The financial inclusion status of rural households in Eswatini

by

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DECLARATION

I hereby declare that this dissertation which I submit for the MSc. Degree in Agricultural Economics at the University of Pretoria is my work and has not been previously submitted for a degree at this or any other university of higher learning.

Signature: …… Date: …….

Maxwell Banele Nkambule

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ACRONYMS

AFI	Alliance for Financial Inclusion
CFI	Centre for Financial Inclusion
CGAP	Consultative Group to Assist the Poor
EHIES	Eswatini Household Income and Expenditure Survey
FI	Financial Inclusion
FinTech	Financial Technology
GDP	Gross Domestic Product
GoE	Government of Eswatini
IT	Information Technology
KYC	Know Your Customer
MFII	Multidimensional Financial Inclusion Index
MoMo	Mobile Money
NFIS	National Financial Inclusion Strategy
RD	Rural Development
SDG	Sustainable Development Goals
SHGs	Self- Help Groups
SSA	Sub-Saharan Africa
UFA	Universal Financial Access
UN	United Nations
WB	World Bank

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ABSTRACT

Financial inclusion has become a focal point in nation building. It facilitates inclusive growth, which contributes significantly to the economic development of the rural poor. However, the existing financial inclusion dimension used by some researchers does not address the financial inclusion problem in a multidimensional manner in Eswatini. Researchers mostly measure financial inclusion using the access component, which does not provide a complete picture of financial inclusion. Some studies have investigated financial inclusion in Eswatini, but overlooked certain key factors that have been proven to assist in achieving a higher degree of financial inclusion for rural people. The determinants of financial inclusion in Eswatini, especially in rural households, have not been sufficiently addressed in the previous studies. To address the above shortcomings, this study assessed the financial participation, financial capability and financial well-being of rural households, and determined their contribution to financial inclusion. The study also examined the determinants of the financial inclusion of rural households.

A stratified two-stage sampling procedure was utilised to sample 2148 rural homes, headed by both genders, from a Metadata of 2928 Eswatini FinScope Consumer Survey respondents. The Alkire-Foster method was used in this study to develop a multidimensional financial inclusion index. The study found that the financial exclusion rate for rural households is 69%, with financial adequacy among rural people being 37.24%. This indicates that not every rural household that has access to formal financial services is financially secure.

The study also found that, the financial well-being domain contribute the most (59%) to the financial inclusion of the rural households as compared to financial participation (37%) and financial capability (46%). The study also found that there is lower contribution in the usage, consumer protection, financial situation, and financial resilience indicators when compared to formal access. The study also determined that age, marital status, source of income, education level, ease of access to formal financial services, and access to land were all positively associated with the financial inclusion status of rural households. Gender and association membership of the rural household, on the other hand, were not statistically significant, implying that these factors gave fewer opportunities for rural households to participate in financial inclusion.

It is on that score that this study recommends measuring financial inclusion not only by formal bank account ownership, but also by the level of financial participation, financial capability, and financial well-being among rural households. There is also a need to examine financial literacy as a policy tool for encouraging rural households, particularly those of marginalised groups such as rural youth and women, to participate in the access and use of formal financial services. There is also a need for a robust approach to ensure that all women residing in rural areas are financially included by simplifying the requirements for accessing formal financial services.

Keywords: Financial Inclusion, rural households, Alkire-Foster method, Multidimensional Financial Inclusion Index, Logit model, Eswatini

CHAPTER ONE:
INTRODUCTION

1.1 Background

Financial inclusion has become a focal point in nation building. Barajas *et al*. (2020) defined financial inclusion as referring to access to and availability of affordable and suitable financial services and products to all the segments of the population in a sustained manner. Financial inclusion increases the opportunities for households to save, participate in education, expand businesses, and make a significant impact on poverty reduction and economic growth (Bruhn & Love, 2014; Ozili, 2018). Financial inclusion further increases the prospects for venturing into the entrepreneurship space, especially for low-income households, which would contribute to the upliftment of their livelihood status. The World Bank (WB) (2018) states that a comprehensive financial inclusion agenda in countries that are grappling with poverty can function as an enabler of 7 of the 17 Sustainable Development Goals (SDGs), including SDG 2, which aims to *"end hunger, achieve food security, improved nutrition and promote sustainable agriculture".*

Findex Data relating to 2017 (Demirguc-Kunt, 2017) indicate that, although financial inclusion has received policy attention, globally, in pursuit of the World Bank's goal of attaining Universal Financial Access (UFA), around one out of three of the world's adult population is unbanked. About half of the unbanked are poor and rural households who derive their livelihoods in the informal sector (Demirguc-Kunt, 2017). The World Bank (2018) has stated that, globally, the gender gap in accessing a formal bank account is shown by 72% of men with access to an account, as compared with 65% of women, which is quite alarming. In Sub-Saharan Africa (SSA), Ashenafi and Kingstone (2016) found that the gender gap is 9% (30%

for women compared with 39% for men). Ashenafi and Kingstone (2016) further found that, in Southern Africa, the gender gap is 5% (60% for men and 55% for women).

Access to and usage of saving, transaction, and credit services can serve a vital role in uplifting welfare and increasing individual prosperity, which might include the smoothening of consumption, no matter the shocks, and the investment in human capital and other opportunities. This has been an issue that has been discussed, worldwide for a long time and has attracted several academics and scholars to turn to it as a field of research.

According to Demirguc-Kunt *et al.* (2020), 51% of adults in first-world countries had bank accounts, compared to just 30% of adults in underdeveloped and developing countries. According to Kama and Adigun (2013), the situation of financial inclusion in underdeveloped and developing countries is generally poorer, with some countries having as high as a 70% financial exclusion rate.

Although financial inclusion has been found to boost the economy, high levels of financial exclusion, especially in developing countries, affect more of the rural dwellers, women, and the youth (Demirguc-Kunt *et al.*, 2018; Aslan *et al.*, 2017). Demirguc-Kunt *et al.* (2018) further state that, despite the recent expansion of Africa's banking network, globally, over 1,8 billion adults lack formal bank accounts, and rely on informal financial services and use simple techniques to handle their money. This is not just an African problem, as most Asian countries also face the same predicament (Abdu *et al.*, 2018).

In Eswatini, the seventh smallest country in Africa, the National Financial Inclusion Strategy (NFIS) (2016) established that 64% of citizens of the country reside in rural areas, with the rural population being twice more likely not to be financially included as compared with their urban counterparts, because they are affected by a high incidence of poverty. More than 70% of this rural population fall into the lower-income generating category, and are involved in

smallholder farming production, artisan work, and other endeavours that are marginalised by financial service providers. Therefore, the role that the Centre of Financial Inclusion (CFI) plays is to strive to decrease financial exclusion from 27% to 15% by 2022 (National Financial Inclusion Strategy, 2016).

Financial inclusion is about enabling and empowering people and communities. It enables people to gain the ability to effectively use money. It also empowers people with skills and knowledge to make sound financial decisions. For a rural population to thrive and significantly contribute to the economy, they have to be financially included. In Eswatini, the NFIS (2016) states that financial inclusion can enable the less-privileged segment of the population to more efficiently access financial resources and make it easier to have access to core services like well-being and education.

Although access to financial services for Eswatini improved from 65% in 2014 to 85% in 2018 (Eswatini FinScope Consumer Survey, 2018), there is still low financial inclusion, a high gap in income, and gender inequality in Eswatini. About 37% of the adult population still have no bank account (Fanta & Makina, 2019), with the gender gap being 4%, as banked females sit at 48% compared with banked men at 52% (Eswatini FinScope Consumer Survey, 2018). The small numbers of the population who do open bank accounts face hindrance to access and usage afterwards, as well as high transaction costs.

Financial inclusion can also be affected by unemployment. According to CFI (2019), unemployment in Eswatini was at 26.4% in 2018, with close to 50% of the population being rural dwellers, receiving remittances from people residing in urban areas. The remittances are largely sent through the Mobile Money (MoMo) and the *Hamba Mali* services of MTN Eswatini, which have been able to accommodate even the financially excluded people in rural areas by offering a fast, secure, and convenient method of transacting money. Bateman (2014)

established that rural households make better use of small loans to initiate income-generating activities to sustain their livelihoods, and these include those who are major players in the entrepreneurship space in the country.

1.2 Problem statement

CGAP (2014) found that access to financial services is an important component for measuring inclusive finance. Alliance for Financial Inclusion (AFI) (2011) developed indicators in the context of financial inclusion dimensions, mainly developed by the World Bank, relating to access to credit and usage of financial services. The Eswatini FinScope Consumer Survey (2018) verified that Eswatini has utilised access to formal financial services as a way of assessing financial inclusion. However, access to financial services alone cannot be a sustainable way to measure financial inclusion.

Nandru *et al.* (2016) and Soumar *et al.* (2016) measured financial inclusion, with account ownership being the dependent variable. Soumar *et al.* (2016) further added savings and frequency as proxies in measuring financial inclusion. According to Sarma (2008), using a single component to assess financial inclusion might be quite misleading, as it does not give a complete picture of a country's financial inclusion and also fails to appreciate the multidimensional character of financial inclusion. As a result, there is a lack of comprehensive literature for a measure of financial inclusion that regards its multidimensional aspect. This study endeavours to fill the gap by integrating financial participation, financial capability, and financial well-being. Hence, this study will assess the rural households' financial participation, financial capability, and financial well-being.

There is a general consensus that financial inclusion is critical to economic development. However, few studies have been conducted with a focus on the determinants of financial

inclusion in Eswatini, especially in rural households. For instance, Hlophe (2018) investigated whether financial development causes increased financial inclusion in Eswatini.

