteristics results of this study, the South African government can assist younger MSME owners, Black owners and those without education through several programmes. Firstly, government initiatives should be focused on enhancing the skills of younger MSME owners. Based on the findings, policies should address the challenges that are unique to MSME owners aged between 16 and 24 years. Their awareness of existing agencies and policies such as the Youth Enterprise Development Strategy (YEDS) and the National Youth Development Agency (NYDA) should also be rigorously promoted through campaigns. On the other hand, financial service providers can also assist governments' efforts to ensure that MSMEs are using financial products. For instance, financial service providers could collaborate with non-financial institutions such as youth-serving and educational organisations to assist youth MSME owners with financial literacy and digital

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banking awareness, with the intention of improving the chances of governments reaching their financial inclusion outcomes.

Secondly, policies should be geared towards affirmative action initiatives that promote the financial inclusion of Black-owned MSMEs. This can be achieved through promoting preferential access to funding by banks or financial institutions to boost their financial inclusion. Similarly, government initiatives such as the National Empowerment Fund (NEF) should collaborate with banks and financial institutions to ensure that products and services offered are inclusive of black economic participation. Lastly, financial education initiatives in the form of study loans and financial literacy programmes should be implemented by governments and financial institutions to enable MSME owners with no education a chance to obtain a formal education. This recommendation is substantiated by a study by Grohmann et al. (2018) who found that a higher financial literacy index promotes greater financial inclusion.

Other recommendations relate to administrative enhancements in terms of improving the existing measures used to track the digital or formal financial footprint of MSMEs. Recording the financial product or service usage by MSMEs allows better insight into their habits and preferences and thus makes it easier to implement constructive policies and interventions to aid their growth. According to the IFC (2018), a consistent and comprehensive update on the financial activities of the South African MSME sector should be implemented through the collection of data from MSME owners interviewed on a regular basis via household and nationally-representative surveys such as the FinScope MSME surveys, in order to build a better and more accurate MSME financial activity database. Similarly, the study by Triki & Faye (2013) agrees that data on MSME access to finance, financial capability, and the impact of MSME financial access is scarce in many African countries.

Yet, further research should be established to assess the abovementioned recommendations on the financial inclusion of MSMEs in South Africa. Further research could include more financial inclusion variables or the use of a different methodology and data to deepen the understanding of MSME financial inclusion in South Africa. For instance, this study is limited to the use of cross-sectional data instead of balanced panel data. The use of balanced panel data allows for efficiency in the number of respondents over the period in question as the same respondents are present in all periods of observation. This provides another area for further research using the same cohort of MSMEs over time. Ultimately, obtaining a greater

knowledge of the financial inclusion status of MSMEs could improve the outreach of policymakers and regulators in their mission to improve the financial inclusion of MSMEs.

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APPENDIX

Additional statistics: MSMEs in South Africa

Globally, most firms are categorised as micro-, small or medium-sized enterprises (MSMEs) (Beck & Cull, 2014). In 2020, MSMEs contributed to about 87 per cent of the total labour force in South Africa (Motsomi et al., 2020). By 2021, the number of MSMEs in South Africa amounted to over 2.33 million which created over 9.7 million jobs (SEDA, 2021). It is argued that because of their significance in size within South Africa's financial sector, MSMEs contribute greatly to the gross domestic product (GDP) and employment rate of the country (Leboea, 2017). The employment provided by MSMEs amounted to 84.8 per cent from micro-enterprises, 14.4 per cent from small ones, and 0.8 per cent from medium-sized enterprises in 2020 (Motsomi et al., 2020). By the first quarter of 2021, the number of jobs provided by these businesses increased by 6.9 per cent compared to the last quarter of 2020 (SEDA, 2021).

In addition, the estimated turnover of MSMEs in 2020 amounted to about R3.1 trillion, which more than doubled from R86 million in 2010 (Grundling & Kaseke, 2010). In correlation to the subsectors defined by the NSB Amendment Act (2004), subsectors of the service sector include the finance and business services (FBS) and the community, social and personal services (CPS) subsector. Whereas, the trade sector includes retail, motor trade, and repair services, as well as the wholesale subsector. The contribution towards total turnover from MSMEs remained around 37.4 per cent in the first quarter of 2020, with the highest contribution recorded for the trade and accommodation industry while the lowest has been reported for the mining sector (SEDA, 2021). Motsomi et al. (2020) agree that MSMEs mainly operate in the service and trade sectors and less so in the agriculture and mining sectors. By the first quarter of 2021, the trade and accommodation sector accounted for almost 40 per cent of total turnover, whereas the services sector accounted for the next highest shares at 13.7 and 14.8 per cent for FBS and CPS, respectively (SEDA, 2021). The above-mentioned statistics could indicate that the turnover of all MSMEs remained stable from 2020 to 2021 while employment by these businesses increased.

This valuable contribution of MSMEs to the economy has not gone unnoticed by the South African government as they have introduced various legislation and policies to reinforce the potential of MSMEs. Since 1996, legislation such as the National Small Business Act has offered financial and regulatory guidelines for the MSME sector. By 2004, the Act of 1996

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was amended to establish the SEFA and SEDA to implement development support programmes to assist MSMEs (National Small Business Amendment Act, 2004). The existence of these various government agencies and legislation could indicate that the development of MSMEs has been supported to enable them to compete globally and domestically. Yet, these enterprises still require financial access and support.

