The Relationship Between Financial Inclusion and Entrepreneurship among South African Women

by

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SUBMITTED TO THE UNIVERSITY OF CAPE TOWN

In partial fulfilment of the requirements for the degree

Master of Commerce specialising in Corporate Finance and Valuations

Department of Finance and Tax

Faculty of Commerce

UNIVERSITY OF CAPE TOWN

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DECLARATION

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ACKNOWLEDGEMENTS

I sincerely thank Professor Pradeep Brijlal for his exceptional academic leadership, keen insights, and constant support. His guidance was invaluable in shaping my research and propelling me forward. I also thank the Department of Finance and Tax for offering a stimulating and rewarding Master's program that challenged me to think critically and expand my knowledge. Beyond academia, my wife, Enelo and family, whose consistent support and encouragement sustained me throughout this journey.

Abstract

In South Africa, women have historically faced multifaceted challenges in accessing financial resources, starting and growing businesses, and achieving economic independence. These challenges have contributed to persisting gender disparities in their economic participation. Given the potential for inclusive financial practices to bridge gender disparities, this study examines women's entrepreneurship to generate practical recommendations for policymakers and practitioners.

Secondary quantitative data from the World Bank's Global Findex Database was used, and various statistical methodologies, including correlation and regression analysis, were applied. The nature and strength of the relationships between financial inclusion and entrepreneurship among South African women were analysed to understand the impact of financial inclusion on women's entrepreneurship and the determinants and barriers affecting South African women's entrepreneurial engagement.

The findings highlighted a positive correlation between women's entrepreneurial engagement and financial inclusion, implying that the latter can enable the participation of women in entrepreneurial activities. Findings also suggested that there has been a steady increase in women's involvement in savings, investments, and entrepreneurial ventures over time. These findings confirm the significant potential for financial inclusion to empower women economically and facilitate greater participation in entrepreneurship. Policymakers and practitioners can use the insights from this study to develop targeted initiatives and interventions aimed at enhancing financial inclusion and, by extension, empowering women economically.

Keywords: South Africa, financial inclusion, women's entrepreneurship, correlation analysis, regression analysis

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CHAPTER 1: INTRODUCTION

Financial inclusion remains a critical focus in Africa because accessing financial services and products is critical for reducing poverty, promoting economic development, and improving financial stability (Smith, 2023). Some researchers define financial inclusion in terms of the accessibility and availability of financial goods and services at a reasonable cost, regardless of income level or geographic location. For example, Kilindo (2021:27) describes financial inclusion as "the extent to which individuals and businesses have access to and use a range of financial products and services that meet their needs at a cost they can afford."

However, for many African people, accessing formal financial services, including credit, savings, insurance, investments and payment services, is challenging (Ahmad, Smith & Johnson, 2020). The lack of access is a consequence of several factors, including poverty and regulatory barriers and a lack of infrastructure, education, and financial inclusion. Ahmad, Smith and Johnson (2020) also noted that of adults in sub-Saharan Africa, 34% had an account at a financial institution in 2017. Moreover, financial literacy is limited, digital financial services are not widely available and regulation is lacking. Akinola (2020) found that women, low-income households and rural communities are especially unlikely to have access to financial services. Therefore, a critical challenge in Africa is financial inclusion, with only 43% of the adult population having a formal bank account in sub-Saharan Africa in 2021 (World Bank, 2021). This low level of financial inclusion can make it hard for people to save, access credit, and protect themselves against financial risks. It can also limit economic growth and development (Van et al., 2021). In addressing this challenge, policymakers and financial institutions are working on various initiatives to expand financial inclusion, such as developing mobile banking and other digital financial services (Oyelaran-Oyeyinka & Gehl Sampath, 2019), offering microfinance programs (Mthanti & Nkambule, 2018), and instituting regulatory reforms.

Promoting entrepreneurship is fundamental to economic development and job creation (World Bank, 2013). Bridging the financial gap in Africa fosters fertile ground for entrepreneurial growth by providing access to the financial resources and the knowledge and skills necessary to begin and develop sustainable businesses (Kabeer,

2015). Female entrepreneurs, particularly, can benefit from access to financial services when beginning and developing their businesses because they would create jobs and contribute to economic growth. For example, the International Finance Corporation (IFC, 2018) found that women's businesses with access to formal financial services tend to be more profitable and employ more people. The study also found that only 34% of women in sub-Saharan Africa have bank accounts, whereas 40% of men have bank accounts. Obtaining credit and insurance is also more likely to involve a struggle for women (Ugochukwu, Oloko & Ajayi, 2017). Expanding financial inclusion to include women will likely facilitate access to the capital and resources that women require to begin and develop businesses, create new jobs and contribute to economic growth and innovation (UN Women Africa, 2018). For example, Aremu and Adeyeye (2020) found that female entrepreneurs in Nigeria who could access financial services were more likely to create jobs. Similarly, Mthanti and Nkambule (2018) found that financial inclusion mirrored an increase in the number of new South African initiated.

Building upon this foundation, the present research examines the effect of financial inclusion among South African entrepreneurs, focusing on female entrepreneurs. Past research about financial inclusion and African entrepreneurship has been limited not only in scope (Mahmud Aderoju & Adedeji, 2019; Hermes & Lensink, 2011) but only sample size and longitudinal data. This study focuses on South Africa and uses an objective survey and secondary data from credible sources between 2011 and 2021. The research method permits a rigorous analysis of the relationship between financial inclusion and entrepreneurship, capturing trends and changes over time to provide a more nuanced understanding of the effect of financial inclusion on women's entrepreneurship. The study draws data from the World Bank's Global Findex Database, synthesises existing research on financial inclusion and entrepreneurship among South African women, identifies gaps in the literature, and offers insights into future research directions. Further examination of the relationship between financial inclusion and entrepreneurship in South Africa may provide valuable insights for policymakers, practitioners and researchers who are committed to promoting inclusive economic development.

1.1 Background of the Research

In this section, an overview of the complex relationship between financial inclusion and South African women's entrepreneurship activities is provided. The section focuses on the role of factors such as cultural norms, legal barriers, and educational access and training. South Africa is one of the largest economies in Africa and has made notable progress in advancing financial inclusion, but significant gaps remain (World Bank, 2020a, 2020b). At the same time, female entrepreneurship emerges as an important means of fostering economic development and reducing gender inequality in the developing world (Corrêa et al., 2022). South Africa has recognised this and has initiated various programs to increase women entrepreneurs' access to finance, training, and market opportunities (Presidency of the Republic of South Africa, 2020).

Despite these efforts, the relationship between entrepreneurship among South African women and financial inclusion remains complex and poorly understood (Mhlongo, 2019). While some findings suggest greater access to finance can enhance entrepreneurship among women, other factors such as cultural norms, legal barriers, and access to education and training may also play a significant role (El Borolossy & Rostom, 2020; Uzochukwu, Anaduaka & Ibe, 2019). For example, the World Bank's Global Findex Database (2017) indicates that just 43% (as opposed to the global average of 69%) of sub-Saharan African adults had bank accounts, thus limiting the abilities of entrepreneurs to access financing, manage cash flow and save for the future.

The *Global Entrepreneurship Monitor Women's Entrepreneurship Report* (2021) noted that only 27% of sub-Saharan African women starting or running a business report that they have access to the financing they need, compared to 44% of men. South Africa, one of the major economies in Africa with a well-documented entrepreneurial spirit (GEM, 2022), presents challenges for female entrepreneurs related to financial inclusion, such as limited access to finance and low financial literacy (Meyer & Hamilton, 2020; El-Gohary & Eid, 2019).

As a social economy with different economic and cultural contexts, South Africa provides an excellent opportunity to examine the relationship between entrepreneurship and financial inclusion. The economically distinct contexts in South

Africa, compared to other African economies, such as its relatively developed financial sector and infrastructure, higher GDP per capita, and unique socio-economic challenges like high inequality and unemployment rates (Masilela, 2023), present an opportunity to examine the effect of financial inclusion on entrepreneurship in diverse settings (Masilela, 2023). By examining the relationship between financial inclusion and entrepreneurship among South African women, policymakers and researchers can gain valuable insights about inclusive economic development and its promotion in the country.

1.1.1 Financial Inclusion in South Africa

On a continent where many lack access to formal financial services, a vital development objective in Africa is financial inclusion. African governments and development organisations have prioritised promoting financial inclusion by leveraging technology and innovative financial products to reach underserved populations (African Development Bank, 2022). The government of South Africa has implemented initiatives and policies such as the National Financial Inclusion Strategy, the Mzansi Account Initiative, and various financial literacy programs (National Treasury, 2023) for expanding access to financial services and improve financial capability among underserved populations (National Treasury, 2020b). The government has established a regulatory framework for microfinance institutions, provided subsidies to promote access to credit for small businesses, developed a credit bureau system, encouraged the development of digital financial services, and facilitated a financial literacy and education program (Banda & Chikodzi, 2017).

Despite these governmental and institutional efforts to promote financial inclusion, South Africa's financial inclusion landscape remains uneven. According to the 2023 FinScope Consumer Survey, while formal financial inclusion has reached 98% of adults in South Africa, disparities persist across gender and geographic location (FinMark Trust, 2023). Notably, while the overall gender gap has narrowed significantly, women still lag behind men in terms of usage of formal financial products and services (FinMark Trust, 2023).

Promoting financial inclusion remains challenging despite the South African government and other stakeholders' efforts. The use of formal financial services

remains relatively low, and many individuals and businesses depend on informal financial services and cash transactions (Zikmund-Fisher, Kemp & Mosoetsa, 2018). The informal economy accounts for around 30% of the gross domestic product (GDP) in South Africa, and this sector is often excluded from formal financial systems, making measuring the effect of financial inclusion on the GDP challenging (Kite, 2021).

1.1.2 Entrepreneurship

Entrepreneurship is a multifaceted and dynamic concept rooted in economics and business theory. Davidsson, Delmar and Wiklund (2017) defined it as identifying, creating, and exploiting market opportunities to establish and manage a new venture, typically to generate profit and innovation. Entrepreneurs perform a central role in the process, possessing the vision, willingness to take risks, and capacity to mobilise resources to transform innovative ideas into viable business entities (Kauffman Foundation, 2023). Liang, Wang and Lazear (2018) stated that entrepreneurship encompasses various activities, including opportunity recognition, business planning, resource acquisition, strategic decision-making and market entry. It is characterised by high uncertainty and ambiguity, requiring the ability to adapt to changing circumstances and market conditions (Morris, Kuratko & Bygrave, 2022). Entrepreneurship can occur in various forms, such as small-scale start-ups, family businesses, or corporate entrepreneurship within established organisations.

1.1.3 Entrepreneurship among Women

Women's entrepreneurship is a subset of entrepreneurship that highlights the unique challenges, opportunities, and dynamics women face as they engage in entrepreneurial activities (Garg & Agarwal, 2017). Women entrepreneurs initiate, organise, and manage businesses or enterprises ranging from small start-ups to large corporations (McAdam, 2022). Women entrepreneurs are crucial economic development and empowerment agents because their entrepreneurial endeavours can have far-reaching societal impacts, including wealth creation, employment generation, and social change (McAdam, 2022; Garg & Agarwal, 2017).

Women entrepreneurs in South Africa face significant financial inclusion difficulties, such as limited access to finance, lack of collateral, and low financial literacy (Ojo & Zondi, 2023). These factors often result in female entrepreneurs' exclusion from the formal financial system, limiting their abilities to start or grow their businesses (Ojo, 2020). Meyer and Hamilton (2020) confirm that female entrepreneurs in South Africa face challenges related to financial inclusion. Their findings highlight the need for policymakers and program managers to develop initiatives promoting South African and African female entrepreneurs' financial inclusion. Meyer and Hamilton (2020) note that despite various attempts and consistent growth observed over an extended period, there has been no significant development in entrepreneurship among South African women because of the systemic barriers women face in accessing economic opportunities and financial services. These barriers include social and cultural factors and a male-dominated business ecosystem. In their study, Dwinger and Hossain (2021) found that South African female entrepreneurs face discrimination, poor business network access, and societal expectations regarding gender roles.

Moreover, the study revealed that female entrepreneurs often struggle to access funding and face barriers when seeking loans from financial institutions. These challenges contribute to the challenges faced by the entire ecosystem for South African women. The World Bank Enterprise Survey (2020) indicates that access to finance is a major obstacle for South African enterprises, particularly for small and medium-sized enterprises (SMEs). However, it is important to note that the survey also highlights other significant challenges, such as crime, electricity shortages, and high operating costs, which often have a more detrimental impact on businesses than access to finance alone. This finding is echoed in the South African Global Entrepreneurship Monitor (GEM) report (2022), which identifies similar obstacles for entrepreneurs, highlighting the complex and multifaceted nature of the entrepreneurial ecosystem in South Africa. The gender perspective in business sectors concerning accessing finance, selecting business units, and securing contracts with customers has been studied by El-Fiky (2022), who found that the gender barrier is a significant factor that gradually spreads to other aspects. Women entrepreneurs' limited access to financial services requires government intervention to reintroduce and modify schemes and programs to give them preference.

For several reasons, examining the connection between entrepreneurship and financial inclusion in South Africa is essential. First, a recognised driver of economic growth and job creation globally is entrepreneurship, necessitating a thorough understanding of factors influencing entrepreneurial activity (Hlalele & Ameer, 2020; Weng & Wu, 2019). Second, financial inclusion, encompassing the affordable and suitable access and use of financial services, is a critical enabler of entrepreneurship, providing entrepreneurs with the necessary capital to start and expand their businesses (Chikako & Naito, 2019; Saulnier, 2017). Exploring this relationship could inform efforts to tailor financial inclusion initiatives to specific contexts and countries (Mori, 2019; Tarazi & Breloff, 2018). Female entrepreneurs in South Africa encounter similar financial inclusion challenges as their counterparts in other countries (Abdou, 2021; Mahrous, 2019). Gender disparities significantly hinder women's access to education, skills development, and business networks. In addition, inadequate financial services pose a significant barrier to entrepreneurs who are female in South Africa, impeding business establishment and expansion (Masilela, 2023; National Treasury, 2020a).

1.1.4 Women's Entrepreneurship and Financial Inclusion

Financial inclusion initiatives often emphasise entrepreneurship as a key component of their approaches, particularly female-specific schemes (Asante & Oduro, 2022; Kabeer, 2023). However, the availability of funding through financial inclusion schemes is crucial (Andriamahery & Qamruzzaman, 2022). Financial inclusion can positively impact women entrepreneurs' financial literacy because it encompasses the knowledge and skills to manage finances effectively (Lusardi & Mitchell, 2020). Financial inclusion can increase women's entrepreneurship, promoting further financial inclusion (Singh & Bhattacharya, 2018). Financial inclusion has been shown to positively affect women entrepreneurs' access to entrepreneurial activities and financial services in Ghana (Asiedu, Antwi-Asare & Abankwah, 2020), Kenya (Kiringai, Nyangweso & Kariuki, 2019), and Ethiopia (Megersa, Abebe & Assefa, 2021).