Existing research has focused on the measurement and promotion of financial inclusion, to the disadvantage of a substantial assessment of its determinants. Although some studies have looked at financial inclusion in Eswatini, certain key factors have been overlooked that have been proven to assist in achieving a higher degree of financial inclusion for rural people. For example, Magongo (2019) investigated what drives the adoption of mobile money in Eswatini. Dlamini (2019) also investigated the factors affecting the adoption of mobile money by farming households in Eswatini. These studies contribute little knowledge of the determinants of financial inclusion among rural households. In this regard, this study will aim to address the existing gap by analysing the key determinants of the financial inclusion of rural households in Eswatini.

1.3 Objectives of the study

The main objective of this study is to determine the financial inclusion status of rural households, taking into account the multidimensional measure of financial inclusion, and to identify its key determinants in Eswatini.

The specific objectives of the study are to:

i) assess the financial participation, capability and well-being of rural households;

ii) determine the contribution of financial participation, capability and well-being to the financial inclusion of rural households;

iii) determine the contribution of financial inclusion indicators to the financial inclusion of rural households; and

iv) determine the factors that influence the financial inclusion of rural households.

1.4 Definition of terms

1.4.1 Financial inclusion

In the context of this study, financial inclusion will be examined according to the definition by the World Bank (2018) as being the capacity of individuals to gain access to low-cost and convenient financial products and services that meet their needs and are delivered sustainably. Financial inclusion is also defined by the geographies and locations of countries around the world, based on their social, economic, and financial development, as well as the priority of their social concerns. In line with this definition, specific groups play a role in financial inclusion, which in turn enables economic progress and improves productivity, employment enhancement, and, ultimately, sustainable development.

1.4.2 Rural households

In the context of this study, a rural household represents a unit consisting of one or several persons having general kinship ties, living together and share resources they have , and obtain agricultural products mainly for own consumption (Chitea & Dona, 2018). Rural households comprise an essential and powerful indicator of the development of a society as they are mostly engaged in micro-business activities.

1.4.3 Financial participation

The financial participation factor denotes how many individuals have access to and utilise financial services and products, at affordable rates. Financial participation reflects on the magnitude of the formal account of the household, reflects whether the respondent had utilised a personal or another person's bank account, informal account, or mobile money account to conduct financial activity for the past month, which accounts for the frequency of usage and

addresses the challenges of high transaction costs, physical distance, and the Know Your Customer (KYC) requirements for the household.

1.4.4 Financial capability

The financial capability factor reveals the capacity of people to engage in a formal financial system through making wise and careful financial decisions and plans, without difficulties. It uses formal education to determine financial inclusion, financial management skills to see if household properly plan for their future and use trust to see if financial service providers alert the consumer about their financial activity.

1.4.5 Financial well-being

The financial well-being factor reflects the extent of financial resilience, indicates whether a person has the freedom to make financial decisions or not, and also reflects financial safety over another person's financial condition. It reflects the ability to minimise threats, and to accept financial uncertainties or meet emergencies that affect the household's financial health. This factor includes control over finance indicator, which refers to the ability of the household to pay bills without being under pressure or facing financial constraints. It also includes the financial situation indicator, which refers to the current financial situation of a household as to whether they have enough money to buy food and clothes, while still being able afford to buy other non-necessary goods at the same time.

1.5 Outline of the study

The first chapter of this study has covered the introduction and a general background of financial inclusion, together with an overview of the situation in Eswatini. The problem statement, describing in detail the research questions, and purpose is also presented in the first chapter. Chapter Two presents a review of the literature on the multidimensional measure of

financial inclusion and on rural development, together with any relevant context to the study. Methods and procedures are presented in Chapter Three, including the analytical techniques, econometric models and analysis of data applied in this study, as well as the construction of an index to make it suitable for the study. Chapter Three further defines the domains of the multidimensional financial inclusion in details. Chapter Four presents the statistical data, sensitivity analysis, and the robustness of the ranking. Chapter Five presents the empirical results and discussions of the econometric models. The conclusion of this study and recommendations to stakeholders are presented in the final chapter.

CHAPTER TWO:
REVIEW OF LITERATURE

2.1 Introduction

This chapter reviews research on about financial inclusion as it affects rural households. It addresses the conceptual framework of financial inclusion. It then addresses how financial inclusion has been measured including the aspects of financial participation, financial capability, and financial well-being. Determinants of financial inclusion are also addressed before the chapter summary is presented.

2.2 The concept of financial inclusion

Financial inclusion does not have a straightforward definition. Its multidimensional nature can be defined through various approaches. With new financial technology developments, financial inclusion will be an ever-changing concept. Financial inclusion, according to Ozili (2020), can in simpler terms be seen as the process of guaranteeing access to financial services, such as facilities for borrowing, savings, and sufficient credit where necessary for resource-poor and less-privileged populations, all at reasonable costs. Barajas *et al*. (2020) defined financial inclusion as the access to, and availability of, affordable and suitable financial services and products to all the segments of the population, in a sustained manner. Olaniyi and Adeoye (2016) defined it as representing a situation in which significant portions of individuals and households are reached by financial services that adequately provide credit and other financial products at reasonable prices. Carballo (2017) defined financial inclusion as the creation, development and regulation of a financial environment that is secure, accessible, and inexpensive to the whole society.

The development of this sector can result in individuals being able to increase their chances to save, participate in education, expand businesses, and make a significant impact on poverty

reduction and securing economic growth (Bruhn & Love, 2014). Financial inclusion may also assist families in absorbing financial shocks, achieving improved health, promoting gender equality, and gaining access to infrastructure (Demirguc-Kunt *et al*., 2018). With such developments, previously marginalised groups can gain access to financial services, thereby strengthening their economic empowerment and consistent participation in the financial system.

2.3 The measure of financial inclusion

Studies of financial inclusion fall into certain categories. Some papers have discussed the general outlook of financial inclusion (Dev, 2006), some have discussed approaches to the measurement of financial inclusion (Chakravarty & Pal, 2013), and some have discussed whether financial inclusion promotes entrepreneurship (Ajide, 2020). On the macroeconomic level, some studies also show a positive relationship between financial inclusion with some macroeconomic indicators, such as economic growth (Peterand & Oden, 2019), economic stability, and financial sustainability (Le *et al*., 2019).

Several studies have also looked on the outreach of the individual, such as rural empowerment and its positive effects on financial services (Sanyal, 2014). According to the World Bank (2008), countries with substantial populations that are not included in the formal financial sector have a high incidence of poverty and inequality. The World Bank (2012) further states that financial inclusion plays an important role in alleviating rural poverty, since it helps poor people to save, borrow to help smooth consumption, and insure themselves against shocks. As a result, by gaining access to a range of financial products and services, financial inclusion improves the economic empowerment of the rural poor and those in the low-income bracket. This is supported by Dogan *et al.* (2021), for example who found that increasing financial

inclusion in Turkey reduces poverty. With this capability in mind, financial inclusion is broken down into components that can fully integrate the adequacy of rural households.

Although financial inclusion is a concern, its assessment has concentrated on access to formal financial services from the supply side (Honohan *et al*., 2009; Sarma, 2008). The analyses of the demand side of assessing financial inclusion have concentrated on measurements that do not offer a complete picture of a country's level of financial inclusion (Chakravarty & Pal, 2013). For example, a large number of access sites to formal financial services does not necessarily imply a high degree of financial inclusion. According to Mindra and Moya (2017), the access to and use of the formal financial system influences an individual's choice whether or not to participate in formal financial services and, to a certain degree, to choose informal financial services. Other factors also come into play, such as human capital, the legal position of the country, and a country's financial stability.

Hence, such study approaches are prone to measurement errors, a multidimensional lens for examining financial inclusion is seen as providing the best possible way to measure financial inclusion.

2.4 Multidimensional measure for financial inclusion

Many previous studies have adopted the multidimensional nature of financial inclusion (Sarma 2008; Camara and Tuesta 2014; Park and Mercado Jr. 2018). The classification of FI as access, usage and quality (AFI, 2011) indicates that FI extends beyond just having financial access. While the access dimension represents the supply side of formal services, usage is synonymous with demand for formal financial services backed with supply, and the aspect of quality implies the segmentation of financial markets in order to provide products that address the financial needs of target clients (Triki and Faye, 2013). Triki and Faye (2013) opined that efforts geared

towards enhancing financial inclusion should ensure that the three dimensions are addressed. Furthermore, the World Bank (2017a) indicated the need to differentiate between access and usage of financial services, and this requirement reflects that they are different but equally relevant concepts in FI policy development. Most studies with a multidimensional approach to financial inclusion have used a distance-based approach (Park, Rogelio & Mercado, 2018; Le *et al*., 2019), and two-step principal component analysis (Camara & Tuesta, 2014). While these approaches are useful in measuring financial inclusion, the distance-based approach was deemed less acceptable because it does not address the decomposability property of the multidimensional measure (Chakravarty & Pal, 2013). While financial inclusion has also been analysed at the macro-level, this level has not revealed the true situation of poor households. Sarma (2015) posited that the two-step principal component analysis may fail to effectively disclose the key qualities of monotonicity, which is an integral component of the multidimensional measure. Because the dimensions and indicators that constitute the index can be altered, the monotonicity property renders the multidimensional financial inclusion measure adaptable to different situations.

This study considers a multidimensional financial inclusion index that contains financial participation, financial capability, and financial well-being domains as sufficient conditions for measuring financial inclusion. An adequate multidimensional financial inclusion system is regarded as being one where rural households can utilise at least two of the financial inclusion domains.