Table A: Initial MCA estimation - 2010

```
Multiple/Joint correspondence analysis          Number of obs    =      5,676
                                                Total inertia    =  .03336021
    Method: Burt/adjusted inertias              Number of axes   =          2

                      principal              cumul
     Dimension         inertia    percent   percent

          dim 1       .0265147      79.48     79.48
          dim 2       .0021764       6.52     86.00
          dim 3       .0001588       0.48     86.48
          dim 4        .000058       0.17     86.65
          dim 5       .0000242       0.07     86.73
          dim 6       .0000109       0.03     86.76
          dim 7       2.97e-08       0.00     86.76
          dim 8       5.57e-10       0.00     86.76

         Total       .0333602     100.00
```

Source: Author's computation using the FinScope MSME (2010) dataset.

Table B: Initial MCA estimation - 2020

```
Multiple/Joint correspondence analysis        Number of obs    =      4,897
                                              Total inertia    =   .03450802
   Method: Burt/adjusted inertias             Number of axes   =          2

                   principal                cumul
    Dimension       inertia     percent    percent

        dim 1      .0259222       75.12      75.12
        dim 2      .0018471        5.35      80.47
        dim 3      .0008742        2.53      83.01
        dim 4      .0004084        1.18      84.19
        dim 5      .0001275        0.37      84.56
        dim 6      .0000647        0.19      84.75
        dim 7      5.00e-06        0.01      84.76
        dim 8      2.56e-07        0.00      84.76

        Total      .034508      100.00
```

Source: Author's computation using the FinScope MSME 2010 and 2020 datasets.

Table C: First dimension results for deriving the MSME financial inclusion index

Categories	2010			2020		
	Coord.	Sqcorr.	Contrib.	Coord.	Sqcorr.	Contrib.
Reason: no business bank account – business/income too small						
Yes	0.225	0.685	0.003	-0.010	0.109	0.000
No	-1.907	0.685	0.021	1.598	0.109	0.001
Reason: no business bank account – no business address						
Yes	0.048	0.395	0.000	-0.000	0.782	0.000
No	-2.051	0.395	0.005	2.557	0.782	0.000
Reason: no business bank account – do not qualify						
Yes	0.012	0.366	0.000	-0.002	0.013	0.000
No	-1.791	0.366	0.001	1.190	0.013	0.000
Reason: no business bank account – cannot afford the minimum balance						
Yes	0.023	0.491	0.000	-0.001	0.025	0.000
No	-2.072	0.491	0.003	0.932	0.025	0.000
Reason: no business bank account – business is not registered						
Yes	0.072	0.341	0.000	-0.004	0.081	0.000
No	-1.264	0.341	0.005	1.548	0.081	0.000
Reason: no business bank account – not enough money from the business						
Yes	0.093	0.525	0.000	-0.011	0.165	0.000
No	-1.678	0.525	0.008	1.715	0.165	0.001
Reason: no business bank account – do not need one						
Yes	0.098	0.799	0.001	-0.003	0.020	0.000
No	-2.164	0.799	0.011	1.141	0.020	0.000
Use a bank account or bank card						
Yes	1.934	0.933	0.113	1.237	0.919	0.039

No	-2.323	0.933	0.136	-1.055	0.919	0.033

Use a bank loan

Yes	0.146	0.595	0.001	0.540	0.806	0.014
No	-5.237	0.595	0.041	-3.562	0.806	0.093

Use business insurance

Yes	0.204	0.621	0.002	0.278	0.884	0.004
No	-4.746	0.621	0.051	-4.510	0.884	0.066

Source of borrowing

Yes	0.099	0.809	0.001	0.279	0.955	0.004
No	-3.349	0.809	0.018	-2.022	0.955	0.028

Savings/investment channel

Yes	1.192	0.967	0.054	1.568	0.869	0.056
No	-2.614	0.967	0.119	-1.083	0.869	0.039

Use savings book

Yes	0.052	0.788	0.000	0.456	0.788	0.010
No	-2.447	0.788	0.007	-2.975	0.788	0.065

Use garage card

Yes	0.117	0.470	0.001	0.388	0.759	0.008
No	-6.395	0.470	0.041	-4.436	0.759	0.088

Use overdraft facility

Yes	0.105	0.474	0.001	0.368	0.788	0.007
No	-6.021	0.474	0.034	-4.736	0.788	0.090

Reason: no business bank account – banks do not offer suitable services for MSMEs

Yes	1.023	0.973	0.043	1.156	0.770	0.046
No	-2.961	0.973	0.125	-1.828	0.770	0.072

Reason: no business bank account – banks do not provide adequate financial advice

Yes	0.965	0.970	0.039	1.148	0.772	0.045
No	-2.829	0.970	0.113	-1.854	0.772	0.073

Reason: no business bank account – banks do not explain how things work

Yes	-0.063	0.148	0.000	1.158	0.784	0.046
No	0.123	0.148	0.000	-1.853	0.784	0.073

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