Banks and financial service providers have taken significant steps to promote financial inclusion in South Africa (Maharaj & Raghunandan, 2021). Initiatives include developing innovative products and services tailored to the needs of underserved

populations, such as low-cost bank accounts with minimal transaction fees, mobile banking apps, and digital payment solutions that cater to individuals without traditional banking infrastructure. Collaborations with microfinance institutions and non-profit organisations have also been instrumental in extending financial services to marginalised communities, and expanding financial education (Maharaj & Raghunandan, 2021). Regulatory support has enabled environments that foster financial inclusion initiatives. Challenges like limited access to infrastructure and financial education must be addressed to ensure financial inclusion (Kpodar & Ndikumana, 2022). Criteria for assessing financial exclusion in South Africa include income level, geographic location, gender, age, education level, and employment status (Gumede & Maennling, 2019). Understanding these criteria is critical for financial institutions and policymakers if they are to focus on interventions that further financial inclusion and address financial exclusion.

1.1.5 COVID-19 and Financial Inclusion

Responses to COVID-19 mobilised efforts towards financial inclusion worldwide with several mechanisms. These included government emergency relief payments to bank accounts and debit cards (Demirgüç-Kunt et al., 2022). McKinsey & Company (2023) found that more people use online transactions, mobile banking accounts, and automated teller machines (ATMs) during epidemics. However, these shifts do not always continue, and the adoption of digital means is often concentrated among the young and wealthy (Mishra & Kremer, 2021). While the long-term effects of the pandemic on financial inclusion are unknown, research findings suggest that the pandemic increased the adoption of accounts and digital payments (Mishra et al., 2021).

Account ownership, which means having a bank account or other financial account in one's name, is required for using financial services; however, ownership is insufficient to promote development outcomes (Demirgüç-Kunt et al., 2022). An experimental study to test the effect of extending access to rudimentary bank accounts in Malawi, Chile, and Uganda noted that savings or welfare were little affected by giving free bank accounts (Demirgüç-Kunt et al., 2022). Demirgüç-Kunt et al. (2022) suggest that expanding access to basic accounts will unlikely increase financial inclusion unless

policies, products and incentives encourage account use for payments, savings and credit.

1.2 Statement of the Problem

Financial inclusion is widely recognised as encouraging economic growth and development when ensuring financial service access to all individuals, including female entrepreneurs (Abdulquadri et al., 2021; Ajide, 2020), but a lack of research examining the relationship between the promotion of entrepreneurship and financial inclusion exists, particularly female entrepreneurs in African countries such as South Africa. African countries face unique challenges, and women's financial inclusion measures differ, making a comprehensive analysis of the topic crucial (*Global Entrepreneurship Monitor*, 2020). In addition, African economies, particularly South Africa, have great potential for growth but struggle with inequality and limited gender representation in entrepreneurship as highlighted by the Global Entrepreneurship Monitor (2020) report, which found that the rate of established business ownership among women in South Africa was only 5.2%, compared to 10.2% for men. An expanding body of research suggests that financial inclusion can also promote entrepreneurship. Abdulquadri et al. (2021), for example, noted a positive correlation between financial inclusion and entrepreneurial activity in Nigeria. Similarly, Ajide (2020) found that financial inclusion increases the likelihood of starting a business in Kenya.

However, a dearth of research examining the relationship between entrepreneurship and financial inclusion exists in African countries like South Africa. Failure to examine the relationship is a significant gap because South Africa is a major economic power in Africa and has many female entrepreneurs. The challenges female entrepreneurs face in accessing financial services in South Africa are complex and varied. These challenges include a lack of collateral, low credit scores, gender discrimination, and cultural barriers. As a result, female entrepreneurs often cannot obtain the loans and other financial services they need to start and develop their businesses. This research aims to comprehensively analyse the relationship and effect of financial inclusion on entrepreneurship among South African women and thereby

unravel the relationship between the involvement of women in entrepreneurial endeavours and financial inclusion.

By examining various financial indicators, like account ownership, financial institution accounts, debit/credit card ownership, savings, and borrowing, the objective is to offer a more nuanced understanding to show that increased financial inclusion can foster an environment conducive to women's entrepreneurial activities. The core objective is to uncover empirical evidence and establish if a significant positive correlation exists between the growth of women's entrepreneurship and financial inclusion. The relationship between entrepreneurship and financial inclusion is explored, and the study seeks to add to the ongoing discourse about gender equality and economic development by demonstrating the role of financial inclusion in promoting women's entrepreneurship as critical. Also highlighted are the additional trends and gender differences in South Africa's financial landscape.

1.3 Aims and Objectives

The aim of the current study is to analyse the effect of South African women's financial inclusion (FI) and women's entrepreneurship (WE).

1.3.1 Research Objectives

The following objectives have been adopted based on the aims of the study:

- To determine if a relationship exists between financial inclusion (FI) and South African women's entrepreneurship (WE).
- To assess the effect of South African women's entrepreneurship on financial inclusion indicators. The indicators include
    - Access to formal financial services, such as bank accounts and loans
    - Use of formal financial services like savings and investments
    - Education in financial literacy
- To investigate the determinants and barriers affecting South African women's entrepreneurial engagement. The determinants and barriers include
    - Cultural factors like gender norms and stereotypes
    - Institutional factors like government policies and support programs.

1.4 Research Questions

The study attempts to answer the following research questions based on the preceding objectives:

- What is the relationship between financial inclusion (FI) and women's entrepreneurship (WE) in South Africa?
- How does financial inclusion (FI) influence women's entrepreneurship (WE) in South Africa?
- What are the key determinants and barriers influencing women's participation in entrepreneurship in South Africa?

1.5 Research Methodology

The study adopts a positivist paradigm, which asserts that only factual knowledge gained through observation, including measurement, would be reliable and effective in exploring associations between financial inclusion and women's entrepreneurship (Park, Kim & Kim, 2019). Positivism is a philosophical paradigm grounded in the principles of quantification and rationality (Park, Kim & Kim, 2019). Positivism asserts that only those phenomena that can be subjected to quantifiable measurement are eligible for unequivocal comprehension and verification, implying that anything beyond the purview of such measurement remains uncertain regarding knowledge attainment (Ryan, 2018). Within this framework, it is posited that knowledge is ascertained through impartial and quantifiably observable assessments of human activities, actions and reactions.

Quantitative data for answering the research questions were collected through secondary reports published by the World Bank's Global Findex Database from 2011 to 2021. Data were used to determine the relationship between entrepreneurship among South African women and financial inclusion. Statistical tools, such as measures of central tendency and statistical tools like correlation, regression, and ANOVA, were applied to analyse the data using software analytics provided in SPSS. The World Bank's Global Findex Database is a comprehensive and credible data source for financial inclusion. It includes approximately 300 financial indicators for ten years between 2011 and 2021, with data collected every three years. The data pertains

various domains, such as account ownership, payments, savings, credit and financial stability. Studies have used the variables listed below to measure financial inclusion. For example, Demigüç-Kunt et al. (2022) provide an overview of the findings from the 2021 Findex survey based on nation, region, and income criteria. Allen et al. (2016) studied the Global Findex database to study the determinants and consequences of financial inclusion. They found that financial inclusion correlated with many positive outcomes, among them economic growth, poverty reduction, and gender equality. Klapper and Zia (2023) also used the Global Findex Database to study the relationship between economic growth and financial inclusion.

Descriptive, correlational, and regression analyses were applied to the World Bank's Global Findex Database to assess the effect of financial inclusion and entrepreneurship among South African women. In this research, an initial step in analysing the data was extracted from correlation analysis to the regression matrix, descriptive statistics, and an examination of gender disparities.

The institution's ethical considerations concerning privacy and confidentiality were also considered during the study's different phases to ensure validity and reliability, which included access to a credible database, being transparent about the sources of the data and the methods used to analyse it, and ensuring that the data were used per the World Bank Global Findex database license. The World Bank Global Findex database is licensed under the Creative Commons Attribution-Non-commercial-Share Alike 4.0 International (CC BY-NC-SA 4.0) license. The license permits sharing and adapting the data for non-commercial purposes as long as the World Bank is credited and licenses the adapted data under the same terms.

1.6 Significance of the Research

This study has important theoretical and practical implications. Empirically, a gap in the literature on the effect of financial inclusion on and entrepreneurship among South African women is addressed. The intention is to understand better the relationship between women's entrepreneurship and financial inclusion that can help scholars and stakeholders develop effective policies and programs that promote both. Practically, the findings may aid South African policymakers in developing policies that foster growth in financial inclusion and female entrepreneurship. It can also assist female

entrepreneurs in establishing new ventures and using different financial services. Financial institutions may also use the study's findings to develop products and services that are more accessible and affordable to female entrepreneurs. Overall, the study has implications for theory and practice, promising to advance knowledge in financial inclusion and women's entrepreneurship.

1.7 Chapter Division

The thesis has been divided into the following chapters to present the analysis and results systematically derived from the study:

Chapter 1: Introduction – The problem statement, along with the background of the study and the study's aims and objectives, research methodology, and research questions, were covered.

Chapter 2: Literature Review – An intensive analysis of past studies is presented in this chapter, along with the identified research gaps to be addressed.

Chapter 3: Research Methodology – The philosophical and theoretical aspects adopted during the research are covered in this chapter, along with the data collection and analysis methods.

Chapter 4: Data Analysis and Discussion – Different statistical tests used to analyse the data gathered and the derived results that meet the objectives of the study, including similarities to and contradictions of the results of past studies, are discussed.

Chapter 5: Conclusion – The entire study is summarised, and recommendations, limitations and avenues for future research are outlined.

1.8 Summary

This study examines the link between financial inclusion and entrepreneurship among South African women. The chapter began with a brief background of the study, which provided an overview of the South African financial inclusion landscape and the challenges South African female entrepreneurs face. The problem statement, aims, objectives and research questions were then outlined. The research methodology was also presented, along with the structure of the thesis. The following chapter examines

relevant literature on the relationship between financial inclusion and entrepreneurship among South African women.

CHAPTER 2: LITERATURE REVIEW

Financial inclusion is a key economic development component, especially in economies like South Africa. Financial inclusion refers to the level to which people and businesses have access to financial services like banking, credit, and insurance (Allen et al., 2016). Several steps can be taken to increase levels of financial inclusion, promote entrepreneurship and foster economic growth. The literature review examines the relationship between entrepreneurship and financial inclusion in South Africa. The review provides an overview of financial inclusion in South Africa and the initiatives implemented for elevating financial services use. In addition, the review evaluates the effect of financial inclusion on female entrepreneurship and focuses on factors that contribute to successful entrepreneurship and the chances of financial inclusion for boosting economic growth.

2.1 Theories of Financial Inclusion

Financial inclusion includes the ability of individuals and businesses to access and use affordable and appropriate financial services (Honohan, 2006), and it has emerged as essential for supporting economic growth among women entrepreneurs. Women make up almost half of the entrepreneurial workforce in South Africa, so understanding the various theories of financial inclusion is crucial for designing effective policies and programs to empower women entrepreneurs and foster inclusive economic growth.

Public Good Theory posits financial inclusion as a fundamental right and a public good that benefits society (Stiglitz, 2009). It argues that formal financial services access, like as savings accounts, loans, investments, and insurance, may improve productivity, reduce poverty, and increase financial resilience. Proponents of this theory advocate for government intervention, such as providing subsidies or establishing state-owned financial institutions to ensure broad access to affordable financial services. Dissatisfaction Theory focuses on understanding why individuals or businesses remain financially excluded (Leyshon & Pande, 2010). It argues that dissatisfaction with existing financial institutions, such as high fees, complex procedures, or lack of trust, hinder financial inclusion efforts. This theory calls for improving the quality and accessibility of financial services to address these concerns. It also encourages voluntary financial inclusion. Vulnerable Group Theory recognises that certain groups,

like women, low-income families, and rural dwellers, are disproportionately affected by financial exclusion (Sarma & Fay, 2011). It advocates for targeted interventions that address these vulnerable groups' specific needs and challenges. This approach can help ensure that financial inclusion efforts are inclusive and reach those who most need them.

Systems Theory pertaining to financial inclusion emphasises a complex interplay of factors that impact financial inclusion outcomes, like economic, financial, and social systems (Beck, Demirgüç-Kunt & Levine, 2007). The theory recognises that financial inclusion is not simply a matter of individual choice but is also embedded within broader societal structures. This theory calls for a holistic approach to financial inclusion that addresses systemic barriers and promotes enabling environments. Community Echelon Theory highlights the pivotal role of community leaders in promoting financial inclusion at the grassroots level (Arnott, 2019). It recognises that community leaders significantly influence their communities and can be crucial in promoting financial literacy, advocating for financial services, and building trust in financial institutions. This theory supports developing community-based financial inclusion initiatives that leverage the expertise and influence of community leaders.

Public Service Theory holds governments accountable for ensuring financial inclusion for all citizens (Cull, 2016). It argues that governments, through their existing infrastructure and resources, are responsible for providing access to appropriate and affordable financial services. The theory emphasises the importance of policies and regulations that promote financial inclusion and protect consumers on the part of the government. Special Agent Theory introduces the concept of specialised agents, either governmental or private, to spearhead financial inclusion projects (Ghatak, 2013). These agents bring expertise, focus, and resources to financial inclusion efforts, often in collaboration with community stakeholders. This theory supports using specialised agents to address specific financial inclusion challenges and achieve targeted outcomes. Collaborative Theory advocates for a multi-stakeholder approach to financial inclusion that involves governments, financial institutions, non-profit organizations, and community representatives (Hermes & Lensink, 2018). This theory

recognises the value of diverse perspectives and expertise in designing and implementing effective financial inclusion strategies.

Financial Literacy Theory emphasises financial education as important for empowering individuals to make informed financial decisions and effectively participate in the formal financial sector (Lusardi, 2014). This theory supports financial literacy programs and initiatives to increase knowledge, skills, and confidence in managing finances. Private Money Theory advocates for using private financing mechanisms to fund financial inclusion initiatives (Arner & Demirguc-Kunt, 2012). It argues that private capital can provide faster deployment of funds, more flexibility in funding models, and a keener focus on profitability and sustainability. The critical role of private investors and financial institutions in driving financial inclusion is supported by this theory. Intervention Fund Theory proposes the creation of dedicated intervention funds to finance financial inclusion projects, often bypassing traditional government budgetary processes (A. Singh, 2018). This theory can expedite the implementation of financial inclusion initiatives, particularly in resource-constrained environments.

These diverse theories provide valuable insights about the factors influencing financial inclusion and the strategies that may promote financial inclusion among South African female entrepreneurs. Understanding the strengths and limitations of each theory may enable policymakers and practitioners to design more effective interventions that can address the specific needs and challenges that female entrepreneurs face and foster an increasingly inclusive financial system in South Africa.