2.4.1 Financial participation and financial inclusion

Financial participation is influential regarding the financial behaviour and knowledge of individuals. It enhances financial inclusion in individuals through encouraging them to own a formal account and to save, as well as to venture into income-generating activities to develop

resilience to financial shocks and increase their financial independence, over time (Camara & Tuesta, 2014). This means that for rural households to utilise financial services, the financial services should be provided at a cost as low as possible, while at the same time being efficient for them to adopt and use in a sustainable manner. Literacy is one important factor that can be used for prompting rural households to adopt formal financial services. According to Abel *et al.* (2018), Olaniyi and Adeoye, 2016, and Yakubu *et al.* (2017), literacy was found to be a crucial factor of financial inclusion, as it eliminated most barriers faced by individuals who wanted to use financial services. This goes to show the need for financial participation in an inclusive financial system.

2.4.2 Financial capability and financial inclusion

Financial capacity goes beyond understanding financial inclusion to encompass a set of behaviours, skills and attitudes that enable successful and responsible financial decision-making. Improving financial capability among rural households can result in rural individuals being empowered to efficiently manage their business finances and to grow them sustainably. This allows rural individuals to ascertain which financial service is suitable for them, which in turn triggers the growth of rural enterprises and plays a pivotal role in economic development, as the individuals interact with formal financial institutions for advice, such as on savings plans, insurance plans and credit plans (Ndebbio, 2004; Dev, 2006). This can also have an immediate influence on growth by sparking other service sectors, as well as an indirect impact by increasing productivity and profitability.

According to Dev (2006), if formal financial service providers become consumer oriented, a significant percentage of households could engage with the providers, thus maximising a country's potential for growth and prosperity. It is in this regard that rural households need to be better equipped with knowledge and skills to enable them to make informed financial

decisions. Adegbite *et al.* (2021) found that financial capability contributes the least to an inclusive financial system, as compared with financial participation and well-being, which confirms the urgent need to address the financial capability domain.

2.4.3 Financial well-being and financial inclusion

Financial well-being embraces elements such as quality of life, living standards, income and consumption. It is further associated with control over finances, daily or monthly, and the capacity to deal with financial uncertainties or unexpected events, as well as the financial freedom that a consumer can have in making choices (Bailey, 2019). Rural households are understood to be vulnerable to shocks and emergencies, which vulnerability compromises their financial well-being (Dev, 2006). Women comprise the majority of the population in rural Eswatini (Eswatini Household Income and Expenditure Survey, 2018), and in the event of natural disasters, robberies, theft and the like, their rural households suffer the most, as they have fewer resources in their financial reserves. Financial well-being is one domain to be looked at, particularly because rural women are vulnerable to health issues, etc. This vulnerability could result in them exhausting every financial reserve they have, thus pushing their households deep into poverty.

2.5 The determinants of the financial inclusion of rural households

The theory of finance-growth nexus is based on the suppositions of perfect knowledge, a frictionless economy, and resource mobility. This idea highlights the relationship between the real economy and the financial sectors. This theory, promoted by Bagehot (Kaboro & Mose, 2019), illustrates how events in the money market effect capital spillovers in an economy as people strive to obtain the highest returns from their investments. Financial resources will often stimulate economic activity because of the credit's multiplier effect (Kaboro & Mose, 2019).

The idea is essential for pinpointing factors that affect financial inclusion of rural households. These assumptions result in the conclusion that consumer decision-making or governmental policy determines financial inclusion. The importance of this study is on the financial inclusion of rural households, as the majority of them are poor and constrained in access, ownership, utilisation and control of productive resources (Rapsomanikis, 2015). Moreover, the lack of access and usage of financial resources constitutes a major constraint to their participation in agricultural economic opportunities (Ogunmefun and Achike, 2015). Owing to this restriction, when rural households are faced with financial challenges, they resort to using informal financial services that are considered more flexible, but contributing less to the economic growth of a country (Ayegba, 2013). Economic growth can be achieved through creating value in smaller enterprises, which has a beneficial knock-on effect on measures of human development including infrastructure, health, and education (Nanda & Kaur, 2016). This will undoubtedly enhance financial inclusion. Financial inclusion greatly depends on having access to formal financial services. This is due to the fact that people with high literacy levels would be aware of the value of formal financial system services. Akudugu (2013) found that age, literacy, closeness to banks, lack of trust in the financial chain, poor keeping of financial records, lack of necessities, and common networks were identified as being key determinants of financial inclusion in Ghana. Furthermore, Abel *et al.* (2018) found that trust in the financial system, age, educational level, income, and internet access were significant factors of financial inclusion. Yakubu *et al.* (2017) further found that age, cost, capability, literacy, distance to financial institutions, and employment were identified as significant determinants of financial inclusion in the north of Ghana. Lotto (2020) also studied the determinants that influence financial inclusion in Tanzania and concluded that income level, age, educational level, and gender were significant determinants of financial inclusion.

Brune *et al.* (2011) also provide relevant insights for understanding the impact of FI in rural settings and found that a significant, positive impact on welfare was attained through increases in agricultural input use, output, sales, expenditures and income returns. Other studies have evaluated the impact on welfare achieved through branchless banking and digital financial inclusion. For instance, Akileng *et al.* (2018) found that financial literacy, age, branchless banking and income were seen as being significant determinants of financial inclusion in Uganda. This study shows that branchless banking plays an important role in promoting financial inclusion especially for rural households that are usually located in remote areas with poor infrastructure.

Some countries have analysed the state of financial inclusion by using data from the World Bank's Global Findex databank for different countries. Soumar *et al.* (2016) examined the determinants of financial inclusion in 18 Central and West African counries and found that employment, education, age, income, gender, residential location, household size, and marital status were all significant in both regions. Zins and Weill (2016) also studied the factors that contributed to financial inclusion in 37 African nations and ascertained that educated and wealthy adult males were more likely to be involved in financial inclusion. Lanie (2017) identified the factors that influenced financial inclusion in West Africa and found that gender, employment level, educational status, and income status were statistically significant. Giron *et al*. (2021) further examined the factors determining financial inclusion in the least-developed countries in Africa and concluded that marginalised groups, being the youth and women, were financially excluded and that the key pillar for solving the problem was to invest in education. Olaniyi and Adeoye (2016) examined the determinants of financial inclusion in Africa from 2005 to 2014, using the World Development Indicators, and demonstrated that income per

capita, a high share of Gross Domestic Product (GDP), access to education, access to internet services, and Islamic banking were all significant determinants of financial inclusion in Africa.

The above review of literature indicates that financial inclusion is affected by numerous factors. However, it is evident that some of these factors are predominant in most of the studies reviewed. These include age, education, marital studies, income, gender and wealth (e.g. land ownership). These are some of the factors that will be included in the econometric model developed in this study.

2.6 Chapter summary

This chapter has presented the conceptual framework of financial inclusion, as adopted from other studies. It then discussed how financial inclusion has been measured by other studies. Furthermore, it discussed the multidimensional nature of financial inclusion. Lastly, it reviewed determinants of financial inclusion from other studies, which prompted this study to adopt the Logit model for assessing the determinants of financial inclusion. The resulting econometric model for the multidimensional financial inclusion index is discussed in the next chapter.

CHAPTER THREE:
METHODS AND PROCEDURES

3.1 Introduction

This chapter defines the research methods used in the data analysis for the study. The first section provides a brief description of the method used and the justification for its use. The second section describes the study area, with its structures. This is followed by a section on the sampling procedure that was employed in the discussion and analysis instrument. The last part describes and discusses the construction of the empirical model that was applied for the econometric analysis, together with a table showing the domains, indicators, and the weight of the indicators.

3.2 Research design and settings

This study applies a multidimensional approach to assess the financial inclusion status among rural households in Eswatini. The Alkire-Foster method was used in the study to create a multidimensional financial inclusion index for rural households. It also used a binary logit regression model to examine the factors that influence the financial inclusion of rural households.

The Alkire-Foster method was chosen for this study because it is survey-based and assesses the intensity of the condition, therefore meeting the properties of a development index, such as monotonicity and decomposability (Alkire & Foster, 2011). Because the dimensions and indicators that comprise the index are flexible to alteration, the MFI index is adaptable to a variety of scenarios. This is beneficial to the study since the contributions of financial inclusion domains and indicators of the level of financial inclusion of rural people are also established, thus allowing policy interventions to be targeted.

Sarma (2015) used the distance-based approach to measure financial inclusion, and Park *et al*. (2018) and Le *et al*. (2019) used the distance-based approach and two-step principal component analysis techniques to measure financial inclusion. However, this approach was deemed as being less informative regarding policy directions because of the non-decomposability property of the multidimensional index (Chakravarty & Pal, 2013). At the macro level, most financial inclusion studies rely on supply data, which does not reflect the complete situation of poor households in rural areas. Despite that, Camara and Tuesta (2014) employed both demand and supply-side data in their two-stage principal component analysis, although Sarma (2015) claims that these techniques may fail to account for important components of a development index, such as monotonicity.

3.3 Study area description

Eswatini comprises four administrative regions, namely Hhohho, Manzini, Shiselweni, and Lubombo. This study was carried out amongst rural households in all of the regions.

The reason that rural households were selected is that the country is predominantly rural, and most households live below the poverty line. This leads to formal banks being reluctant to provide services thus, leaving many of these households without means of access to sustainable, formal financial services.

Furthermore, there are long distances between the administrative towns of Eswatini. Because of the long distance between towns, gaining access to financial services is often expensive for people living in rural areas. Even with a well-connected transport system, accessibility still proves to be costly. The infrastructure also encourages some micro-business activities, as many rural people are to be found vending fruit and vegetables along the roads. At the border gates linking Eswatini with South Africa, artefacts are also sold by the rural people.

The selection of rural households was further based on the scarcity of, and distance to, formal financial services in these areas. This challenge has led to rural adults being highly dependent on children, friends, relatives, and other informal financial services as the main sources of financial inclusion. To solve measurement problems, it is critical to consider the multidimensional measure of financial inclusion. It is imperative to make necessary recommendations that are tailored and suited for rural households. It is important to explore innovative approaches in FinTech to make it possible for the rural population to become fully financially included.