2.2 Financial Inclusion: An Overview

Financial inclusion, a crucial concept, denotes the use of formal financial services by individuals and organisations, particularly those historically left out of the conventional financial sector. Ozili (2021) underscores the multifaceted nature of financial inclusion, revealing that its trajectory is shaped by various factors like the infusion of financial innovation, the prevalence of poverty among its populace, the regulatory frameworks spanning nations, and the stability of its financial sector. Ajide (2020) reinforces this perspective by highlighting how financial inclusion can be a

potent remedy for surmounting businesses' financial hurdles by facilitating efficient resource allocation.

The global significance of financial inclusion is underscored by its endorsement at the G20 summit as an integral driver of worldwide development. Zins and Weill (2016) explored financial inclusion through a regional lens, finding that African countries lag behind their global counterparts in terms of financial inclusion. Their study, which spanned 37 African nations, illuminated the favourability of the financial system towards affluent, literate, urban and older individuals. Using three key financial indicators – formal account use, formal savings engagement, and formal credit accessibility – Zins and Weill (2016) exposed the relative underperformance of countries in Africa concerning financial inclusion compared to their global counterparts. Further insights into financial inclusion's implications are unveiled by Ambarkhane, Singh and Venkataramani (2016), who analysed financial inclusion metrics in the context of corporate stakeholders. Their study underscores that restricted access to financial services can significantly impede individual financial development and growth.

The transformative potential of financial inclusion emerges as a potent tool in mitigating poverty and inequality. By providing individuals and entities a means to save, invest, and manage risk, financial inclusion stands as a catalyst for equitable progress (Mahmud Aderoju & Adedeji, 2019). Moreover, its role in amplifying entrepreneurial activities and catalysing economic growth is illuminated by facilitating capital access, credit availability, and the incubation of nascent business ventures (Hermes & Lensink, 2011). Financial inclusion is a pivotal goal for many nations in the global context. Its potential to enhance individual and corporate well-being while concurrently propelling economic advancement underscores its significance. However, achieving full financial inclusion is riddled with challenges that necessitate concerted efforts for resolution.

2.3 Technology Integration and Enhancing Financial Inclusion

Technology integration has been a significant catalyst for advancing South African's financial inclusion. Mobile and digital financial services have dismantled traditional barriers to financial inclusion, like inadequate physical infrastructure, diminished

financial literacy and elevated transactions. Ifediora et al. (2022) discovered that comprehensive financial inclusion affects economic development positively because it can facilitate more accessible loan procurement for developmental endeavours. Durai and Stella (2019) have shown that digital finance has transformed how people manage their finances. By leveraging cutting-edge banking technologies, individuals have gained unprecedented access to fund management, payments, and receipts, which has led to greater convenience and ease for individuals.

However, there are still challenges to be addressed in digital finance. Ozili (2018) highlights the need for robust financial education frameworks that ensure individuals make informed financial decisions. Siddik and Kabiraj (2020) support this sentiment and show that mobile banking services have been particularly beneficial in rural areas, where traditional banking infrastructure is often lacking. Khera et al. (2021) offer an overview of digital financial inclusion in African and Asian countries. They show that FinTech innovations have played a central role in augmenting inclusivity in financial services. In addition, Kelikume (2021) evaluated the links between financial systems, mobile phones, and Internet penetration in informal economies.

African governments have taken steps to surmount barriers to financial inclusion. Oji (2015) highlights initiatives such as Nigeria's rotating savings and credit mechanisms. In South Africa, Moloi (2010) highlights the National Payment System and the Financial Sector Code, which are aimed at promoting financial inclusion through technological avenues. Mavilia and Pisani (2020) explore South Africa's efforts to harness blockchain solutions for reducing financial exclusion. Ismael and Ali (2021) construct a comprehensive financial inclusion index using principal component analysis (PCA). Technology integration has been a positive force for financial inclusion in South Africa, expanding opportunities for small businesses and individuals with lower income and driving overall economic growth (World Bank, 2023a). However, challenges remain to be addressed, such as ensuring the authenticity of digital financial services and guaranteeing equitable access for all segments of society, irrespective of their financial literacy levels.

2.4 Women's Entrepreneurship and Financial Inclusion

Financial inclusion can positively affect female entrepreneurship by ensuring accessible financial services. Female entrepreneurs, particularly in the South African corporate ecosystem, face several obstacles in accessing finance and credit due to socio-cultural norms, discrimination based on gender, and lack of collateral (Adeola, 2021). For example, Berguiga and Adair (2021) gathered 3,986 samples from the 2013 World Bank Enterprise Survey and applied a descriptive design to explore gender ownership and management in Africa. The findings suggest that the lack of availability of loans and financial exposure are reasons for women's businesses not developing. However, with the help of microfinance, this gap is being filled, providing adequate opportunities to women.

Studies denote that financial inclusion can positively affect women. Another study by Liu and He (2022) found that digital financial inclusion promoted women's entrepreneurship in China. They found that digital financial inclusion can help female entrepreneurs overcome the barriers they face when accessing traditional financial services, like lack of collateral and gender discrimination. A systematic review by Ndubisi, Nwankwo and Ndubisi (2021) found that in developing countries, financial inclusion positively impacts female entrepreneurship. The review suggests financial inclusion can help female entrepreneurs start, grow, and improve their business performance.

A World Bank study found that women with access to financial services tend to expand their businesses (Beninger, Goedhuys & Klapper, 2016). In South Africa, research conducted by the Small Enterprise Finance Agency found that businesses led by women are more successful when they have access to finance and other forms of support, such as business training and mentorship (Kamberidou, 2020). Financial technology and women's entrepreneurship go side by side; the research shows that the expansion of formal bank-based finance and mobile money in Africa is a major contributing factor. Kedir and Kouame (2022) disagree that gender discrimination is the sole reason for lower levels of empowerment among women. They consider finance and mobile money a means to enhance women's business associations.

However, several factors negatively affect female growth and development. These include personal factors, like lack of motivation and financial resources; social support factors, including gender discrimination and poor access to education; and environmental factors, like lack of exposure to technology and FinTech (Adeola, 2021). Overall, financial inclusion has the potential to enhance entrepreneurship among South African women, but a need for continued efforts to ensure that women enjoy equal financial services access and support exists.

2.5 Opportunities for Financial Inclusion and Entrepreneurship

Female entrepreneurs in South Africa face many challenges, including a lack of educational support, financial resources, and access to technology (Kamberidou, 2020). However, female entrepreneurs play an increasingly critical part in the South African economy, creating jobs, driving innovation and contributing to economic growth (Nambiar, Sutherland & Scheepers, 2020). Financial inclusion may help address these challenges by providing female entrepreneurs with financial services and capital access. Access might help them start and develop businesses, create jobs and bolster economic development. Some financial inclusion and entrepreneurship opportunities in South Africa include microfinance, crowdfunding, government grants and loans, and business development services (Kamberidou, 2020).

Microfinance institutions offer small loans to entrepreneurs who cannot access credit from traditional banks (Honohan, 2016). Crowdfunding platforms allow entrepreneurs to raise money from many people, often online. The South African government offers grants and loans to entrepreneurs, particularly female entrepreneurs. Business development services help entrepreneurs with marketing, accounting and management. In addition to the opportunities mentioned above, financial inclusion helps improve financial literacy, reduce gender inequality, and promote sustainable development (Nambiar, Sutherland & Scheepers, 2020).

Financial inclusion can improve financial literacy among female entrepreneurs, which may assist them in making better financial decisions (T.A. Ojo, 2022). It can also help to decrease economic gender inequality by giving women more financial resources (Kamberidou, 2020). Financial inclusion can also help promote sustainable development by supporting businesses that address environmental and social

challenges (Beninger, Goedhuys & Klapper, 2016). Financial inclusion can support women's entrepreneurship and economic development in South Africa. Access to financial services and capital, or financial inclusion, can potentially help women begin and develop their businesses, create jobs, and add to the country's economic growth. Financial inclusion may also improve financial literacy, reduce gender inequality, and promote sustainable development (Lustig & Desai, 2016).

2.5.1 Access to Credit

Financial inclusion may assist with providing access to credit for small and medium-sized enterprises (SMEs), enabling the initiation and growth of businesses. Ajide (2020) noted that financial inclusion policies that provide access to credit have a long-term positive effect on SMEs in African countries.

Access to credit can also help SMEs reduce their reliance on informal credit sources, which can be expensive and complex to access. El Deeb, Arafa and El Said (2021) found that SMEs in Egypt with formal credit access were more likely to survive and grow than those without. El Deeb, Arafa and El Said (2021) also found that formal credit helped SMEs to improve their financial management and access new markets. Thus, credit access, a key financial inclusion aspect, can help SMEs grow and contribute to economic development. Providing access to credit may assist with lowering the cost of capital for SMEs, improving their financial management, and giving them the resources they need to grow and succeed (Hery-Chardonnet & Sakho, 2020).

2.5.2 Innovation in Financial Products and Services

Financial inclusion helps encourage innovation in financial products and services, such as microfinance and mobile banking. These innovations can help meet the needs of micro-businesses and individuals with lower incomes, often underserved by traditional financial institutions (Asongu, Zhang & Leung, 2023). Ouma, Odongo and Were (2017) found that adopting mobile telephony in Africa to access financial services has been a medium for integrating the country's unbanked segments. They found that using mobile phones for financial activities has induced further innovations and improvements based on financial technology, improving these innovations'

performance and economic outputs. These innovations have assisted lower-income groups and increased technology exposure to the country's unbanked segments.

Another study by Makina (2019) highlights the improvements brought into the markets through innovative financial products and services. Makina (2019) found that introducing financial technology breached financial inclusion barriers and incorporated a variety of financial opportunities into the economy and entrepreneurship. Makina (2019) noted that the introduction of mobile technology is considered the most successful investment in a country. Crowdfunding also serves as a great medium of expansion. Small and medium enterprises were introduced to Internet access and mobile banking, reducing barriers and opening new grounds for business and economic growth.

2.5.3 Support for Female Entrepreneurs

Financial inclusion can support female entrepreneurs by providing them with adequate knowledge of financial services and support, such as business training and mentorship. Inclusion can help women overcome barriers to obtaining adequate funds for starting their businesses (Akter, Hossain & Uddin, 2023). In their research, Manwari, Ngare and Kipsang (2017:38) argue about the opportunities and challenges for women in financial inclusion, "business support services are essential to making women more competitive and to helping them explore vast value chain opportunities". Along with proper legislation and regulations and using mobile devices for accessing credit, Manwari, Ngare and Kipsang (2017) found that the Women's Enterprise Fund helped women expand their knowledge and use of financial services.

2.5.4 Job Creation

Financial inclusion is essential for job creation in South Africa through providing capital and support for small businesses. In South Africa, small businesses are a significant source of employment, accounting for about 60% of jobs in the country. Ndung'u (2018) analysed the digital revolution and its impact on job creation in Africa. Ndung'u (2018) found that the digital revolution is directly associated with generating new job opportunities. The FinTech industry has created a higher demand for new and skilled employees, improving the productivity of the existing workforce and increasing

employment opportunities. Ndung'u (2018) also analysed different surveys showing the need for financial inclusion in the future. Financial inclusion can help boost job requirements and create new job skills. For example, financial inclusion can help small businesses access credit, which can help them grow and create more jobs (Akter, Hossain & Uddin, 2023).

2.5.5 Financial Literacy and Awareness

Financial inclusion can significantly enhance financial literacy and awareness among individuals and business owners. Inclusion is essential for making sound decisions and effectively managing their finances (Akter, Hossain & Uddin, 2023). As Abubakar (2015:142) points out, "Financial literacy and awareness play a critical role in the usage of financial systems and tools". Knowledge is the foundation for any successful strategy. Adetunji and David-West (2019) analysed the effect of financial literacy and income on financial inclusion in Africa using survey data that included 22,000 Nigerian residents. They found that financial literacy and income level are two critical drivers of financial inclusion, with financial literacy impacting the saving patterns of individuals and businesses.

When people understand the complex networks of institutions, agents, and markets that facilitate the flow of money and credit in an economy, they can better use financial resources to grow their businesses. Financial education is being provided through various policies and strategies to raise awareness across different sectors and regions of the country. For example, the South African government launched a financial literacy campaign called "Know Your Money" to educate people about financial concepts and products (Morgan & Long, 2020). In South Africa, financial inclusion offers significant entrepreneurship and economic development opportunities. However, to realise these opportunities, a need exists for continued efforts to promote financial literacy and awareness, develop technologically advanced financial products and services, and create a supportive environment for small businesses.

2.6 Challenges for Financial Inclusion and Entrepreneurship

While, potentially, financial inclusion shows significant opportunities for entrepreneurship and economic growth in South Africa, numerous challenges need to

be addressed. Some of the challenges to financial inclusion and entrepreneurship are as follows.

2.6.1 Limited Financial Literacy and Awareness

Financial literacy's role in promoting female entrepreneurship has been established by Chhabra, Singh and Mehdi (2022). They noted that financial literacy significantly impacts women's entrepreneurship success, both in the adoption and implementation stages. This impact is because financial literacy helps female entrepreneurs make better financial decisions, operate their businesses more effectively, and access financial services. Many individuals and small business owners in South Africa lack basic financial knowledge, causing difficulties in comprehending and using financial services. The lack is a problem because financial services encourage and assist people with saving money, investing in the future, and growing their businesses.

Messy and Monticone (2012) highlight the status of financial education in sub-Saharan Africa. They note that the region has a low school enrolment rate, high informal labour, and high poverty rates. These factors can all contribute to a lack of financial literacy. The government of South Africa has implemented several educational initiatives to increase financial knowledge and skills. However, these efforts have not been as successful as hoped. Much needs to be done to improve financial literacy in South Africa, especially among female entrepreneurs (Ndlela & Mbewe 2021). Akomea-Frimpong, Olaniyan and Dwomoh-Okudzeto (2021) presented evidence to suggest that even African legislators have average financial literacy. The low literacy level suggests a need for more comprehensive education programs in the region, especially for those in positions of power.

2.6.2 Access to Collateral

Financial resource accessibility alone may not improve female entrepreneurship in the country; ensuring females have access to collateral to secure credit from such institutions is as important (Andriamahery & Qamruzzaman, 2022). Recently, new policies have aimed to reduce such challenges by introducing no-collateral-based loans or providing loans with a lower level of collateral than other loan products (Fanta, 2016). However, this challenge is only felt initially, as an organisation can obtain

business loans later. Therefore, the aim must be to reduce the need for collateral and ensure better asset ownership by female entrepreneurs (Baiyegunhi & Fraser, 2014). A survey based on smallholder farmers in South Africa to understand their socioeconomic conditions found that lenders have the upper hand in evaluating borrowers' creditworthiness based on several factors, such as education, gender, savings, assets, income, and social capital (Fanta, 2016). For these reasons, small businesses cannot achieve the required level of financial support to boost their growth and financial independence.

2.6.3 Gender-Based Discrimination

Over the years, society has established social boundaries between female and male members, so female members find limited opportunities to engage in employment or start successful business ventures (Erogul, Barragan & Essers, 2021). In this regard, a significant challenge emerges in a society where a formal financial system is less developed and an informal financial system exists where the system has been dominated by male entrepreneurs (Nanziri, 2016). However, such challenges can also be witnessed due to family or cultural settings, which can restrict female entrepreneurs from accessing funds and becoming active female entrepreneurs in the economy. Female entrepreneurs in South Africa face gender-based discrimination in accessing finance and credit, which remains a significant challenge to starting and growing their businesses. Morsy, Asongu and Odhiambo (2020) found that women in South Africa are less likely to be granted loans from formal financial institutions than men, even with the same creditworthiness. The denial is due to several factors, including gender stereotypes, lack of female representation in decision-making positions, and the perception that lending money to women involves more risk. Morsy, Asongu and Odhiambo (2020) also noted that female entrepreneurs prefer using informal financial services, like microfinance loans, rather than formal ones. This is because informal financial services are often more accessible and less discriminatory than formal ones. However, informal financial services can be more expensive and have less favourable terms than formal financial services. Morsy, Asongu and Odhiambo (2020) conclude that discrimination based on when accessing finance is a persistent barrier to entrepreneurship among South African women.

2.6.4 Limited Availability of Financial Services

Ughetto et al. (2020) stated that the limited available financial resources or formal institutions in the economy can limit the growth of female entrepreneurship, particularly in rural areas or remote areas. The limitation is that women in these areas may not enjoy ready access to banks or other financial institutions, making it difficult to begin or develop their businesses. The growth of digital and Internet-based banking services has been considered as a potential solution to this problem. However, these services also require constant and uninterrupted Internet access, which may not be available in all areas. In addition, women in rural areas may not be familiar with digital banking services, which can further limit their access to financial resources (Akter, Hossain & Uddin, 2023). In South Africa, financial services are limited, particularly in rural and remote areas. Rateiwa and Aziakpono (2017) note direct links between economic development and non-banking financial institutions. The relationship means that available financial services can help boost economic growth, but this is only possible if these services are accessible to everyone, including women in rural areas. The study also found that a lack of awareness and inaccessible financial services impacted economic development in South Africa, suggesting that the government and financial institutions need to make financial services available and accessible in rural areas. Increased availability can be achieved by providing subsidies for Internet access, offering financial literacy training, and making opening bank accounts easier for women.

2.6.5 Regulatory Barriers

The legal ecosystem of an economy can significantly impact the growth of entrepreneurship, especially for female entrepreneurs (Darwish, Alzayed & Ahmed, 2020). Legal challenges can range from general challenges, such as tax system barriers or difficulties in registering a business, to challenges specific to the industry in which the entrepreneur wants to operate. Worth noting is that many countries worldwide have started to implement specific laws promoting female entrepreneurship, but the effect of these laws is still being evaluated.

Some regulatory barriers to financial inclusion and entrepreneurship include high licensing fees for small businesses, a lack of Internet security, a complex tax system,

and a lack of coordination between government agencies (Lewis & Gasealahwe, 2017). Lewis and Gasealahwe (2017) researched entrepreneurship barriers in South Africa and found that these barriers include lengthy bureaucratic procedures and a long process for obtaining a license. Rural people with less investment money are likelier to start small businesses and may find it challenging to comply with lengthy paperwork and other regulatory requirements. However, the government is working to reform the education system by teaching entrepreneurial skills, which could assist with increasing the number of small businesses that are started in the future (Asongu, Zhang & Leung, 2023).

2.6.6 Insufficient Investment in Infrastructure

Infrastructure is an essential requirement for any business, and it can also impact the state of female entrepreneurship in a region (Ingalagi et al., 2021). Infrastructure can be broadly defined as general infrastructure, such as roads and electricity, and dedicated infrastructure, such as Internet services and financial institutions (Cohen & Peterson, 2015). Any government effort to promote inclusive infrastructure will benefit both male and female entrepreneurs, which is desirable for the entire economy. However, a lack of evidence exists regarding developing infrastructure for promoting women's entrepreneurship (Ndlela & Mbewe 2021). The South African economy demonstrates a lack of basic infrastructure investment, such as roads, banking facilities, and electricity, which can limit the ability of small businesses to grow and thrive. Mbaku (2013) found that Africa has plans to upgrade its infrastructure, and South Africa spent $25 million in 2012 on various infrastructure projects. However, the country's required infrastructure, especially roads and transportation networks, remains wanting. This lack of infrastructure can make it difficult for businesses to operate, especially in rural areas. In addition, a lack of banking facilities in rural areas can make accessing financial services challenging and hinder female entrepreneurs' abilities to start or grow a business.

2.6.7 Limited Availability of Venture Capital

Business organisations can receive funding from different angel investors and venture capital investors, but there is evidence that venture capital investors prefer male-led ventures (Balachandra, 2020). This preference could result from several factors,

including unconscious gender bias, lack of knowledge about female-led businesses, and the perception that male-led businesses are more likely to succeed. In South Africa, venture capital is limited, making it challenging for start-ups and SMEs to obtain the capital required to grow. Limited venture capital can be incredibly difficult for female entrepreneurs, who already endure many other barriers to entrepreneurship (Morsy, Asongu & Odhiambo, 2020).

2.7 Research Gaps

A research gap can be identified after critically evaluating the literature on entrepreneurship and financial inclusion in South Africa. While much research has focused on explaining the links between entrepreneurship and financial inclusion, little research addresses financial inclusion's effects on women's entrepreneurship and development (Balachandra, 2020; Ingalagi et al., 2021). Furthermore, while some studies have analysed the challenges and opportunities for entrepreneurship and financial inclusion, studies on the importance of financial technology for enhancing financial inclusion in South Africa are few (Mbaku, 2013). Poor financial technology, or FinTech, is a gap in developing countries and other underserved areas (Darwish, Alzayed & Ahmed, 2020). The study found that the gap in FinTech access is due to several factors, such as lack of infrastructure, high costs, poor financial illiteracy and lack of trust. In addition to these factors, Darwish, Alzayed and Ahmed (2020) found that certain groups, such as women, rural residents, and the poor, are more likely to be excluded from FinTech access.

Despite the increasing attention to financial inclusion in Africa, limited understanding exists of its impact on SMEs in specific countries (Rateiwa & Aziakpono, 2017). While research evaluates the association between financial inclusion and African entrepreneurship, most analyses provide a basic overview rather than focusing on specific countries. Moreover, studies suggest that financial inclusion positively impacts the promotion of entrepreneurship, while others argue that it has a minimal impact (Lewis & Gasealahwe, 2017).

In South Africa, the contextual factors that influence the relationship between entrepreneurship and financial inclusion deserve evaluation. These factors include regulatory frameworks, cultural and social aspects, infrastructure facilities, and credit

access (Darwish, Alzayed & Ahmed, 2020). Therefore, a research gap exists in identifying the specific effects of financial inclusion on entrepreneurship and the contextual factors that shape this association. While considerable research on financial inclusion and entrepreneurship exists in South Africa, considerable gaps exist in understanding these issues. Addressing these research challenges and gaps will be critical in forming effective policies and programs promoting financial inclusion and entrepreneurship in South Africa.

2.8 Summary

This chapter included an overview of the parameters of financial inclusion. The chapter highlights the opportunities and challenges for South African entrepreneurship and financial inclusion, including the issues faced, like financial literacy and an awareness of financial instruments, access to credit and collateral, discrimination among men and women, the unavailability of financial services, regulatory and political barriers, and limited investment in infrastructure and availability of venture capital. The chapter identifies several research gaps, including the need for more research on the effect of financial inclusion on female entrepreneurs, the value of technology in improving financial inclusion, and the effectiveness of public-private partnerships in promoting financial inclusion and entrepreneurship. This chapter provided a foundation for further research on South African entrepreneurship and financial inclusion.

The aim of the study is to build on the present literature by examining the relationship between South African entrepreneurship and financial inclusion and exploring contextual factors that strongly affect this relationship. This analysis may provide insights into unique and unexplored aspects affecting financial inclusion among South African female entrepreneurs and inform strategies and policy decisions that promote entrepreneurship and financial inclusion. Overall, this study may add to the existing body of literature about African entrepreneurship and financial inclusion and contribute to present and ongoing efforts to promote economic development and inclusive growth in the region.

CHAPTER 3: RESEARCH METHODOLOGY

This chapter describes the research methodology to understand the relationship between entrepreneurship among South African women and financial inclusion. The research adopts a positivist paradigm and quantitative approach to analyse secondary data from the World Bank's Global Findex Database for 2011–2021. A descriptive research design is employed where data analysis involves descriptive statistics and correlation analysis. Throughout the research process, ethical considerations were addressed to ensure the integrity and trustworthiness of the findings. The chapter concludes with a statement outlining the study's quality and rigour.

3.1 Research Design

Given the aim of the current study, to understand financial inclusion's effect on entrepreneurship among South African women, a descriptive research design is deemed suitable for achieving this aim because it allows an examination of the phenomenon without manipulating or controlling variables, which aligns with the secondary data collection approach employed in Snyder (2019). Researchers have employed descriptive research designs to explore financial inclusion in various contexts. For instance, Ardic et al. (2020) employed a descriptive cross-sectional study to assess the level and determinants of financial inclusion among micro, small, and medium-sized enterprises (MSMEs) in Turkey.

3.2 Research Philosophy

The current research seeks to understand the relationship between entrepreneurship among South African women and financial inclusion. A positivist paradigm was adopted for this study because it aligns with the study's objectives and the nature of the research questions. For example, Demirgüç-Kunt et al. (2015) employed a positivist and quantitative approach to assess the relationship between women's empowerment and financial inclusion.

This research employs several well-defined variables to measure financial inclusion and female entrepreneurship. Financial inclusion and female entrepreneurship are measured using the following indicators:

1. Financial institution account (% age 15+): This measures the percentage of adults 15 years and older who have an account at a formal financial institution (bank, credit union, etc.). It is a basic indicator of FI access and is a starting point for analysis in several studies (World Bank, 2023b); Demirgüç-Kunt, Klapper & Singer, 2017; Ssewankafu, 2016).
2. First financial institution account opened to receive a wage payment or money from the government (% age 15+): This indicator examines how individuals initially enter the financial system and the role of wage/government income in promoting FI (World Bank, 2023b).
3. Received wages into a financial institution account (% age 15+): This indicator assesses formal account use for wage payments, indicating financial system integration into employment (World Bank, 2023b; Khandker et al., 2014).
4. The main source of emergency funds accessible within 30 days: loan from a bank, employer, or private lender (% age 15+): This explores reliance on different sources for emergency funds, including formal versus informal channels and highlights financial safety nets access (World Bank, 2023b; De Mel et al., 2012).
5. Owns a debit/credit card (% age 15+): This measures access to and use of a payment tool, reflecting financial transaction convenience and potential participation in the digital economy (World Bank, 2023b).
6. Account ownership by women: This specifically looks at female FI access, highlighting potential gender gaps and needs (World Bank, 2023b; Demirgüç-Kunt, Klapper & Singer, 2017).
7. Owns a debit/credit card, female (% age 15+): Similar to Variable 5, but focused on women, emphasising the financial transaction tools in their hands.
8. Years of education of women over 25: This examines human capital factors potentially enabling or hindering women's entrepreneurial efforts (World Bank, 2023b).
9. Access to formal loans by women: This assesses women's ability to obtain funding from formal sources, which is crucial for business growth (World Bank, 2023b).

10. Mobile money account, female (% age 15+): This explores the use of digital financial services by women, potentially offering alternative pathways to FI and entrepreneurship (World Bank, 2023b; Reynolds et al., 2023).
11. Borrowed to start, operate, or expand a farm or business, female (% age 15+): This focuses on women using loans for entrepreneurial activities, highlighting their financial needs and resource acquisition strategies (World Bank, 2023b).
12. Saved to start, operate, or expand a farm or business, female (% age 15+): This examines women's saving behaviours toward entrepreneurial goals, showcasing potential financial planning and investment capacity (World Bank, 2023b).

The variables measuring women's entrepreneurship and financial inclusion have been extensively employed and validated in the academic literature and empirical research. These metrics serve as critical indicators, offering insights into the complex dynamics of financial inclusion and gender-specific entrepreneurial activities. Scholars and researchers have consistently turned to established data sources such as the World Bank's Global Findex Database to explore account ownership, financial institution access, debit/credit card use, savings behaviours, and borrowing patterns across different regions and countries (World Bank, 2023a; Demirgüç-Kunt et al., 2022). Moreover, gender-specific dimensions of financial inclusion and women's entrepreneurship are prominent, with studies using these variables to shed light on disparities in access and participation between men and women (World Bank, 2023a; Demirgüç-Kunt et al., 2022). The analysis relied on these sources to provide robust and widely accepted measures for the key aspects, contributing to the credibility and reliability of research findings. Financial inclusion (FI) has been selected as an independent variable, and women's entrepreneurship (WE) is the dependent variable.

3.3 Research Strategies

The current study adopts a secondary data collection approach, using existing data from the World Bank's Global Findex Database between 2011 and 2021. The approach was chosen because of its efficiency and cost-effectiveness compared to primary data collection methods (Larkin & Thompson, 2012) for measuring the effect of financial inclusion on South African entrepreneurship. The database is an inclusive dataset that

provides information on financial inclusion in over 180 countries. It includes data on access to financial services, like bank accounts and credit, and the use of financial services, like savings and borrowing. Using the data in this study has several advantages. First, the data were readily available, eliminating the need for extensive data collection efforts, thus reducing research time (Saunders, Lewis & Thornhill, 2016). Second, the data were freely accessible and available at a significantly lower cost than primary data collection, which can involve substantial expenses for equipment, personnel, and data processing (Creswell & Creswell, 2018). Third, the data source provides comprehensive and aggregated data from various sources over extended periods (Sandelowski, 2000).

3.4 Data Collection

Secondary data presented in the World Bank's Global Findex Database for 2011–2021 was used to examine how financial inclusion impacts entrepreneurship among South African women. The Global Findex indicators were obtained from survey data gathered over the 2011–2021 period. Collected by Gallup, Inc. in its yearly Gallup World Poll, the sample includes over 150,000 individuals from 148 economies, representing 97% of the world's population. Since 2005, the poll has collected data from approximately 1,000 persons annually in up to 157 economies. The data were obtained through randomly selected samples typical of the entire nation. The target audience consists of all individuals aged 15 and above who are not employed in institutions or part of the military. Surveys are conducted in the predominant languages of each economy. This utilised data from the World Bank's Global Findex 2023 Database which consisted of a sample of 1,280 adults representative of the national adult population of 42,227,12 residing in South Africa in 2021.

3.5 Ethical Considerations

Ethical norms applied in this study ensured the integrity of the research process by protecting participants and ensuring the trustworthiness of the findings (Hartas, 2015; Gajjar, 2013).

In this study, the following ethical norms were followed:

- Findings from previous research retrieved or addressed in the investigation have been acknowledged and cited (Hartas, 2015).
- Permission (see https://creativecommons.org/licenses/by/3.0/igo/) to replicate quantitative data from previous work and financial reports was obtained before using it.
- The database is credible and licensed under a Creative Commons Attribution 3.0 Intergovernmental Organization (CC BY 3.0 IGO) license, which allows for copying, distributing, transmitting, and adapting the data, including for commercial purposes if the author and license are credited (see https://www.worldbank.org/en/publication/globalfindex).