3.4 Data description

This study employed secondary data from a national survey on households in all four regions, headed by males, females and older children, as gathered from FinScope consumer survey data collected in Eswatini (Eswatini FinScope Consumer Survey, 2018). The rural households in the four regions of the country were chosen by using a stratified multistage sampling procedure. In this survey, a rural household is defined as a family that lives in a rural residential setting that is far from essential services, such as formal financial institutions, or urban settings. Data were collected from early August 2018 to late August 2018 and a total of 2 928 households was surveyed.

The study's target population comprised rural households in Eswatini. As a result, respondents were chosen from FinScope consumer survey data by using a stratified two-stage sampling procedure. The first stage entails categorising respondents from the data into urban and rural respondents. The second stage entails sifting through the data to identify respondents living in rural areas. This resulted in a total of 2148 rural households, across the country.

3.5 Development of domains and indicators for the multidimensional financial inclusion index

The multidimensional financial inclusion (MFI) index is built on three domains, namely financial participation, financial capability, and financial well-being, which cover a total of nine indicators that are produced through using the Alkire-Foster Method (Adegbite *et al.*, 2021).

3.5.1 Financial participation domain

The domain of financial participation denotes how many individuals have access to and utilise excellent financial services and products at reasonable rates, and which may suggest the need to remove barriers that involve unaffordable service fees and proximity to access points (Camara & Tuesta, 2014). The indicators of financial participation are access to and usage of financial services.

In this study, the access indicator measures the extent of account ownership held by the respondents. In this situation, a rural household is considered to have formal account ownership if it utilises at least one bank, non-bank financial institution, or mobile money service provider to access finance.

To account for the frequency of usage, the usage indicator is generated to assess whether a respondent had used their own, or someone else's, bank account or informal mechanism to accomplish at least one financial transaction in the previous month. The “no barrier” indicator assesses the following, based on their common occurrence among rural people: high transaction costs, physical distance, and Know Your Customer (KYC) requirements, such as lacking formal identification and lacking knowledge on how to use a formal account.

3.5.2 Financial capability domain

The financial capability domain displays the capacity of people to engage in a formal financial system, without difficulty, by making wise financial decisions and planning (Honohan *et al.*, 2009). Indicators of this domain include having knowledge about FI and consumer protection mechanisms, which can play a significant role in enhancing this domain.

3.5.2.1 Indicators of financial capability domain

Three questions are critical for understanding financial inclusion: Is the respondent familiar with any of the financial services provided by formal financial institutions? What kinds of financial activity may the respondent use mobile money for? Is the respondent able to recall a financial service provider on their own? Formal education is used to determine financial inclusion (Fungacova & Weill, 2015), but it is low for people living in rural areas. Hence, specific financial training and awareness programmes should be made available to such people.

While the consumer protection mechanism, as a quality of financial inclusion, is often low, it looks at where financial service providers alert the consumer about their financial activity in financial institutions in order to create trust.

Financial planning is another fundamental indicator of financial capability. It shows whether a consumer has the financial management skills needed to properly plan for their future. According to Cole *et al.* (2009), people who are illiterate in financial terms frequently fail to prepare for the future, and borrow at high interest rates from financial service providers. Two crucial questions arise in this regard: Is there a savings strategy, an investment plan, or an insurance plan in place (Dev, 2006)? Is the respondent currently in possession of a credit plan or a contingency plan to meet the requirements of their children and relatives, a savings plan

for school and tertiary tuition, and a payment or savings plan for agricultural inputs (such as seeds, fertiliser and labour)?

3.5.3 Financial well-being domain

Financial well-being represents the extent of financial resilience, having the liberty to make financial decisions, and financial security over a person's financial situation (Kanungo & Gupta, 2021). It is a vital factor in determining financial inclusion.

3.5.3.1 Indicators of financial well-being domain

The characteristics of the financial well-being domain in this study are financial control, financial resilience, and financial situation indicators. The ability of an individual to make payments without being under pressure or experiencing financial restraints is referred to as financial control. The subject of financial control stems from two questions: Does a respondent make decisions alone, with another person, or with no consideration at all? How frequently does the respondent pay their debts without delaying?

The financial resilience indicator assesses a respondent's capacity to reduce risks, accept financial uncertainties, and deal with financial emergencies that affect their financial health. This indicator raises the following questions: Can the respondent come up with enough money in the event of an emergency that necessitates a quick payment? Is the respondent prepared to pay unexpected bills with unplanned funds?

The financial situation indicator relates to a respondent's current financial position, such as whether they have enough money to buy food and clothing, while still affording to buy non-essential items.

3.6 Constructing the multidimensional financial inclusion index

This study adopts the Alkire-Foster method in the functional form of the MFI index (Adegbite *et al.*, 2021). The first step is to code the rural households as 1 if all FI indicators are met, and 0 if they are not met. This study applied an equal weighting to all the indicators and domains, such that their total weights are 1 ($\sum_{i=1}^{d} \mathrm{b}i = 1$) (Adegbite *et al.*, 2021). The adequacy score a_i is, thus, the weighted sum of the adequate accomplishments across the indicators for every rural person as:

$$a_i = \mathrm{b}_1X_1+\mathrm{b}_2X_2+\mathrm{b}_3X_3+\mathrm{b}_4X_4+\mathrm{b}_5X_5+\mathrm{b}_6X_6+\mathrm{b}_7X_7+\mathrm{b}_8X_8+\mathrm{b}_9X_9 \quad (1)$$

where X_i and b_i represent the i^{th} indicator and weight of i^{th} indicator, respectively, and $a_i = 1$ if the respondent is adequate in all indicators, and 0 if not.

Table 3.1: Financial inclusion domain indicators, adequacy, and weighting

Indicator	Adequacy	Weight
Access	Adequate if a rural household has a formal account with at least one formal financial service provider	1/9
Usage	Adequate if a rural household has used a formal account with one of the formal financial service providers up to 3 months	1/9
No barrier	Adequate if a rural household reported experiencing no barrier from among the listed barriers	1/9
Financial literacy	Adequate if a rural household indicates having used at least one of the formal financial institutions OR indicates conducting at least one type of financial activity, OR if they can use MM or recall one name of a mobile money provider without assistance	1/9
Financial planning	Adequate if a rural household uses an institution through a saving plan, investment, retirement plan, insurance plan OR has a credit plan	1/9
Consumer protection	Adequate if a rural household has trust in at least one formal financial service provider	1/9
Control over finance	Adequate if a rural person makes either a sole or a joint decision regarding daily expenses, OR always or sometimes pays bills	1/9
Financial resilience	Adequate if it is possible or somehow possible for a rural household to have access to emergency funds for unexpected events or have enough money to pay for an emergency in the following month	1/9
Financial situation	Adequate if a rural household has at least enough money to buy food and clothing for up to a year	1/9

The financial adequacy threshold (*fk*) represents the proportion of a rural household's weighted adequacy required across all indicators, with or without adequacy in the access indicator. The adequacy threshold examined in this study is that of Eswatini, which is expected to increase the financial inclusion rate from 73% in 2017 to 85% by 2022 (NFIS, 2016). The figures of 73% and 85% are used to create the lower and upper bound adequacy thresholds in the sensitivity analysis discussed later in the study. Setting a high f_k would mean that few rural households would fall under the financially adequate category, while it would be challenging to set a low f_k as more rural people would not fall under the financial adequacy category. A rural household is considered financially adequate if they achieve an adequacy score equal to or greater than two out of three of the FI domains ($a_i \geq f_k$).

To check the financially adequacy headcount, this study categorises respondents with ($a_i \geq f_k$) as ($a_i(k) = 1$), while those with ($a_i < f_k$) are categorised as $a_i(k) = 0$ (Alkire & Foster, 2011). A rural household is considered financially included if they have adequacy equal to or greater than the financial capacity cut off, with adequacy in the access indicator ($a_i \geq f_k$) such that respondents with ($a_i \geq f_k$) are classified as ($a_i(k) = a_i$), and those with ($a_i < f_k$) are classified as $a_i(k) = 0$. The MFI index, which measures the level of financial inclusion, therefore reflects the incidence (Ch_{FI}) and the intensity (A_{FI}) of the multidimensional financial inclusion of rural households.

$$ChFI = \frac{FI}{n} \tag{2}$$

where:

Ch_{FI} is the headcount ratio of the financially included censored (incidence)

FI is the number of financially included rural households

n is the total sample size.

$$AFI = \frac{\sum_{i=1}^{n} fi(k)}{FI} \tag{3}$$

where:

A_{FI} is the average adequacy (intensity) score of financially included rural households, and *fi(k)* is the censored adequacy score of the ith financially included rural households.

The MFI index is thus expressed as:

$$MFII = ChFI \times A_{FI} \quad (4)$$

where:

(1- ($ChFI \times A_{FI}$) represents the MFI index.

The policy efforts to achieve sustainable financial inclusion in Eswatini can be seen in the (Eswatini FinScope Consumer Survey, 2018), where financial inclusion is measured according to the number of adults who own formal accounts, and this study tests if owning a bank account to access finance is equivalent to financial adequacy, and accordingly, to the financial inclusion of rural households.

The contribution of each i^{th} indicator to the level of multidimensional financial inclusion is represented as:

$$((b_i ChX_i/MFII) * 100) \quad (5)$$

where:

$$b_i \left(\sum_{i=1}^{d} bi = 1\right) \quad (6)$$

ChX_i represents the weight and censored headcount ratio of indicator *i*, respectively.

The sensitivity of the estimates to alterations in adequacy threshold at $\mathbf{f_k \geq 0.55}$ and $\mathbf{f_k \leq 0.77}$ is determined by using Kendall's tau rank correlation analysis, measured as:

$$R\tau = (CP - DP)/(n(n-1)/2) \quad (7)$$

where:

CP is the number of concordant pairs

DP is the number of discordant pairs, and

n is the number of compared pairwise observations.