Following ethical principles in this study supports the unification of expertise and may promote public confidence in the findings (Gajjar, 2013).

3.6 Data Processing and Data Analysis

Following data collection, a key activity involved converting raw numerical or qualitative data into variables the user could understand and interpret (Panneerselvam & Sivasankaran, 2014).

Descriptive statistics were employed to:

- Describe the sample's characteristics, such as demographics, financial status, and entrepreneurial experience.
- Identify trends and patterns in financial inclusion and entrepreneurship data over time.
- Compare financial inclusion and entrepreneurship outcomes across different groups, such as men and women, urban and rural areas, and income levels.

This analysis used correlation and regression analyses, like Adeoye and Adegboye (2023), who employed descriptive statistics and correlation analysis to determine the effect of financial inclusion on women's entrepreneurship in Nigeria. Exploring relationships or associations among various financial inclusion indicators, including financial institution account ownership, credit access, mobile money account ownership, and debit/credit card use, was achieved with a correlation analysis.

The variables that follow were used to measure women entrepreneurship (WE):

- Financial institution account, female (% age 15+)
- Owns a debit/credit card, female (% age 15+)
- Years of education of women aged over 25
- Access to formal loans by women
- Mobile money account, female (% age 15+)
- Borrowed to start, operate, or expand a farm or business, female (% age 15+)
- Saved to start, operate, or expand a farm or business (% age 15+)
- Used a debit/credit card, female (% age 15+)

Calderon, Cunha, and De Giorgi (2020) used similar variables to measure female entrepreneurship, including the number of women-owned businesses, the percentage of self-employed women in the workforce, and the amount of revenue generated by women-owned businesses (Ghosh & Vinod, 2017).

The variables to measure FI were the following:

- Financial institution account (% age 15+)
- The first financial institution account ever opened to receive a wage payment or money from the government (% age 15+)
- The first financial institution account ever opened to receive a wage payment (% age 15+)
- Received wages into a financial institution account (% age 15+)
- Owns a debit/credit card (% age 15+)

These financial inclusion variables align with Demirgüç-Kunt et al. (2015) when examining various variables to measure financial inclusion, including account ownership, credit access, and financial services use.

This research used a correlation analysis to test the relationships between women's entrepreneurship and financial inclusion to determine the degree and direction of these associations, as did Khan and Ahmad (2023) when examining the relationship between women's entrepreneurship and financial inclusion in Pakistan. The value of a correlation lies between -1 and +1. The analysis conducted explored relationships between key financial variables. Pearson correlation coefficients were computed to

assess linear associations between these financial inclusion factors and women entrepreneurship variables.

The Pearson correlation coefficient (r_{ij}) between financial variables $FINi$ and $FINj$ is calculated as follows:

$$rij = \frac{\Sigma(FIN_i - F\bar{I}N_i)(FIN_j - F\bar{I}N_j)}{\sqrt{\Sigma(FIN_i - F\bar{I}N_i)^2 \Sigma\,(FIN_j - F\bar{I}N_j)^2}}$$

Where:

- $FINi$ and $FINj$ are individual points of financial inclusion variables: Financial institution account (% age 15+), received wages into a financial institution account (% age 15+), owns a debit/credit card (% age 15+) and first financial institution account ever opened to receive a wage payment (% age 15+)
- $FINi$ and $FINj$ are means of the variables listed above.

These formulas express the basis for calculating Pearson correlation coefficients between specific pairs of variables in each analysis. They quantify the degree and direction of the linear relationships, providing a statistical measure of the association between women's entrepreneurship and financial inclusion. To deepen insight into the relationships between women's entrepreneurship and aggregated financial inclusion, FI (financial inclusion) and WE (women entrepreneurship), FI was derived from the summation of the financial inclusion variables, representing a consolidated financial inclusion measure. Female entrepreneurship was computed by summing various women's entrepreneurship-related variables.

The effect of financial inclusion on women's entrepreneurship was assessed with a regression analysis. The regression analysis determined whether financial inclusion significantly impacts entrepreneurship among South African women, like Adeoye and Adegboye (2023), who used regression analysis to explore the effect of financial inclusion on women's entrepreneurship in Nigeria, examination of the coefficients and significance levels in the designated dataset provided insight into the predictive power of financial inclusion indicators on South African female's entrepreneurship outcomes.

The general form of the linear regression equation linking female entrepreneurs and financial inclusion is expressed as follows:

$$WE = (a) + (b)FI$$

In this equation, (a) and (b) represent the regression coefficients that govern the relationship between women's entrepreneurship and financial inclusion. WE refers to the following variables: Financial institution account, female (% age 15+); owns a debit/credit card, female (% age 15+); access to formal loans by women; mobile money account, female (% age 15+); borrowed to start, operate, or expand a farm or business, female (% age 15+); saved to start, operate, or expand a farm or business (% age 15+); and used a debit/credit card (% age 15+). FI refers to the following variables: Financial institution account (% age 15+), received wages into a financial institution account (% age 15+), owns a debit/credit card (% age 15+), and first financial institution account ever opened to receive a wage payment (% age 15+).

In addition to the above analysis, like Ndiaye and Diop (2023), who used the Chi-square test to examine the relationship between gender and access to financial services in Senegal, in this study, the Chi-square test was employed to determine gender differences and variations for specific categories, such as debit/credit card ownership. This test measures the independence or association between categorical variables. Using the Chi-square assisted determination of significant gender-based differences in owning debit/credit cards. It assessed the relationship between categorical variables, specifically gender and card ownership.

Using SPSS software is typical in research on financial inclusion in Africa because SPSS is reliable and efficient for analysing quantitative data collected from surveys. It allows for various statistical analyses, making it a valuable tool for drawing meaningful conclusions and insights from data (Pallant, 2016). For example, Attefah and Oppong (2018) used SPSS to analyse the data collected from a survey of 400 respondents to determine the level of financial inclusion in Ghana. Similarly, Ogwok and Yawe (2020) used SPSS to analyse the data collected from a survey of 200 respondents on the effect of financial inclusion on the reduction of poverty in Uganda. In addition to SPSS, additional statistical manipulations, such as probit regression analysis, panel data analysis, and cluster analysis, were used in previous studies about

financial inclusion in Africa to provide insight into the factors and relationships affecting financial inclusion. Regression analysis using SPSS software in this study provided a reliable and efficient tool for drawing meaningful conclusions and insights from the collected quantitative data.

Last, the analysis of variance (ANOVA) was applied to examine variations in financial behaviours over multiple categories, such as the percentage of people with an account across different years. The objective of the analysis was examining the relationship between female entrepreneurship represented by the dependent variables of financial institution account, female (% age 15+); owns a debit/credit card, female (% age 15+); access to formal loans by women; mobile money account, female (% age 15+); borrowed to start, operate, or expand a farm or business, female (% age 15+); saved to start, operate, or expand a farm or business (% age 15+); and used a debit/credit card (% age 15+) and various financial inclusion predictors, namely financial institution account (% age 15+); received wages into a financial institution account (% age 15+); owns a debit/credit card (% age 15+), and first financial institution account ever opened to receive a wage payment (% age 15+). The model assesses whether the combined effect of these predictors explains the variation observed in women's entrepreneurship. Like, Agyapong and Gyasi (2023) used ANOVA to examine trends in financial inclusion in Ghana over time, in this research, ANOVA was used to assess statistical significance in data variations across different years to determine trends in financial behaviours.

3.7 Summary

In this chapter, the research methodology applied in this study, including the data collection and analysis methods, was presented. A positivist paradigm and descriptive research design were adopted, and a quantitative research approach was applied to analyse secondary data from a credible database, namely, the World Bank's Global Findex Database for 2011–2021. Statistical methods such as the Chi-square test, ANOVA, the Pearson correlation, and panel data regression techniques were used to analyse the database. The data analysis was conducted using The statistical software package SPSS was used to conduct the data analysis. In the following chapter, findings based on the data analysis are discussed.

CHAPTER 4: DATA ANALYSIS AND DISCUSSION

The previous section examined the research design, methodology, and suitable data analysis methods. The present chapter reports on the data and statistical analysis. After that, the outcomes of the statistical analyses are deliberated upon as they correspond with the predetermined research objectives and the primary research aim of the research study, which is to analyse the relationship between financial inclusion (FI) and South African women's entrepreneurship (WE).

4.1 Descriptive Statistics

In Table 1, the descriptive statistics for the critical variables of this research are presented. These include bank accounts, financial institution accounts, financial institution, and business and credit cards for individuals and females aged 15 years and over.

Exploring the intricate relationship between entrepreneurship among South African women and financial inclusion requires a granular examination of key data points. Descriptive statistics offer a valuable first step. The average account ownership of 69.64% among individuals aged 15 and above indicates a commendable level of financial inclusion, suggesting active engagement with formal financial institutions (Demirgüç-Kunt & Klapper, 2015). Similarly, the average financial institution account ownership of 68.49% suggests a prevalent reliance on structured financial channels, which aligns with the findings of Beck, Demirgüç-Kunt and Levine (2017). Further analysis into the motivations behind this engagement suggests that 68.49% opened their first account to receive wages or government funds, highlighting the crucial role these accounts play in facilitating access to essential resources and linking financial inclusion to socio-economic well-being.

Savings behaviour reveals a mixed picture. While 28.53% of the population saves at financial institutions, indicating a culture of financial prudence, the low percentage (3.29%) borrowing for entrepreneurial activities suggests a more nuanced relationship between formal finance and business ventures, which is consistent with the findings of Allen et al. (2014). The widespread use of debit/credit cards (49.53%) reflects the adoption of digital financial tools.

Table 1: Descriptive Statistics of Study Variable

Descriptive Statistics	***N***	**Range**	**Min.**	**Max.**	***M***	***SD***	**Variance**	**Skew.**	**Kurt.**
Account (% age 15+)	4	31.73	53.65	85.38	69.64	13	168.05	-0.06	1.5
Financial institution account (% age 15+)	4	30.47	53.65	84.11	68.49	12	155.2	0.19	1.5
The first financial institution account ever was opened to receive a wage payment or money from the government (% age 15+)	4	30.47	53.65	84.11	68.49	12	155.2	0.19	1.5
Saved at a financial institution (% age 15+)	4	15.13	22.08	37.21	28.53	7.7	58.65	0.29	-4
Borrowed to start, operate, or expand a farm or business (% age 15+)	4	7.51	0	7.51	3.29	3.9	15.01	0.19	-5
Used a debit/credit card (% age 15+)	4	23.79	36.58	60.38	49.53	11	112.15	-0.42	-2
Borrowed from a formal financial institution (% age 15+)	4	17.65	0	17.65	10.45	7.5	56.11	-1.19	2
Account, female (% age 15+)	4	35.16	51.02	86.18	69.39	14	206.86	-0.33	1.6
Financial institution account, female (% age 15+)	4	33.88	51.02	84.9	68.21	14	191.46	-0.11	1.5
Owns a debit/credit card, female (% age 15+)	4	24.36	31.45	55.81	46.37	12	137.65	-0.72	-2
Saved to start, operate, or expand a farm or business, female (% age 15+)	4	10.77	0	10.77	5.02	5.8	33.99		-6

Note: Min = Minimum; Max = Maximum; *M* = Mean; *S.D.* = Standard. Deviation; Skew = Skewness; Kurt = Kurtosis

Intriguing patterns emerge when examining gender disparities. Females exhibit slightly higher account ownership (69.39%) and financial institution account ownership (68.21%) than males. They also show a significant presence in electronic transactions, with 46.37% owning debit/credit cards. However, the lower percentage of females saving for entrepreneurial activities (5.02%) indicates a complex interplay of factors affecting their engagement in business ventures, as Apedo-Yeh (2020) highlighted.

The descriptive statistics lay the groundwork for understanding the intricate relationship between entrepreneurship among South African women and financial inclusion, paving the way for further analysis that addresses the remaining objectives, namely:

- Unveiling the specific nature of the relationship between women's entrepreneurship and financial inclusion.
- Investigating the influence and effect of financial inclusion on various aspects of women's entrepreneurial endeavours.
- Identifying the key factors enabling and hindering women's participation in entrepreneurship.

Furthermore, descriptive statistics, specifically variance, skewness, and kurtosis, add a nuanced layer to our understanding of the relationship between women's entrepreneurship (WE) and financial inclusion (FI) in South Africa, aligning with the study's objectives.

Variance analysis reveals a diverse panorama of financial inclusion practices. High values for account ownership (168.05) and financial institution account ownership (155.2) highlight a broad spectrum of engagement, suggesting that while many participate in FI, the extent varies considerably, as described by Ahmad, Smith and Johnson (2020). This variability may be explained by the sampled population's diverse economic circumstances or differential access to financial services.

Skewness, however, hints at potential asymmetries in this landscape. While most variables exhibit a near-symmetrical distribution, negative skewness in savings at a

financial institution (–4) and borrowing for entrepreneurial activities (–5) suggests a concentration of lower values on the right side.

Finally, kurtosis provides insights into the distribution's tails. Positive kurtosis in account ownership and financial institution account ownership (1.5 each) indicates heavier tails than a normal distribution, suggesting the presence of outliers with exceptionally high levels of FI. Conversely, negative kurtosis in savings and borrowing (both –5) reflects flatter distributions with potential outliers on the lower end, highlighting challenges faced by a segment of the population in building savings or accessing formal credit for entrepreneurial ventures, which is in line with the findings of Chigunta et al. (2023).

These statistical measures offer a multifaceted perspective on the intricate relationship between FI and WE in South Africa. Variance underscores the diversity in financial behaviours, skewness reveals potential asymmetries, and kurtosis points to outliers.

The next section uses correlation analysis to examine the relationship between entrepreneurship among South African women and financial inclusion.

4.2 Correlation Analysis

The following analysis assesses the relationship between women's entrepreneurship (WE) and financial inclusion (FI) using the Person correlation to quantify the relationship's presence, strength, and direction.

Table 2 presents a correlation matrix with the relationship between two variables: women's entrepreneurship (WE) and financial inclusion (FI). The table offers valuable insights into their associations. Each cell shows the Pearson correlation coefficient and quantifies the linear relationship between FI and WE in terms of their strength and direction. All coefficients are positive and strong, starting with the correlations between FI (financial institution account, % age 15+) and WE variables. For instance, the correlation between FI and WE (borrowed to start, operate, or expand a farm or business) reaches 0.967, indicating a positive association consistent with Calderon, Cunha, and De Giorgi's (2020) findings. Similarly, correlations with other WE variables, such as 'borrowed/saved to start, operate, or expand a farm or business' and 'used a debit/credit card', are notably high (Sarma & Pais, 2011).

Table 2: Correlation Matrix of Study Variables

Correlations					
Variables		WE - Financial institution account, female (% age 15+)	WE – Borrowed to start, operate, or expand a farm or business, female (% age 15+)	WE – Saved to start, operate, or expand a farm or business (% age 15+)	WE – Used a debit/credit card
FI – Financial institution account (% age 15+)	Pearson Correlation	1	0.967	0.886	0.897
	Sig. (2-tailed)		0	0.003	0.003
	N	8	8	8	8
FI –First financial institution account ever was opened to receive a wage payment or money from the government (% age 15+)	Pearson Correlation	0.967	1	0.842	0.930
	Sig. (2-tailed)	0		0.009	0.001
	N	8	8	8	8
FI – Received wages into a financial institution account (% age 15+)	Pearson Correlation	0.886	0.842	1	0.902
	Sig. (2-tailed)	0.003	0.009		0.002
	N	8	8	8	8
FI – Owns a debit/credit card (% age 15+)	Pearson Correlation	0.897	0.930	0.902	1
	Sig. (2-tailed)	0.003	0.001	0.002	
	N	8	8	8	8

*Note***:** FI = financial inclusion; WE = women's entrepreneurship; Correlation is significant at the 0.05 level (2-tailed); $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

Considering the correlations within FI variables, a consistent pattern of positive and strong relationships emerges. For example, the correlation between FI (first financial institution account opened for wage payments or government funds) and WE (used a debit/credit card) reaches 0.930, suggesting a significant positive link.

Furthermore, the significance levels (Sig. 2-tailed) reveal that most correlations are statistically significant at the 0.05 level, implying a high degree of confidence in the observed associations, as highlighted by Brush, De Bruin, and Welter (2019).

The table suggests strong positive correlations between FI and WE variables. These findings indicate that improved financial inclusion, as measured by various indicators,

is associated with increased participation and activities in women's entrepreneurship, in line with the findings of Opoku-Agyemang et al. (2022; see Appendix A).

The next section discusses an analysis of a regression model that explores the relationship between financial inclusion (FI) and women's entrepreneurship (WE), supported by statistical evidence and data visualisations.

4.3 Linear Regression Analysis

A regression analysis determines the relationship between the dependent variable, women entrepreneurship (WE), and financial inclusion (FI), the independent variable (Rehman & Roomi, 2018). The analysis models the association between the WE and FI variables to understand how shifts in the independent variables relate to shifts in the dependent variable. In this specific case, the model aims to predict the values of the dependent variable. Specifically, women entrepreneurship (WE) is the dependent variable and is assumed to follow a probability distribution, while financial inclusion (FI) is the independent variable, which is considered to be fixed values across repeated samples (Darlington & Hayes, 2016). Tables 3 to 5 show the outcomes of the regression analysis.

Table 3 summarises a model linking women's entrepreneurship and financial inclusion.

Table 3: Regression Analysis (a) (Model Summary)

Model Summary				
Model	*R*	*R* square	Adjusted *R* square	Std. Error of the estimate
1	.970a	0.94	0.91	10.54201

a Predictors: (Constant), Financial inclusion

The regression results show a statistically significant relationship between the dependent variable (women entrepreneurship) and the independent variable (financial inclusion). The high correlation coefficient (*R*) of 0.970, which quantifies the strength and direction of the linear relationship between two variables, underscores a positive association, suggesting that as financial inclusion increases, a corresponding and substantial increase in the values of women entrepreneurship occurs. Conversely, as

financial inclusion decreases, women's entrepreneurship tends to decrease. This strong correlation indicates a meaningful and consistent connection between the two variables, consistent with the findings of Adeleye, Adegbite and Isenmila (2022) and Bruhn and Love (2014).

The R^2 value of 0.94, the statistical measure of the proportion of variance in the dependent variable that is explained by the independent variable in a regression model, revealed that approximately 94% of the variability in women's entrepreneurship could be explained by variations in financial inclusion, consistent with Ifediora et al.'s (2022) findings.

The adjusted R^2, at 0.91, considers the potential complexity introduced by including predictors. This metric highlights the model's ability to maintain a high level of goodness of fit even when considering the number of predictors involved. It provides a more conservative estimate of the model's performance, ensuring that adding additional variables does not overstate its predictive power.

The low standard error of the estimate (10.54201) further supports the model's reliability. The model's minimisation of this error underscores its effectiveness in capturing and explaining patterns within the dataset.

The regression model, with financial inclusion as the predictor, demonstrates a high degree of explanatory power and reveals a nuanced understanding of the relationship between financial inclusion and the dependent variable. Including a constant term in the model suggests that even in scenarios where financial inclusion is zero, there is a non-zero intercept, highlighting additional complexities in the relationship between variables.

Table 4 shows the regression analysis, which presents an analysis of variance (ANOVA) for the dependent variable WE (women's entrepreneurship) and the predictor FI (financial inclusion).

Table 4: Regression Analysis (b) (ANOVA)

ANOVA						
Model		Sum of Squares	*df*	Mean Square	*F*	Sig.
1	Regression	3488.594	1	3488.594	31.391	.030b
	Residual	222.268	2	111.134		
	Total	3710.862	3			

a Dependent variable: WE = women's entrepreneurship

b Predictors: (constant), FI = financial inclusion

Note: df = degree of freedom

The ANOVA indicates that the regression model, which includes the predictor FI (financial inclusion) to explain the variance in the dependent variable WE (women's entrepreneurship), is statistically significant. The regression model explains significant variability in the dependent variable WE (women entrepreneurship), as evidenced by the statistically significant *F*-statistic of 31.391 with a corresponding significance level of $p = 0.030$. This low *p*-value (below a conventional threshold of 0.05) offers evidence to reject the null hypothesis that all regression coefficients are zero. The result suggests that FI is a meaningful predictor of WE, a finding supported by Opoku-Agyemang et al. (2022).

The Sum of Squares for Regression (3488.594) represents the variability in WE that can be attributed to the inclusion of FI. The Residual Sum of Squares (222.268) captures the unexplained variability in WE unaccounted for by the regression model, thus explaining most of the total variability in WE (as represented by the Total Sum of Squares) and further supports the model's effectiveness. In this context, WE (women's entrepreneurship) is treated as a continuous variable because it represents a quantitative measure that can vary along a continuum. For instance, WE could be measured with a numeric scale representing levels of women's entrepreneurship, allowing for a more detailed and nuanced analysis of its relationship with other variables, such as FI. Using a continuous variable allows for a more granular exploration of the association between FI and WE, providing valuable insights into the

quantitative impact of financial inclusion on women's entrepreneurship (Apedo-Yeh et al., 2022).

Table 5 presents an analysis of the effect of financial inclusion on entrepreneurship among South African women using a linear regression model. The table unveils the regression equation coefficients, which function as a quantitative tool to assess the link between the dependent variable – women entrepreneurs (WE) – and the independent variable – financial inclusion (FI). This non-standardised regression model meticulously calculates how financial inclusion influences women's entrepreneurship while keeping all other independent variables constant.

Table 5: Regression Analysis (c) (Coefficients a)

Coefficients a						
Model		Unstandardised coefficients		Standardised coefficients	*t*	Sig.
		B	Std. Error	Beta		
1	(Constant)	17.9	30.984		0.578	0.621
	FI	0.62	0.111	0.97	5.603	0.03

a Dependent variable: WE = women's entrepreneurship

Note: FI = financial inclusion*;* Std. Error = standard error

The regression analysis results in Table 5 provide valuable insights into the link between financial inclusion (FI) and women entrepreneurship (WE). The non-significant constant suggests that the baseline of women entrepreneurship does not deviate significantly from zero in the absence of financial inclusion. However, the statistically significant coefficient for financial inclusion (FI) at 0.62 indicates a positive association. The result implies that as financial inclusion increases by one unit, there is a corresponding 0.62-unit increase in women's entrepreneurship. The significance of this coefficient, supported by a *t*-value of 5.603 and a significance level of 0.03, underlines the importance of financial inclusion for influencing and fostering women's entrepreneurship.

The standardised coefficient (**β**) of 0.97 further illuminates the strength and direction of this relationship after accounting for the measurement scale. The high **β** value

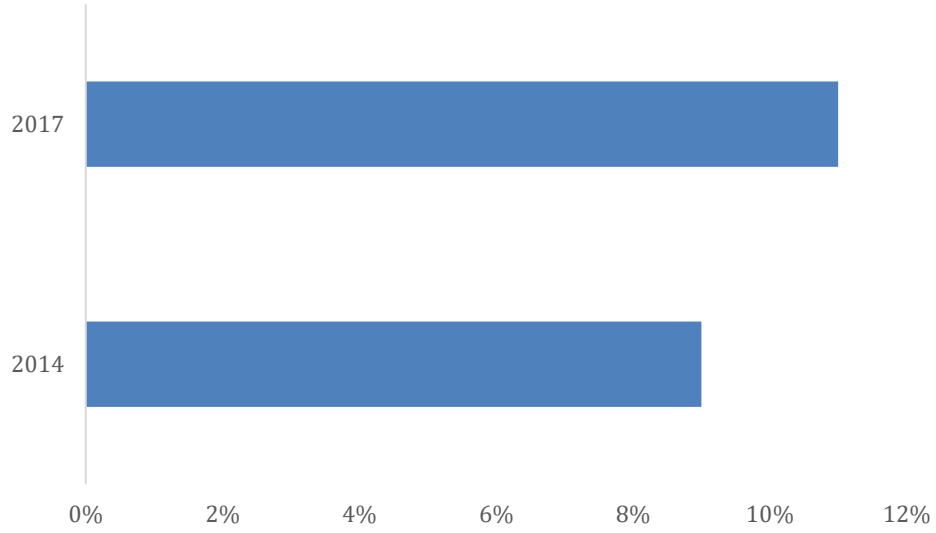
signifies a positive correlation between standardised financial inclusion scores and women's entrepreneurship, which suggests that financial inclusion has a considerable effect on predicting variations in women's entrepreneurship, emphasising its role as a key factor in fostering entrepreneurship among women. The result aligns with the findings of Mhlongo (2019) and Ncube and Shimeles (2018). This finding also supports the study's second objective.

In the following segment, Figures 1 to 6 show evolving financial behaviours among South African women aged 15+ with entrepreneurial ambitions and investigate the determinants and barriers influencing women's entrepreneurial engagement within South Africa, as outlined in the study's third objective.

Figure 1 illustrates the link between female savings for starting, operating, or expanding a business and its connection to financial inclusion in South Africa. The bar graph depicts the effect of female entrepreneurs on financial inclusion, with an increase from 2014 to 2017, highlighting the changing patterns of saving for entrepreneurship among females aged 15 and over (see Appendix B).

In 2014, a noticeable increase was noted, with 9.32% of females in this age category actively saving to start, operate, or expand a farm or business. The result indicates a growing interest among females in using savings to pursue entrepreneurial goals over these three years. The upward trajectory continued into 2017, with 10.77% of females in the age group demonstrating a commitment to entrepreneurial savings. This sustained growth suggests that entrepreneurship had gained traction and that more females were actively preparing for business or farm-related endeavours through financial savings. Thus, the data indicate a fluctuating trend in female entrepreneurial savings behaviour over the period. These findings align with Van der Sluis and Hofstede's (2020) findings that savings can be a source of empowerment to start a business.

Figure 1: Female (age 15+) savings for starting, operating, or expanding a business.



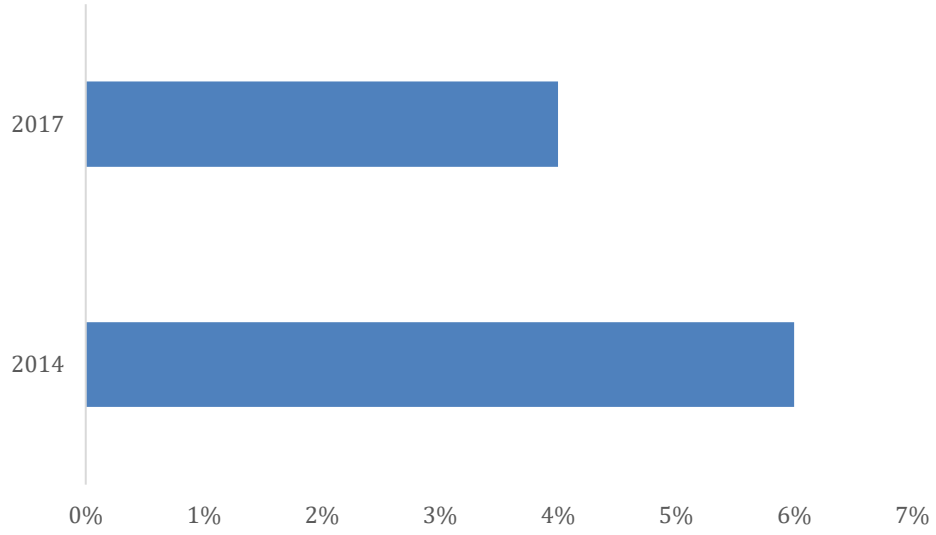
Source: World Bank (2023b).

In summary, the data provide insights into the link between female savings for entrepreneurship and financial inclusion. It demonstrates how fluctuations in savings behaviour can reflect the success or challenges of financial inclusion initiatives. The data underscore the importance of sustained efforts to increase financial inclusion and support the financial aspirations of women in business (Karlan et al., 2021).

Figure 2 shows a bar graph of the effect of loan access on female entrepreneurs, with the years on the *x*-axis and the percentage of women entrepreneurs borrowing money to begin businesses.

This graph is valuable for policymakers, researchers, and organizations working to enhance economic participation by women. Understanding the dynamics of female borrowing for business purposes provides crucial insights into the financial landscape and women entrepreneurs' challenges. Addressing these challenges, such as improving access to credit and fostering financial literacy, becomes imperative for promoting sustainable and inclusive economic development. Therefore, the results encourage discussions on financial inclusion for women entrepreneurs, permitting further exploration of the factors influencing their borrowing behaviours.

Figure 2: Female (age 15+) borrowed money for starting, operating, or expanding a business.



Source: World Bank (2023b).

Figure 2 presents valuable views of female's financial behaviours in the context of entrepreneurship. The figure illustrates the percentage of females aged 15 and above who borrowed money for business-related purposes over a specified period. The declining trend depicted, from 6% in 2014 to 4% in 2017, signifies a reduction in the proportion of women who relied on borrowed funds to initiate or expand their entrepreneurial ventures. This trend suggests a decreasing trend towards using formal financial channels for borrowed funds over these three years. Petersen and Ndebele (2020) had similar findings. The decreasing use of borrowed funds could be interpreted in several ways. It might indicate growing self-sufficiency among women entrepreneurs relying more on personal savings or alternative funding methods. Alternatively, it could signal challenges in accessing loans or credit, potentially hindering the growth or initiation of women-led businesses. The findings from Figure 2 align with the broader discourse on female entrepreneurs' access to finance. Petersen and Ndebele (2020) noted that access to finance significantly impacts the development and survival of enterprises operated by South African women. Therefore, the decreasing trend in borrowing could highlight potential barriers or challenges in accessing financial resources that impede women-led businesses' financial growth.