A positive rank coefficient indicates that the number of the concordant pairs is higher than the number of the discordant pairs, implying the estimates are closer to 1 and thus exhibit higher robustness (Alkire *et al.*, 2015).

3.7 Empirical model

Objectives	**Analysis**
1) Assess the financial participation, capability and well-being of rural households	Descriptive statistics of the MFI index were used
2) Determine the contribution of financial participation, capability and well-being to the financial inclusion of rural households	Descriptive statistics of the MFI index were used
3) Determine the contribution of financial inclusion indicators to the financial inclusion of rural households	Descriptive statistics of the MFI index were used
4) Determine the factors that influence the financial inclusion of rural households	The binary logistic regression model was used

To determine the factors that influence the financial inclusion of rural households in Eswatini, the response variable Y was defined as financially included or financially excluded in a binary logistic regression model (equation 8). Akudugu (2013) used the Logit model to investigate the factors that influence financial inclusion in Ghana. According to Gujarati (1995), the Logit regression model can evaluate the likelihood of an event by predicting a binary dependent result from a set of independent factors. The use of logit model is justified by its ease of calculation and that its probability ranges between 0 (failure) and 1 (success). It is also important to note

that the binary logistic regression model does not evaluate a rural household in isolation, but rather as a result of the two groups' collective decisions (included or excluded). Financial inclusion is represented by 1 if a rural household is financially included, and 0 if a rural household is financially excluded.

$$\text{Financial Inclusion}_i\,(X) = \beta 1 Xj + \varepsilon j \quad (8)$$

Financial inclusion is a dummy dependent variable that takes a value of one if the respondent is financially included (equation 9) and zero if otherwise (equation 10). The value Xj is a vector of the factors determining financial inclusion, while εj is a random error term, accounting for all other factors that might have been excluded from the specified model.

$$\text{Financial Inclusion}_1\,(X) = \beta 1 Xj + \varepsilon_1 \quad \text{for financially included} \quad (9)$$

$$\text{Financial Inclusion}_0\,(X) = \beta 1 Xj + \varepsilon_0 \quad \text{for financially excluded} \quad (10)$$

Below (Equation 10)is the general form of the model depicting the relationship between the dependent variable (Y) being financially included or excluded and the independent variables (X_i) being the independent variables for the factors that determine financial inclusion.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_i X_i + \mu_i \quad (11)$$

The regression model for the factors that determine financial inclusion is as follows:

$$Y = \beta_0 + \beta_1 \text{AGE} + \beta_2 \text{MARS} + \beta_3 \text{INCSO} + \beta_4 \text{EDUC} + \beta_5 \text{GEN} + \beta_6 \text{MEM} + \beta_7 \text{LANDAC} + \beta_8 \text{EAC} + \mu \quad (12)$$

β_0 = the constant term

β_i = the parameters to be estimated

AGE = age (years)

MARS = marital status (dummy: 0 = not married or single, 1 = married)

INCSO = source of income (dummy: 0 = not employed, 1 = employed)

EDUC = educational level (years)

GEN = gender (0 = female, 1 = male)

MEM = membership group (dummy: 0 = no, 1 = yes)

LANDAC = access to land (dummy: 0 = no, 1 = yes)

EAC = ease of access to formal financial services (dummy: 0 = no, 1 = yes)

The detailed description of the independent variables in the regression model is provided in Table 3.2. Table 3.2 also provides information on the expected signs of the independent variables.

Table 3.2: Description of variables

Variable name	Expected signs
Age (years)	+
Marital status 0 = Not married 1 = Married	 - +
Source of income 0 = unemployed 1 = employed	 - +
Education level (years)	+
Gender (0 if female, 1 otherwise)	 -/+
Association membership 0 = no 1 = yes	 - +
Access to land 0 = no 1 = yes	 - +

Ease of access to financial services 0 = no 1 = yes	 - +

3.8 Chapter summary

This chapter presented the research methods that were used in this study. The Alkire-Foster method was utilised in the study to create a multidimensional financial inclusion indicator for rural families. The MFI index also included indicator design, adequacy, and weighting. Furthermore, it used the binary logit regression model to determine the factors that influence financial inclusion of rural households. The study was carried out among rural households of Eswatini by using a two-stage stratified sampling technique. The following chapter presents the statistical results of the study that were derived from using the methods that have been discussed in this study

CHAPTER FOUR:
RESULTS AND DISCUSSION

4.1 Introduction

The descriptive, statistical, and empirical findings of the study were produced through using the research methods mentioned in the previous chapter. Section 4.2 sets out a presentation and discussion of the financial adequacy results and the financial participation of rural households. The financial capability of rural households is presented in Section 4.3. Section 4.4 discusses the financial well-being of rural households. The estimates of the MFI index of rural households are presented in Section 4.5. The domains and contributions of the indicators to multidimensional financial inclusion are discussed in Sections 4.6 and 4.7, respectively. The sensitivity analysis of the FI indicator estimates is discussed in Section 4.8, along with the study's Kendall tau-b rank correlation. The determinants of the financial inclusion of the rural households are discussed in Section 4.9. The chapter concludes with an overview of the topics covered in the chapter sections.

4.2 Financial participation of rural households

The results obtained in (Table 4.1) show that, in the financial participation domain, 36.31% of rural households in Eswatini are adequate in the access indicator, with 34.64% using formal financial services. These formal financial services are provided by the commercial banks where the formal accounts are largely held. This supports the results of Adegbite *et al.* (2021), who found that the rural people and farmers continue to face barriers to formal financial participation. This could be influenced by a variety of factors, including a population being skewed toward youth and women, who represent the groups most vulnerable to financial exclusion (CFI, 2019). CFI (2019) further stated that rural areas are associated with a lack of

infrastructure such as access to health services, and low levels of education, which pose a real challenge to achieving a high degree of formal financial participation.

Furthermore, 40.27% of respondents reported having no challenge to opening a bank account, such as high transaction costs, long distances to access formal financial services, and a lack of documentation and identification. This may be because the Government of Swaziland has decentralised the issuing of documents, such as IDs, birth certificates and passports, to even small towns, which decreases transaction costs. It is noted that, where there are government services, bank branches are also common, which also decreases the long distance to be travelled to access formal financial services.

4.3 Financial capability of rural households

The findings in the financial capability domain show that 36.64% of rural households are adequate in financial literacy, while 41.81% are adequate in financial planning. Moreover, more than half (59.59%) of rural households have adequate consumer protection. The consumer protection findings support those of Camara and Tuesta (2014), who found that trust plays a role in financial inclusion.

The findings of this study regarding financial literacy do not support those of Akileng *et al.* (2018), who found that financial literacy positively affects financial inclusion. This study's findings are also contradictory to the findings of Yakubu *et al.* (2017), who found that capability plays an important role in financial inclusion in Northern Uganda. This may be because the NFIS (2016) shifted its focus to the 'bottom-of-the-pyramid' population, where rural people, women, and youth have been prioritised, and formal banks have eased some of their KYC requirements to accommodate every socio-demographic group in opening a bank account. This is done to promote affordable financial services and to give timely access to

services such as purchasing farm inputs, which can play a significant role in economic development. According to CGAP (2018), the acceptance of innovative insurance products among rural households is challenged by the high costs of products related to coordinating complicated processes to deliver services. Furthermore, the high level of consumer protection, on its own, would have adverse effects on financial capability, if low financial literacy and planning still persist. The World Bank (2017b) has stated that, for a country like Eswatini, consumer trust in formal financial systems is essential for improving the levels of FI. However, despite the consumer protection, a low level of knowledge and management skills needed to make informed choices regarding financial services could be detrimental to the financial capability of rural households.

4.4 Financial well-being of rural households

Regarding the financial well-being domain, 99.81% of respondents indicated having control over their finances, 36.13% reported being 'adequate' in their financial resilience, and 41.85% stated they were 'adequate' in their financial situations. These results differ from the findings of Adegbite *et al.* (2021), who found that more rural smallholder farmers were adequate in their control over finance, financial resilience, and financial situations. These results are then seconded by those of (Iddrisu & Danquah, 2021), who found that households who are financially excluded experience compromised financial well-being, as compared to the financially included. Mukong and Amadhila (2021) further found that financial inclusion has positive and significant effects on household wellbeing. These are indicators that are mostly affected by unexpected events that require rural people to seek emergency funds, and it shows that almost all rural households make decisions on their own or with family and friends, while more than half of them struggle to raise emergency funds. Unemployment stands at 26.4% in Eswatini (National Financial Inclusion Strategy , 2016), which contributes to many of these

challenges. Most rural households consist of women and youth, who constitute the groups who have lower levels of livelihoods and of productive assets, which can hastily be depleted when sold. This makes it very likely that most rural people would fall further into poverty, should an unexpected event strike. This is because formal savings can promote self-insurance, which in turn can complement taking up insurance products to manage risks and economic shocks compared to informal approaches (Moore *et al*., 2019). An example of such informal approaches is the growing of self-consumption gardens, a practice common among rural households. However, this could prove unsustainable as fruits and vegetables are prone to pests and diseases, which can results to death which would only contribute to more loss of livelihood for the rural households.

Overall, the findings of this study show that rural people of Eswatini have the greatest uncensored headcount ratio in the finance control domain, and the lowest in financial literacy and access to formal financial services.