In summary, Figure 2 highlights a declining trend in the percentage of females over 15 borrowing money for business purposes in South Africa, from 6% in 2014 to 4% in 2017. The decreasing use of borrowed money indicates that women's engagement with formal financial systems contributes to the decay of financial inclusion indicators, as highlighted by Chigunta et al. (2023).

The next section discusses the gender differences in South African women's entrepreneurship and financial inclusion. It highlights the challenges women face when accessing financial services and initiating and expanding their entrepreneurial ventures.

4.4 Gender Differences

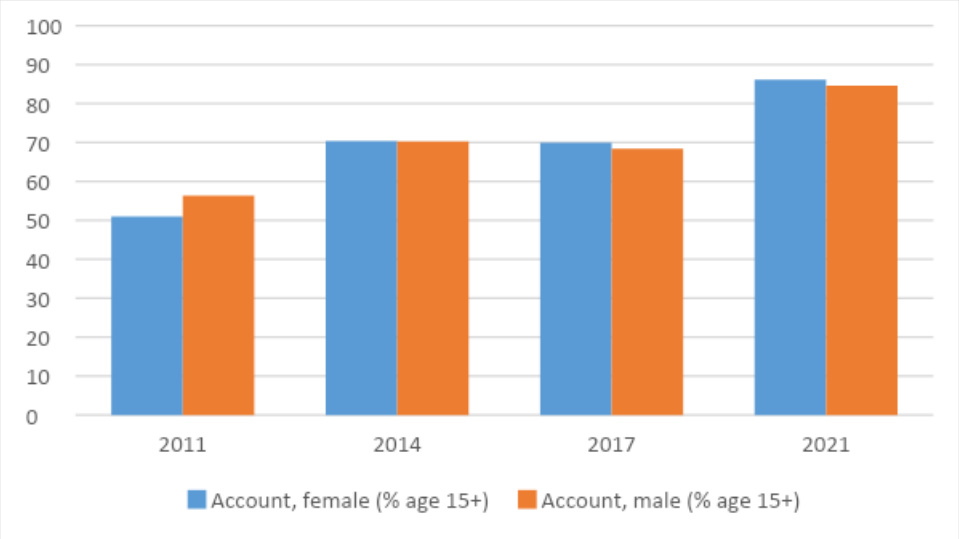
This section comprises Figures 3 to 6, which provide an overview of gender differences and financial inclusion trends in South Africa. These figures collectively provide a deeper understanding of the interplay between financial inclusion, gender dynamics, and entrepreneurship among South African women. This analysis meets the third objective of the study, which is to investigate the determinants and barriers influencing South African women's entrepreneurial engagement.

Figure 3 illustrates the proportion of individuals with bank accounts in South Africa over time, drawing attention to gender disparities. The data shed light on the ownership rates of bank accounts for both males and females, revealing their evolution over the years.

Figure 3 illustrates that the proportion of individuals with accounts in South Africa is comparatively low, with 56% of males and 51% of females in 2011 indicating that they possess such accounts, and both have the same number of accounts at 70% in 2014. The female ratio tends to be higher, accounting for about 69% compared to 68% in 2017 and 2021, which is 86% female and 84% male in South Africa. The results show that bank account awareness has increased among males and females in South Africa. Aligning these findings with the specified objectives provides valuable insights into the interplay of financial inclusion, women's entrepreneurship, and gender dynamics in South Africa. Although Figure 3 does not directly measure women's entrepreneurship, it offers indirect insights into financial inclusion, a crucial pillar of

entrepreneurial success. Increased bank account awareness among both genders suggests that financial inclusion efforts in South Africa have yielded positive outcomes. The findings of Okello et al. (2018) align. Improved access to financial services could foster a more conducive environment for women entrepreneurs, empowering them to pursue their business aspirations, and the gender-specific breakdown of bank account ownership reveals a consistent trend of slightly higher bank account awareness among females, particularly in 2017 and 2021 (Mutesasira, 2017).

Figure 3: Financial Accounts of male and female business owners (% age 15+).

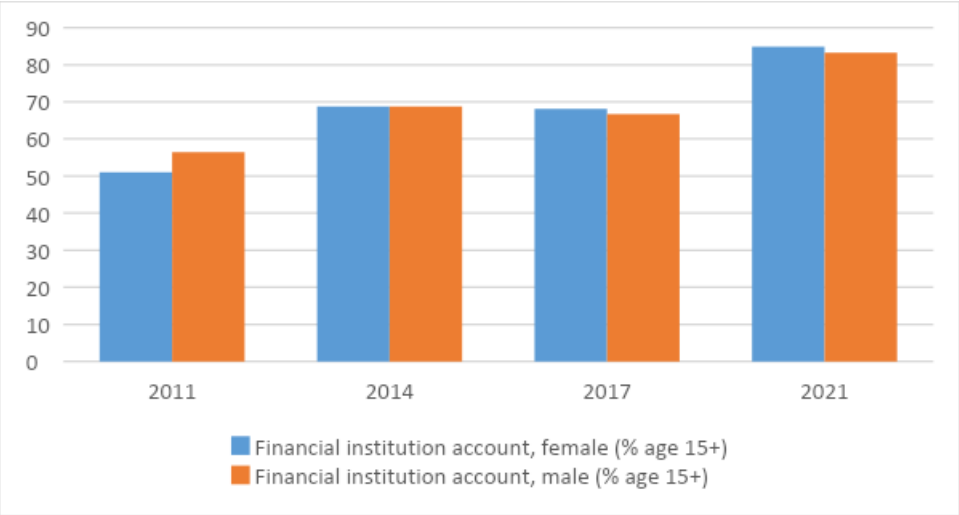


Source: World Bank (2023b).

In summary, Figure 3 highlights the evolution of bank account ownership rates in South Africa based on gender differences. The findings indicate an overall increase in bank account awareness, suggesting progress in financial inclusion efforts. While the figure does not directly measure the effect of women's entrepreneurship on financial inclusion, it provides insights into the broader financial landscape and its implications for women entrepreneurs. The slight gender differences in bank account ownership rates hint at underlying determinants and barriers affecting women's financial behaviours and entrepreneurial engagement also highlighted by Ntlemeza and Biekpe (2020).

Figure 4 depicts the gender-specific presence within the banking landscape of South Africa for 2011, 2014, 2017, and 2021 (World Bank, 2023b). The data demonstrate that 56% of males had bank accounts, significantly exceeding the comparable proportion of 51% among females.

Figure 4: Gender Difference in Accounts at Financial Institutions (% age 15).



Source: World Bank (2023b).

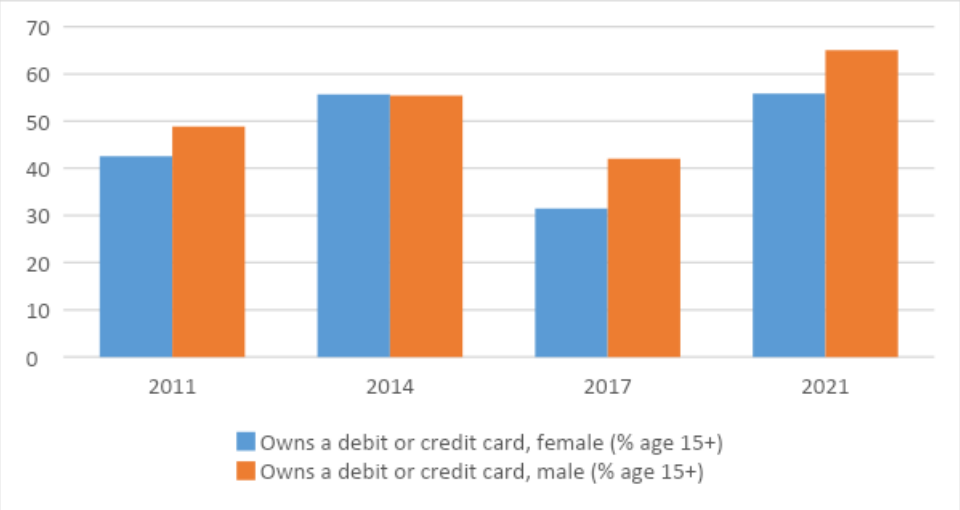
In 2014, a significant change occurred, resulting in an equal distribution of bank account ownership between genders, with males and females accounting for around 68%. The data indicate that the emphasis on gender is having an impact. Women's ownership of accounts has significantly increased since the implementation of inclusion rules in 2017. In 2017, the percentage of female respondents holding bank accounts increased to nearly 68%, slightly outpacing their male counterparts at 66%. This gender-biased fluctuation converged in 2021, where the percentage of female participants with active bank accounts surged to 84%, while male participants exhibited an 83% ownership rate, underscoring a noticeable tilt towards female ownership.

The multifarious challenges women face in South Africa are manifold, encompassing issues such as deficient identification documentation, limited financial literacy, discriminatory protocols, and entrenched cultural norms that impede their holistic financial integration into the system (Abor, Amidu & Issahaku, 2018). This

convergence of societal, structural, and institutional barriers underscores the complexity of the gender-driven discrepancies in banking services.

Figure 5 illustrates gender-based variations in individual debit/credit card ownership.

Figure 5: Gender Difference for Owning Debit/Credit Cards (% age 15+);



Source: World Bank (2023b).

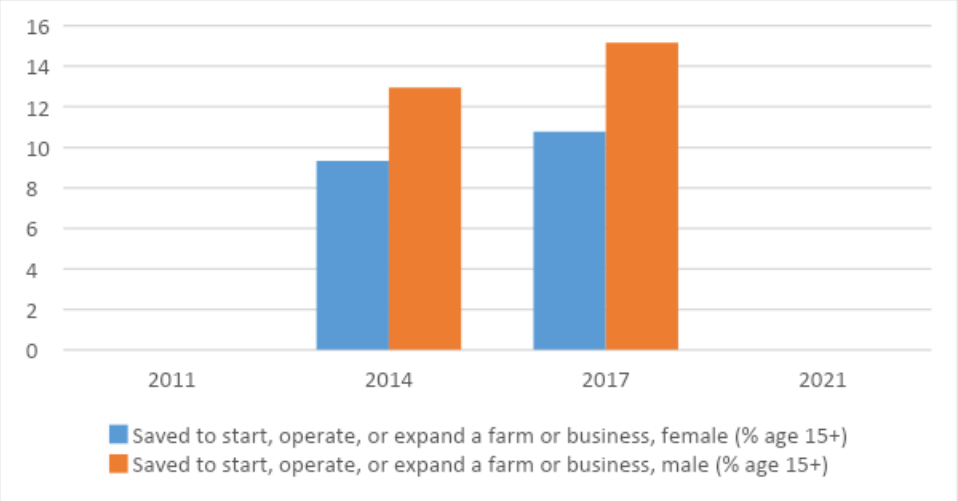
Moreover, one plausible interpretation for the lower prevalence of credit card ownership among women could be attributed to the potential financial control exerted by male partners, limiting women's access to independent credit cards, a finding supported by Ashraf et al. (2014). In contrast, the greater propensity among men to use credit cards might signify a more lax attitude towards accruing debts, consequently raising the spectre of financial precariousness, as highlighted by the findings of Mitchell and Scott (2019). The delineated gender differences in debit/credit card ownership offer a nuanced insight into financial behaviours and power dynamics within South Africa. This analysis underscores the need to recognise the potential implications of seemingly minor variations in financial habits across genders because they could reflect systemic challenges and gender-based disparities that warrant further attention.

The data reveal that 48% of male participants possessed personal debit/credit cards. In contrast, this ownership was reported by only 42% of female participants in the year 2011. By 2014, an equal proportion of male and female respondents, approximately 55% each, reported owning their own debit/credit cards. However, notable gender

discrepancies resurfaced in the subsequent years. In 2017, 31% of females and 42% of males possessed individual cards. In the latest data from 2021, ownership had risen among both genders, but a divergence remained, with 55% of females and 65% of males asserting card ownership. This data substantiate the higher card ownership trend among male participants in South Africa. While seemingly subtle, these gender-specific disparities have meaningful implications worthy of consideration.

Figure 6 provides an overview of the percentage of males and females who saved money to start or expand their business for 2011, 2014, 2017 and 2021. In 2014, the percentage of males who saved money was 12.95, while for females, it was 9.32, indicating males were more active in saving money for their business than females. Likewise, in 2017, the percentage of males and females who saved money to start their own business was 15.17 and 10.77, respectively, highlighting that males were more enthusiastic about saving money to invest than women, while data for 2011 and 2021 was unavailable. Thus, the higher number of South African women involved in entrepreneurial activities holds significance in several ways and confers diverse advantages for individuals, the community, and the economy, as highlighted by Simatele and Kabange (2022).

Figure 6: Gender Difference in saving to begin, operate, or grow a farm or business (% age 15+).



Source: World Bank (2023b).

4.5 Summary

This chapter examined, analysed and interpreted secondary quantitative data from the World Bank's Global Findex Database for the effect of financial inclusion on entrepreneurship among South African women. Findings indicate that financial inclusion significantly impacts entrepreneurship among South African women. The independent variable, financial inclusion, predicts women's entrepreneurship, the dependent variable. In addition, analysis of gender differences showed that the proportion of women has been increasing over time, and they are more likely to save, invest, and start businesses.

SPSS software is a popular choice for data analysis in research about financial inclusion in Africa because SPSS is a reliable and efficient tool for quantitative data analysis. Using SPSS, the study applied various statistical methods to analyse the data, including descriptive, correlational, and regression analyses. These analyses assessed financial inclusion's effect on South African women's entrepreneurship. The findings suggest that financial inclusion positively impacts entrepreneurship among South African women. Financial inclusion provides women with access to the financial resources they need to begin and develop businesses. For example, financial inclusion can help women obtain loans, initiate savings accounts, and take advantage of other financial products. The study also found that the ratio of women saving, investing and starting businesses has increased. This is likely due to the increasing availability of financial services for women.

CHAPTER 5: CONCLUSION

This study's primary aim was to analyse the effect of financial inclusion (FI) on South African women's entrepreneurship (WE). In line with this overarching objective, three specific research objectives were formulated. This chapter consequently encapsulates the examined and presented findings of the study in Chapter Four, aligning with the specified study objective(s). It also offers conclusive insights and explicit recommendations for decision-makers and policymakers.

5.1 Review of the Study

The first objective was to determine the relationship between women's entrepreneurship and financial inclusion. The study found a positive relationship through correlation and regression analyses, indicating that increased financial inclusion means heightened levels of entrepreneurial activity among South African women. This finding suggests that when women have improved access to financial services like loans and savings accounts, they are more likely to launch and sustain their businesses and this is in line with Demirgüç-Kunt, Asli, Klapper, Singer and Ansar (2022).