Table 4.1: Adequacy of rural households

Domain	Indicator	Frequency	Percent
Financial participation	Access	780	36.31%
	Usage	744	34.64%
	No barrier	865	40.27%
Financial capability	Financial literacy	787	36.64%
	Financial planning	898	41.81%
	Consumer protection	1 280	59.59%
Financial well-being	Control over finance	2 144	99.81%
	Financial resilience	776	36.13%
	Financial situation	899	41.85%

n = 2148

4.5 The multidimensional financial inclusion of rural people

This section discusses findings derived from developing the multidimensional financial inclusion index. To begin with, findings from the descriptive analysis of rural households according to the sub-indicators of the three domains of FI – financial participation, financial capability and financial well-being – are presented. The following presents the assessed adequacy of rural smallholder farmers across financial inclusion indicators. and the estimates of the multidimensional financial inclusion index. According to the findings shown in Table 4.2, while 36.31% of rural people have access to formal financial services, only 37.24% have a two-thirds sufficiency in the domain of financial inclusion. This suggests that not all rural households with access to formal financial services are financially adequate.

The results also indicate that the MFI index has a 37.2% incidence, with an intensity of 83.7%. The overall MFI index is 0.311, indicating a low level of financial inclusion. This supports the findings of Adegbite *et al.* (2021) in Nigeria, in the Sub-Saharan Africa region, and of Maria (2015) and Sarma (2012) regarding Latin America and the Caribbean countries, respectively, to the effect that developing countries face lower levels of financial inclusion. Although the (Eswatini FinScope Consumer Survey, 2018) found that 52% of Emaswati both living in urban and rural settings had formal bank accounts in commercial banks, the (Eswatini FinScope Consumer Survey, 2018) further revealed a 2 percent gap between the urban and rural residents in the ownership of formal bank accounts.

The findings of this study indicate that having only formal bank accounts for gaining access to formal financial services by rural households is statistically significant, at all confidence levels, when compared with those who have achieved financial adequacy in at least two-thirds of the

FI domains with formal access. This study ascertained that access to formal financial services does not explain the financial inclusion of rural people in Eswatini, which approves the MFI index construction and the need to look at other ways that can render households financially included.

Table 4.2: Estimates of the multidimensional financial inclusion index

Indicators	**Estimates**
Formal access	36.31%
Financial adequacy	37.24%
Incidence of MFII	37.2%
Intensity of MFII	83.7%
MFII	0.311
1 – MFII	0.689
No. of observations	2 148
Pearson X^2 test	***p*-value**
H_0: formal access = financial adequacy	0.000
H_0: formal access = financial inclusion	0.000

4.6 The contribution of domains to multidimensional financial inclusion

According to this study's findings, financial participation contributes the most (37.9%) to levels of financial inclusion, followed by financial capability (36.5%), and financial well-being (25.6%). This contradicts the findings of Adegbite *et al.* (2021), who found that financial well-being contributes the most, followed by financial participation, and then by financial capability.

The study's findings show that, in comparison with other domains of financial inclusion, the rural people in Eswatini experience the lowest regarding financial well-being, which might have a negative impact on the whole financial inclusion scope. As most populations reside in rural areas, the low level of financial well-being means that fewer people in rural areas are coping with their livelihood strategies, whenever unexpected events strike. These might include natural disasters, theft, inflation, and political unrest. However, this study proposes that a more robust approach should be taken in engaging rural people to diversify their sources of income in order to increase their financial resilience, thus improving their financial well-being domain.

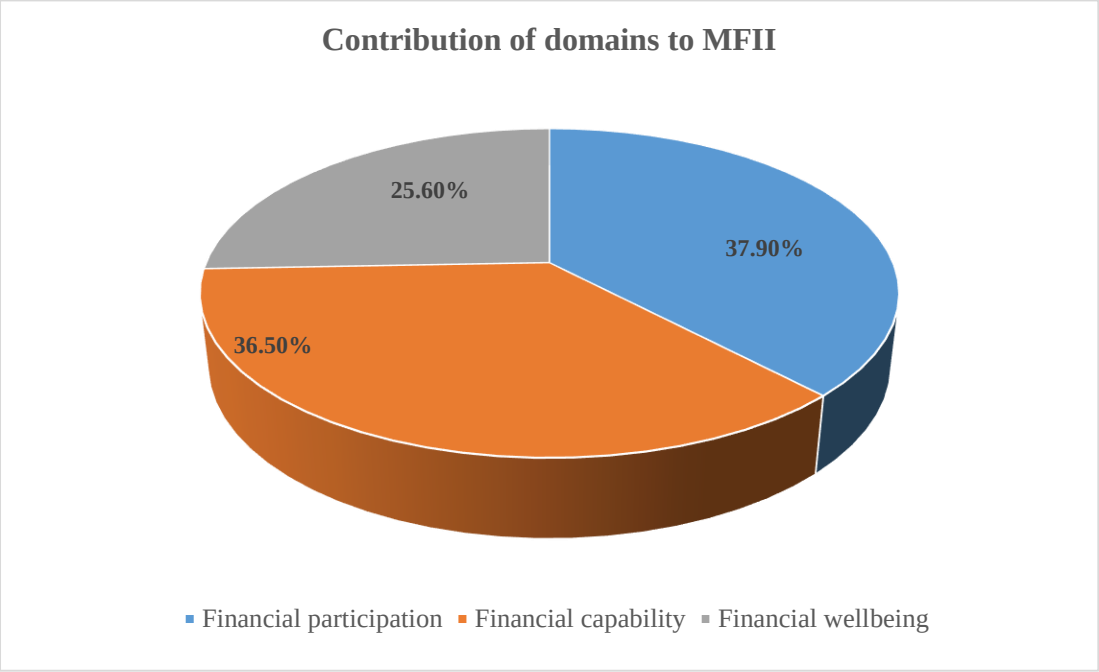

Figure 4.1: Contribution of domains to multidimensional financial inclusion

4.7 Contributions of indicators to multidimensional financial inclusion

Much emphasis has been placed on the access indicator as being the main measure of financial inclusion. However, from a rural smallholder farmer's perspective, two key questions arise: Would having a formal account imply he or she is financially better off than a counterpart outside the formal system? Moreover, how can the process of FI add value to the lives of rural smallholder farmers to the point of making them shift from their traditional financial arrangements? It has been established that financial inclusion is a veritable means to achieve sustainable desired outcomes (Klapper et al., 2016; Adegbite and Machethe, 2020). However, this assertion also depends on defining what specifically is measured as financial inclusion, especially for the rural poor.Further findings regarding the contributions of indicators to the multidimensional financial inclusion of rural families indicate the following order: control over finance (13.3%), financial planning and no barrier (13.2%), financial literacy (12.8%), access (12.6%), usage (12.1%), consumer protection (10.5%), financial situation (7.4%), and financial

resilience (5%). Despite the study's finding of a low level of financial inclusion, there are lower censored headcount ratios regarding usage, consumer protection, financial position, and financial resilience, when compared with formal access.

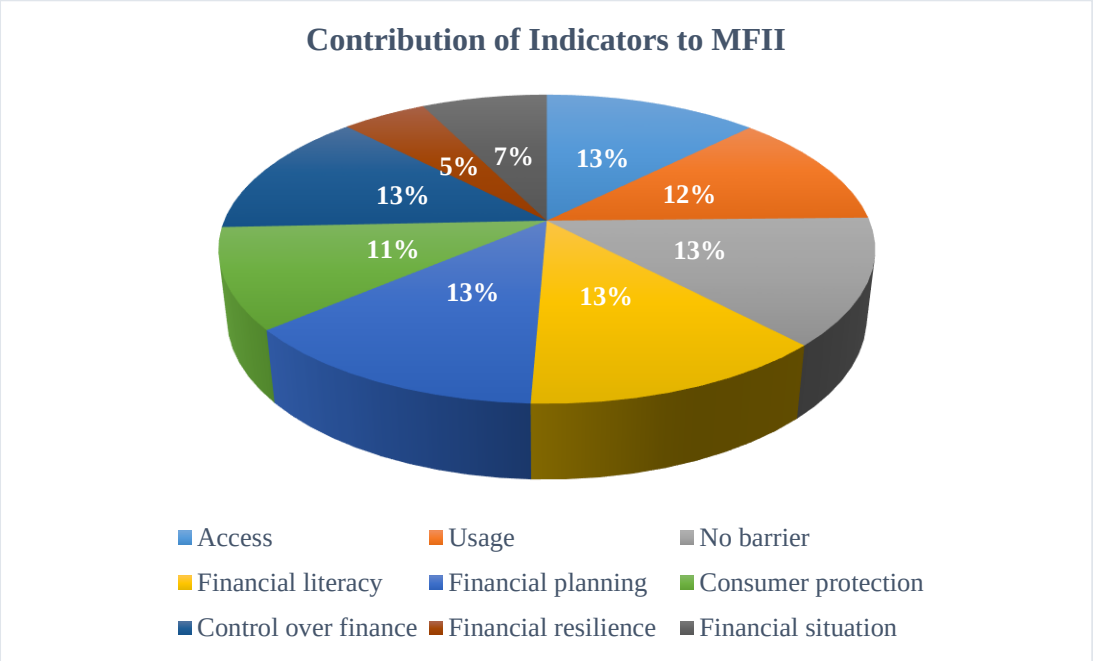

Figure 4.2: Contribution of indicators to multidimensional financial inclusion

4.8 Sensitivity analysis

The sensitivity analysis table (Table 4.3) shows MFII values that range between 0.28 and 0.33, which indicates that rural people in Eswatini consistently experience low financial inclusion, despite the changes in adequacy thresholds. The censored headcount ratio (Ch_{FI}) shows that control over finance is followed by financial planning, while financial resilience contributes the least. This is opposed to the findings of Adegbite *et al*. (2021), which indicated that access to financial services contributed the most, while financial planning contributing the least. Furthermore, when comparing the base threshold ($f_k \geq 0.66$) with the lower bound ($f_k \geq 0.55$), the ranks of the contributions of the FI indicators stayed the same, despite the fact that the no

barrier and financial planning indicators shared the same rank in the base threshold. Findings derived from comparing the base threshold and the upper bound ($f_k \geq 0.77$) indicate that the rankings did not change, except for the no barrier and control over finance indicators sharing the 1st rank, and access to formal financial services and financial literacy indicators sharing the 4th rank. This implies that the no barrier indicator contributes significantly to the financial inclusion of rural households at higher adequacy thresholds.