The second objective focused on assessing the effect of women's entrepreneurship on key financial inclusion indicators. The indicators included access to formal financial products, financial services, and financial literacy. The analysis revealed a positive influence, suggesting that as women actively engage in entrepreneurship, there is a noticeable improvement in their access to formal financial services, financial products, and financial literacy. This finding highlights the potential of WE to drive FI, creating a mutually beneficial cycle of empowerment (Warsame, Lasyoud & Abdalla, 2023)

The third objective investigated the determinants and barriers affecting South African women's entrepreneurial engagement. Cultural factors, like gender norms and stereotypes, were identified as potential barriers, and institutional factors included government policies and support programs. The study underscored the complex interplay of these factors, emphasising the need for targeted interventions to address cultural and institutional challenges hindering women's entrepreneurial participation.

This understanding is crucial for policymakers and stakeholders to design effective strategies to promote WE and FI.

The findings collectively highlight the positive relationship between financial inclusion and entrepreneurship among South African women (Mhlongo, 2019). The nuanced understanding provided by the study contributes to the ongoing efforts to foster inclusive economic development in the South African context.

5.2 Implications of the Study

This study's findings provide valuable insights for policymakers and stakeholders, emphasising the importance of addressing cultural and institutional factors to promote women's entrepreneurial engagement and enhance overall financial inclusion. The findings suggest that policies and programs that promote financial inclusion may help support women's entrepreneurship. The study's insights also point towards a shift in how banks can serve female entrepreneurs. Findings suggest that banks can promote women's entrepreneurship by providing financial services tailored to women's needs. Overall, the findings of this study highlight that the effect of financial inclusion on entrepreneurship among South African women may be positive despite significant gender disparities.

5.3 Limitations

The study on the effect of financial inclusion on entrepreneurship among South African women provides insightful findings while also revealing certain limitations. A positive correlation between women's entrepreneurship and financial inclusion is noted but does not establish causality. This limitation arises partly due to the availability of data for a relatively short period, hindering a long-run analysis that could offer deeper insights into the complex relationship between these variables. Additionally, influential variables may have been overlooked, such as cultural and social factors, education background, access to networks and access to markets. A more comprehensive understanding could be attained through qualitative exploration, which could provide a deeper understanding of female entrepreneurs' challenges and offer insights into the qualitative aspects that quantitative data may not capture.

5.4 Further research avenues

While this study provides insight into the intersection of financial inclusion and female entrepreneurship, much remains to research. Future research can weave a richer tapestry of understanding by employing qualitative methods to illuminate the diverse paths of female entrepreneurs shaped by intricate tapestries of background, culture, and socioeconomic realities. This deeper dive will reveal how factors like ethnicity, religion, and family obligations influence female entrepreneurs' journeys, informing the development of tailored support structures. Examining the crucial role of social networks and informal financial institutions as lifelines for these women, particularly in marginalised communities, can offer alternative models for fostering resource access and building entrepreneurial ecosystems. Further in-depth analyses are encouraged to refine the understanding of policymakers. Engaging with policymakers, implementing agencies and beneficiaries through qualitative methods will unveil the successes and challenges of financial inclusion programs aimed at female entrepreneurs. Such insights will empower us to refine existing policies and effectively target interventions. Furthermore, comparative studies across diverse contexts can illuminate the influence of cultural, historical, and regional factors on policy efficacy. This knowledge can pave the way for context-specific interventions, ensuring greater inclusivity and impact. Finally, researching how female entrepreneurs leverage mobile banking, online lending platforms, and other digital tools to overcome financial barriers and access new opportunities can unlock innovative pathways to their economic empowerment.

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APPENDIX A: CORRELATION CALCULATION BETWEEN VARIOUS FINANCIAL INCLUSION AND WOMEN ENTREPREUSHIP VARIABLES

```
CORRELATIONS
  /VARIABLES=FIN11 FIN7 FIN4 FIN22A FIN22B

CORRELATIONS
  /VARIABLES=fin1.t.d fin17a.t.d fin17b.t.d fin22a.c.t.d.1
```

Correlations

Output Created		
Comments		
Input	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	8
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
Syntax		CORRELATIONS /VARIABLES=fin1.t.d fin17a.t.d fin17b.t.d fin22a.c.t.d.1
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.08

Correlations

		fin1.t.d	fin17a.t.d	fin17b.t.d	fin22a.c.t.d.1
fin1.t.d	Pearson Correlation	1	.967**	.886**	.897**
	Sig. (2-tailed)		.000	.003	.003
	N	8	8	8	8
fin17a.t.d	Pearson Correlation	.967**	1	.842**	.930**
	Sig. (2-tailed)	.000		.009	.001
	N	8	8	8	8
fin17b.t.d	Pearson Correlation	.886**	.842**	1	.902**
	Sig. (2-tailed)	.003	.009		.002
	N	8	8	8	8
fin22a.c.t.d.1	Pearson Correlation	.897**	.930**	.902**	1
	Sig. (2-tailed)	.003	.001	.002	
	N	8	8	8	8

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

COMPUTE FI=fin10a + fin10b.13b + fin13a.t.2014.s + fin13b.t.2014.s + fin14.1.d + fin14.2.

EXECUTE.

COMPUTE Tech=g20.t.d + g20.made.t.d + g20.receive.t.d + g20.t.d.1 + g20.t.d.2 + g20.t.d.3 +

g20.t.d.4 + g20.t.d.5 + g20.t.d.6 + g20.t.d.7 + g20.t.d.8 + g20.t.d.9 + g20.t.d.10 + g20.t.d.11 +

g20.t.d.12.

Regression

Notes

Output Created		
Comments		
Input	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>

	N of Rows in Working Data File	8
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
Syntax		REGRESSION /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT FI /METHOD=ENTER Tech fin1.t.d.7.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.06
	Memory Required	8256 bytes
	Additional Memory Required for Residual Plots	0 bytes

Model Summary

Model	*R*	*R* Square	Adjusted *R* Square	Std. Error of the Estimate
1	1.000[a]	1.000	.	.

a. Predictors: (Constant), fin17b.t.d

ANOVA[a]

Model		Sum of Squares	*df*	Mean Square	*F*	Sig.
1	Regression	39.195	1	39.195	.	.[b]
	Residual	.000	0	.		

	Total	39.195	1			

a. Dependent Variable: Tech

b. Predictors: (Constant), fin17b.t.d

Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients		
		B	Std. Error	Beta	*t*	Sig.
1	(Constant)	-2.561	.000		.	.
	fin17b.t.d	53.826	.000	1.000	.	.

a. Dependent Variable: Tech

Excluded Variables[a]

Model		Beta In	*t*	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	fin1.t.d	.[b]	.	.	.	.000
	fin17a.t.d	.[b]	.	.	.	.000

a. Dependent Variable: Tech

b. Predictors in the Model: (Constant), fin17b.t.d

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT fin22a.c.t.d.1
  /METHOD=ENTER fin1.t.d fin17a.t.d fin17b.t.d.
```

Regression

Notes

Output Created	

Comments		
Input	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	8
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
Syntax		REGRESSION /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT fin22a.c.t.d.1 /METHOD=ENTER fin1.t.d fin17a.t.d fin17b.t.d.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.09
	Memory Required	8784 bytes
	Additional Memory Required for Residual Plots	0 bytes

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	fin17b.t.d, fin17a.t.d, fin1.t.d[b]	.	Enter

a. Dependent Variable: fin22a.c.t.d.1

b. All requested variables entered.

Model Summary

Model	*R*	*R* Square	Adjusted R Square	Std. Error of the Estimate
1	.966[a]	.934	.885	.02219

a. Predictors: (Constant), fin17b.t.d, fin17a.t.d, fin1.t.d

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.028	3	.009	18.895	.008[b]
	Residual	.002	4	.000		
	Total	.030	7			

a. Dependent variable: fin22a.c.t.d.1

b. Predictors: (Constant), fin17b.t.d, fin17a.t.d, fin1.t.d

Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients		
		B	Std. Error	Beta	*t*	Sig.
1	(Constant)	.021	.021		.996	.376
	fin1.t.d	-.154	.138	-.658	-1.118	.326
	fin17a.t.d	.495	.231	1.082	2.143	.099
	fin17b.t.d	.362	.176	.574	2.057	.109

a. Dependent Variable: fin22a.c.t.d.1

DESCRIPTIVES VARIABLES=fin1.t.d fin17a.t.d fin17b.t.d fin22a.c.t.d.1

/STATISTICS=MEAN STDDEV VARIANCE RANGE MIN MAX KURTOSIS SKEWNESS.

Descriptives

Notes

Output Created		27-MAY-2023 05:48:02
Comments		
Input	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	8
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	All non-missing data are used.
Syntax		DESCRIPTIVES VARIABLES=fin1.t.d fin17a.t.d fin17b.t.d fin22a.c.t.d.1 /STATISTICS=MEAN STDDEV VARIANCE RANGE MIN MAX KURTOSIS SKEWNESS.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.02

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Va
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Sta
fin1.t.d	8	.74	.10	.84	.4444	.27831	.07
fin17a.t.d	8	.37	.01	.37	.1608	.14294	.02
fin17b.t.d	8	.29	.02	.31	.1745	.10354	.01

fin22a.c.t.d.1	8	.16	.03	.19	.0950	.06533	.00
Valid *N* (listwise)	8						

DATASET ACTIVATE DataSet4.

DATASET ACTIVATE DataSet4.

SAVE OUTFILE='D:\My Folder\Order id 1\New_Untitled2.sav'
/COMPRESSED.

APPENDIX B: FINANCIAL INCLUSION AND WOMEN ENTREPREURSHIP VARIABLES REGRESSION AND DESCRIPTIVE STATISTICS

```
COMPUTE Financialinclusion=Account + Financialinstitutionaccountage15 +
    Ownsadebitorcreditcardmaleage15 + Usedadebitorcreditcardage15 +
savedatfinancialinstituteaccount +
    Borrowedfromaformalfinancialinstitutionage15 +
borrowedtostartexpandnewbusiness.
EXECUTE.
COMPUTE WE=Accountfemale + Financialinstitutionaccountfemale +
Ownsadebitorcreditcardfemale +
    Savedtostartoperateorexpandafarmorbusinessfemale.
EXECUTE.
FREQUENCIES VARIABLES=Account Financialinstitutionaccountage15
    Firstfinancialinstitutionaccounteverwasopenedtoreceiveawagepayme
savedatfinancialinstituteaccount
    borrowedtostartexpandnewbusiness
Borrowedfromaformalfinancialinstitutionage15
  /ORDER=ANALYSIS.
```

Notes

Output Created		
Comments		
Input	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	4

Syntax		FREQUENCIES VARIABLES=Account Financialinstitutionaccountage15 Firstfinancialinstitutionaccounteverwasopenedtoreceiveawagepayme savedatfinancialinstituteaccount borrowedtostartexpandnewbusiness Borrowedfromaformalfinancialinstitutionage15 /ORDER=ANALYSIS.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

DESCRIPTIVES VARIABLES=Account Financialinstitutionaccountage15

Firstfinancialinstitutionaccounteverwasopenedtoreceiveawagepayme savedatfinancialinstituteaccount

borrowedtostartexpandnewbusiness Usedadebitorcreditcardage15

Borrowedfromaformalfinancialinstitutionage15 Accountfemale Financialinstitutionaccountfemale

Ownsadebitorcreditcardfemale Savedtostartoperateorexpandafarmorbusinessfemale

/STATISTICS=MEAN STDDEV VARIANCE RANGE MIN MAX SEMEAN KURTOSIS SKEWNESS.

Descriptive

Notes

Output Created		
Comments		
Input	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>

	Split File	<none>
	N of Rows in Working Data File	4
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	All non-missing data are used.
Syntax		DESCRIPTIVES VARIABLES=Account Financialinstitutionaccountage15 Firstfinancialinstitutionaccounteverwasopenedtoreceiveawagepayme savedatfinancialinstituteaccount borrowedtostartexpandnewbusiness Usedadebitorcreditcardage15 Borrowedfromaformalfinancialinstitutionage15 Accountfemale Financialinstitutionaccountfemale Ownsadebitorcreditcardfemale Savedtostartoperateorexpandafarmorbusinessfemale /STATISTICS=MEAN STDDEV VARIANCE RANGE MIN MAX SEMEAN KURTOSIS SKEWNESS.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Descriptive Statistics

	N Statistic	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Error
Account (% age 15+)	4	31.73	53.65	85.38	69.6398	6.48178
Financial institution account (% age 15+)	4	30.47	53.65	84.11	68.4904	6.22904
First financial institution account ever opened to receive a wage payment or money from the government (% age 15+)	4	30.47	53.65	84.11	68.4904	6.22904
Saved at a financial institution (% age 15+)	4	15.13	22.08	37.21	28.5261	3.82912
Borrowed to start, operate, or expand a farm or business (% age 15+)	4	7.51	.00	7.51	3.2913	1.93730
Used a debit/credit card (% age 15+)	4	23.79	36.58	60.38	49.5342	5.29508
Borrowed from a formal financial institution (% age 15+)	4	17.65	.00	17.65	10.4481	3.74520
Account, female (% age 15+)	4	35.16	51.02	86.18	69.3890	7.19125
Financial institution account, female (% age 15+)	4	33.88	51.02	84.90	68.2052	6.91837
Owns a debit/credit card, female (% age 15+)	4	24.36	31.45	55.81	46.3713	5.86623
Saved to start, operate, or expand a farm or business, female (% age 15+)	4	10.77	.00	10.77	5.0231	2.91515
Valid *N* (listwise)	4					

CORRELATIONS

/VARIABLES=Financial Inclusion WE

Correlations

Notes

Output Created		
Comments		
Input	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	4
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
Syntax		CORRELATIONS /VARIABLES=Financialinclusion WE /PRINT=TWOTAIL NOSIG /MISSING=PAIRWISE.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.33

Correlations

		Financial inclusion	WE
Financial inclusion	Pearson Correlation	1	.970*
	Sig. (2-tailed)		.030
	N	4	4
WE	Pearson Correlation	.970*	1
	Sig. (2-tailed)	.030	
	N	4	4

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

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT WE
  /METHOD=ENTER Financialinclusion.
```

Regression

Notes

Output Created		
Comments		
Input	Active Dataset	DataSet2
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	4
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
Syntax		REGRESSION /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT WE /METHOD=ENTER Financial Inclusion.

Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01
	Memory Required	4128 bytes
	Additional Memory Required for Residual Plots	0 bytes

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Financial Inclusion[b]	.	Enter

a. Dependent Variable: WE

b. All requested variables entered.

Model Summary

Model	*R*	*R* Square	Adjusted *R* Square	Std. Error of the Estimate
1	.970[a]	.940	.910	10.54201

a. Predictors: (Constant), Financialinclusion

ANOVA[a]

Model		Sum of Squares	*df*	Mean Square	*F*	Sig.
1	Regression	3488.594	1	3488.594	31.391	.030[b]
	Residual	222.268	2	111.134		
	Total	3710.862	3			

a. Dependent Variable: WE

b. Predictors: (Constant), Financial Inclusion

Coefficients[a]

		Unstandardised Coefficients		Standardised Coefficients		
Model		B	Std. Error	Beta	*t*	Sig.
1	(Constant)	17.922	30.984		.578	.621
	Financial Inclusion	.619	.111	.970	5.603	.030

a. Dependent variable: WE