Table 4.3: Sensitivity analysis of financial inclusion indicator estimates

Domains of FI	**Indicators**	**$f_k \geq 0.55$**			**$f_k \geq 0.66$**			**$f_k \geq 0.77$**		
		Ch_{FI}	C_MFII	Rank	Ch_{FI}	C_MFII	Rank	Ch_{FI}	C_MFII	Rank
Financial participation	1. Access	0.124	0.0138	5	0.126	0.014	5	0.127	0.0141	4
	2. Usage	0.118	0.0131	6	0.121	0.0134	6	0.122	0.0136	6
	3. No barrier	0.133	0.0148	3	0.132	0.0147	2	0.129	0.0143	1
Financial capability	1. Financial literacy	0.125	0.0139	4	0.128	0.0142	4	0.127	0.0141	4
	2. Financial planning	0.135	0.0150	2	0.132	0.0147	2	0.128	0.0142	3
	3. Consumer protection	0.106	0.0118	7	0.105	0.0117	7	0.109	0.0121	7
Financial well-being	1. Control over finance	0.136	0.0151	1	0.133	0.0148	1	0.129	0.0143	1
	2. Financial resilience	0.051	0.0057	9	0.050	0.0056	9	0.051	0.0057	9
	3. Financial situation	0.073	0.0081	8	0.074	0.0082	8	0.078	0.0087	8
	MFII		**0.325**			**0.311**			**0.279**	

The results of the Kendall tau-b rank correlation study (Table 4.4) show a range of 0.1897 to 0.9284 of the rank coefficients for the censored headcount ratio of the nine FI indicators, when comparing the base threshold with the lower bound ($fk \geq 0.66$ vs $fk \geq 0.55$). When the base threshold is compared with the upper bound ($fk \geq 0.66$ vs $fk \geq 0.77$), the rank coefficients range

from 0.1290 to 0.9091. A rank coefficient of 1 indicates a perfect, positive relationship (100% pairwise correlation coefficients) between the ranks obtained at the different thresholds, and -1 indicates a perfect, non-positive relationship (0 pairwise correlation coefficients). Alkire *et al*. (2015) have suggested that calculated rank coefficients should be stable enough not to deviate too much from the value of one. The fact that none of the rank coefficients obtained across alternative adequacy thresholds is less than 0 means that the concordant pairs, which are equivalent to a robust pairwise comparison, are greater in number than the discordant pairs, which are equivalent to a non-robust pairwise comparison. This study accordingly concludes that the MFII estimates can be used to inform policy recommendations regarding the financial inclusion of rural households in Eswatini.

Table 4.4: Rank robustness check

Domains of FI	Indicator	Kendall Tau-b rank coefficient	
		$f_k \geq 0.66$ vs $f_k \geq 0.55$	$f_k \geq 0.66$ vs $f_k \geq 0.77$
Financial participation	Access	0.9201	0.8830
	Usage	0.8903	0.8450
	No barrier	0.9284	0.9091
Financial capability	Financial literacy	0.9231	0.8893
	Financial planning	0.9011	0.9011
	Consumer protection	0.3381	0.2902
Financial wellbeing	Control over finance	0.3330	0.3660
	Financial resilience	0.3200	0.1290
	Financial situation	0.1897	0.1706

4.9 Determinants of financial inclusion of rural households

The determinants of the financial inclusion status of rural households regarding demographic and socio-characteristic characteristics are indicated in Table 4.5.

Table 4.5: Determinants of financial inclusion of rural households

Variable	Coefficient	Wald	p-value	Odd ratio
Age	1.072***	2.97	0.003	1.227
Marital status	1.646***	6.55	0.000	2.035
Source of income	1.70***	7.53	0.000	2.049
Education level	2.226***	13.44	0.000	2.552
Gender	0.914	1.03	0.301	1.105
Association membership	0.363	-0.41	0.682	0.840
Access to land	0.962*	1.71	0.088	1.298
Ease of access to formal financial services	1.048**	2.46	0.014	1.263

Constant	0.027***	-12.49	0.000	0.044

*, **, *** represent statistically significant, at 10%, 5%, 1%, respectively; R^2 = 12%

The logit regression produced a Likelihood Ratio (LR) of around 352, which is statistically significant at 1%. This means that all of the variables in the model influence the likelihood of rural families experiencing financial inclusion. A Pseudo R^2 of 0.189 indicates that the factors considered can explain around 12% of the variability in the probability of a rural household receiving formal financial services in Eswatini. According to McFadden (1974), a Pseudo-R^2 of 0.2 to 0.4 suggests a strong model fit. McFadden (1974) goes on to say that values such as 0.18 and 0.19 are also good model fits. As a result, the goodness of the fit measure (LR and Pseudo R^2) indicates that the model used for the estimation is robust.

The results of the model, indicate that participation in financial inclusion by a rural household is positively determined by age, marital status, source of income, education level, gender, access to land, and ease of access to financial services.

In the model, most of the variables were statistically significant regarding a rural household's participation in financial inclusion. Two variables, gender and association membership, were not statistically significant, while age, marital status, source of income, and education level were significant, at 1% level, ease of access to financial services was significant at a 5% level, and access to land was significant at a 10% level. This shows that age, marital status, source of income, and education level provide a greater opportunity for rural households to participate in financial inclusion.

The model therefore shows at 1% level of significance that a person who is a year older is 1.227 times more likely to participate in financial inclusion. The findings of this study are supported

by those of Akileng *et al.* (2018), Abel *et al.* (2018), Soumar *et al.* (2016), Yakubu *et al.* (2017), Lotto (2020), and Nandru *et al.* (2016). These studies also found that age has a positive influence on inclusion in the formal financial market. The findings are further supported by Do *et al.* (2019), who found that age has a positive impact on financial inclusion.

Marital status, which was significant at a 1% level, shows that a rural household is twice as likely to participate in financial inclusion if the household head is married. This is supported by the studies of Camara *et al.* (2014) and Soumar *et al.* (2016), which confirmed that marital status has a positive association with the usage of financial services. It is expected that, in the collective effort in maintaining a household, members find strategic and innovative financial ways of distributing money, either to their partner or to their children.

In the model, source of income, which was significant at a 1% level, reflected an odds ratio which shows that a rural household is twice as likely to participate in financial inclusion if they have a reliable source of income. These findings are further supported by those of Akileng *et al.* (2018), Abel *et al.* (2018), Lotto (2020) and Lanie (2017), who found that lack of money has an inverse proportional effect on the inclusion in the formal financial market of Ghana. According to Zins and Weill (2016), income had a higher influence on financial inclusion in African countries.

In the model, education level, which was significant at a 1% level, shows that a rural household is 2.5 times more likely to participate in financial inclusion as they upgrade their level of education. The likelihood increases as the level of education increases, from primary school to high school to tertiary education or vocational education. These findings are supported by the studies of Soumar *et al.* (2016), Abel *et al.* (2018), Lotto (2020) and Lanie (2017). Akudugu (2013) and Yakubu *et al.* (2017) further found a positive relationship between the inclusion of individual adults in the formal financial markets and literacy levels, while Aterido *et al.* (2011)

ascertained that a lower level of education had an undesired impact on financial inclusion. The findings of Akileng *et al.* (2018) present a different view, i.e. that education level is not a significant determinant of financial inclusion.

Regarding access to land, which was significant at a 10% level, the odds ratio shows that a rural household is 1.3 times more likely to participate in financial inclusion if they have access to land. The World Bank (2008) holds the same view, that access to land is a key factor for financial inclusion. This can be attributed to the fact that land is a factor of production, hence it will be easier for people who have access to land to be financially included, as compared with those who are not able to offer rights in land as a form of collateral.

Ease of access to formal financial services, which was significant at a 5% level, shows that a rural household is 1.3 times more likely to participate in financial inclusion if they are exposed to formal financial services, than when not exposed. The findings are supported by those of Demirguc-Kunt *et al.* (2013), who found that financially excluded people are dominant in developing countries, as access points to financial services are remote from them. A rural household with a short distance to travel to an established town is likely to find it easier to participate in financial inclusion, as financial products and services are within reach.

4.10 Chapter summary

The MFI index used in this study to analyse the data conforms to the desired econometric standards. The estimates of the index all proved to be all reliable and valid. The financial participation, financial capability, and financial well-being of the rural households, and the contribution of the domains and indicators to the index were important to be looked at.

Several inferences can be drawn from the results. It is intriguing to find that approximately 40% of rural population can access formal financial services the way government can render

safe. There is enough evidence that rural people suffer from financial exclusion. In the financial participation domain, it shows that most formal financial service providers have made it easier for rural people to register formal accounts, however the challenge is that the accounts are not adequately used. In the financial capability domain, it shows that more rural people do put trust on the financial service providers while less remember if they have use formal financial services without assistance. In the financial well-being domain, it shows that more rural people do take sole decisions in paying bills related to their households while few have emergency funds in case unfortunate events happen in their households. Kendall's Tau-b coefficient correlation was used, and all the indicators of the lower bound and the upper bound were closer to 1 than -1, which proved the robustness of the check and confirmed the model as being ideal and reliable for purposes of making informed policy recommendations.

The majority of the variables were statistically significant regarding a rural person's participation in financial inclusion, namely age, marital status, source of income and education level, ease of access to financial services and access to land. This means that age, marital status, source of income, and education level provide greater opportunities for rural households to participate in financial inclusion.

The results are further discussed in the next chapter, where implications for policy, together with recommendations to stakeholders regarding the state of financial inclusion in Eswatini, are also made.

CHAPTER FIVE:
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents a summary of the study, conclusions and recommendations for policy and future research.

5.1 Summary

The Eswatini FinScope Consumer Survey (2018) confirmed that Eswatini has used access to financial services as a form of measuring financial inclusion, with the indicators used being the proportion of the adult population's ownership of formal accounts, savings, and the like. Access to financial services, alone, cannot provide a sustainable factor for measuring financial inclusion. Most of the research, which has taken a multidimensional approach to financial inclusion, has used a distance-based approach, supply data, and a two-step principal component analysis. The distance-based approach was deemed less appropriate because it cannot address the decomposability property of the multidimensional measure, while supply and demand data cannot reveal the true nature of the financial inclusion of people, particularly poor households. Moreover, two-step principal component analysis cannot identify the important properties of monotonicity, which is an integral part of the multidimensional measure.

The access component of financial inclusion, when considered alone, has failed to accommodate the multidimensional nature of financial inclusion. As a result, this study analysed rural households' financial participation, financial capability, and financial well-being on a multidimensional scale, as well as by identifying certain key determinants of financial inclusion among rural households.

The Alkire-Foster method was used to create a multidimensional financial inclusion indicator for rural households. The MFI index also included indicator design, adequacy, and weighing. The study furthermore used the binary logit regression model to examine the determinants that

influence the financial inclusion of rural households. The study was conducted among rural Eswatini households through using a two-stage stratified sampling technique.

According to the results of this study, around four out of ten rural households have a two-thirds sufficiency in the FI domains. In terms of financial participation, more rural households are adequate in terms of experiencing no barriers to formal financial services, but are less adequate in terms of using formal financial services. In terms of financial capability, more rural households are adequate in terms of consumer protection, but less adequate in terms of financial literacy. In terms of financial well-being, more rural households are adequate in terms of financial control, but fewer are adequate in terms of financial resilience. Age, marital status, source of income and education level, ease of access to financial services, and access to land were statistically significant while gender and membership association were not statistically significant.

5.2 Conclusions

The results provide sufficient evidence that the MFI index is a useful tool for measuring financial inclusion among rural people. The results indicate that the financial exclusion rate for the rural people in Eswatini is 69 percent. It also provides sufficient evidence that financial adequacy among rural people is low, at 37.24%. This suggests that not all rural households with access to formal financial services are financially adequate. It is thus critical for authorities to recognise that simply having a formal account is insufficient for measuring financial inclusion. Action must be taken to increase financial participation, financial capability, and financial well-being.

The results demonstrate that the aggregate of the indicators in the sphere of financial participation is less than 50%, standing at 37.07%. The results also demonstrate that the

aggregate of the indicators of the financial capability domain is less than 50%, standing at 46.01%. Furthermore, the results demonstrate that the aggregate of the indicators of the financial well-being domain is greater than 50%, standing at 59.26%.

Moreover, the results show that, in the financial participation domain, more rural people were adequate in experiencing no barrier to having formal accounts, as compared with the other financial participation indicators. This may be because the Government of Eswatini (GoE) has decentralised the issuing of documents, such as IDs, birth certificates and passports, to even small towns, which has resulted in decreasing the transaction costs and the long distances to travel to access formal financial services. In the financial capability domain, more rural people are adequate in consumer protection than in financial planning and financial literacy. This shows that more rural people trust the banks they are affiliated with. In the financial well-being domain, more rural people are adequate in the control over their finance than in their financial resilience and financial situation. This shows that almost all rural people make decisions on their own, or consult with family and friends.

This study was able to show that financial participation contributes the most to the levels of financial inclusion, followed by financial capability, and lastly, by financial well-being. Since most people reside in rural areas, the low level of financial well-being means that rural people have fewer coping and livelihood strategies to deal with unexpected events that might strike among the rural people. This may include natural disasters, theft, inflation, and political unrest. The study further found lower censored headcount ratios in usage, consumer protection, financial situation, and financial resilience, relative to formal access.

Lastly, the study indicated that the financial inclusion status of a rural household is positively determined by age, marital status, source of income, education level, gender, access to land,

and ease of access to financial services. On the other hand, association membership had a negative relationship towards the financial inclusion status of the rural household.

The study furthermore ascertained that age, marital status, source of income, education level, ease of access to formal financial services, and access to land were all statistically significant regarding the financial inclusion status of rural households. As a result, these factors should be considered by policymakers for enabling greater opportunities for rural households to participate in financial inclusion. However, rural household gender and association membership were not statistically significant, implying that they provided fewer opportunities for rural households to participate in financial inclusion.

5.3 Recommendations and policy implications

This study used the most holistic, nationally determined data on the financial state of rural households in Eswatini, from which it developed a new method to measure financial inclusion. To achieve the mission to improve financial inclusion, the country's development strategy must be in line with inclusive finance measures in order to improve the existing financial exclusion status. From the previous information that the research has provided, this study makes the recommendations set out below.

5.3.1 Policy recommendations

1. There is a need not only to measure financial inclusion by formal bank account ownership, but also to increase financial participation, financial capability, and financial well-being among rural people. This would allow authorities to measure the financial inclusion of rural households in a multidimensional approach that would address all the financial inclusion components, together. The degree of financial inclusion in that regard would be holistically tackled.

2. There is also a need for specialised financial planning methods to be made available to rural families. This would create an awareness and understanding of investments, insurance and savings, as well as their benefits, which can go a long way toward aiding rural households. This could help in a variety of ways, one of which is to enable rural people to be more robust to unanticipated shocks. Shocks can be economic, political, or even natural disasters, among other things.

3. There is also a need for government to consider removing legislation that imposes barriers to entry into the formal financial market. With the availability of smartphones, the requirements for opening a formal bank account could be attended to at home, and even far away from the physical addresses of formal financial service providers. However, this must be done in a way that still adheres to internationally accepted standards.

4. There is also a need for a robust approach to be taken for assisting all females residing in rural areas to become financially included through the easing of some requirements. As rural females are known for being innovative and resourceful when it comes to nourishing and feeding a household, they could positively contribute to financial and economic development.

5. There is also a need for associations to allow members to open their own formal bank accounts, rather than acting as their agents, as this latter approach does not provide reliable information for assessing financial inclusion.

The intervention in specific financial inclusion fields for rural households would highly likely produce desired results, as far as poor people are concerned.

5.3.2 Recommendations for future research

The findings of this study relate specifically to rural households in Eswatini, which may not be representative for measuring financial inclusion. Therefore, it is recommended that a similar study should be done for urban households.

Another recommendation would be to carry out a study that compares the status of financial inclusion between urban and rural households.

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APPENDIX A:

Letter of Consent

FINMARK TRUST

28 July 2020

File 18735

Maxwell Nkambule
c/o UP Ethical Clearance Committee
Department of Agricultural Economics, Extension and Rural Development
University of Pretoria
Lynnwood Road
Pretoria,0002

Maxwell Nkambule>u18287906@tuks.co.za
Your Ref: e-mail correspondence re UP:18287906
File Ref: 18735

Dear Maxwell

Restricted access to the FinScope data: Eswatini 2011, 2014 & 2018

Further to your request, the Trustees of FinMark Trust ("FMT") hereby confirm that FMT agreed to share FinScope datasets (hereafter referred to as "Data") with you for academic purposes, based on your acceptance of our standard terms and conditions received via e-mail and listed below.

Conditions for sharing data in the public domain:

- the data may not be sold to third parties;
- any reports produced should reference the source and FinMark Trust;
- any reports produced should include a disclaimer that FinMark Trust is not liable for any analysis or interpretations;
- the questionnaire is only shared for analysis purposes and may not be used or reproduced in any way; and
- any reports produced should be shared with FinMark Trust on completion thereof to show value to our funders.

You have requested access to the following datasets in order to further your research as part of your MSc. In Agricultural Economics with specialization in Rural Development and Food Security. All datasets and questionnaires to be shared via Dropbox links:

- FinScope Consumer Swaziland 2011 (Data and Questionnaire)
- FinScope Consumer Swaziland 2014 (Data and Questionnaire)
- FinScope Consumer Eswatini 2018 (Data and Questionnaire)

Yours sincerely,

Mr Brendan Pearce
Chief Executive Officer

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APPENDIX B:

Adequacy and estimates of multidimensional financial index

Table 4.1. Adequacy of rural smallholder farmers

Domain	Indicator	Frequency	Percent
Financial participation	Access	780	36.31%
	Usage	744	34.64%
	No barrier	865	40.27%
Financial capability	Financial literacy	787	36.64%
	Financial planning	898	41.81%
	Consumer protection	1 280	59.59%
Financial well-being	Control over finance	2 144	99.81%
	Financial resilience	776	36.13%
	Financial situation	899	41.85%

Table 4.2. Estimates of the multidimensional financial inclusion index

Indicators	**Estimates**
Formal access	36.31%
Financial adequacy	37.24%
Incidence of MFII	37.2%
Intensity of MFII	83.7%
MFII	0.311
1 – MFII	0.689
No. of observations	2 148
Pearson X^2 test	***p*-value**
H_0: formal access = financial adequacy	0.000
H_0: formal access = financial inclusion	0.000

APPENDIX C:

Sensitivity analysis of financial inclusion estimates

Table 4.3. Sensitivity analysis of financial inclusion indicator estimates

Domains of FI	**Indicators**		$f_k \geq 0.55$			$f_k \geq 0.66$			$f_k \geq 0.77$	
		Ch_{FI}	C_MFII	Rank	Ch_{FI}	C_MFII	Rank	Ch_{FI}	C_MFII	Rank
Financial participation	1. Access	0.124	0.0138	5	0.126	0.014	5	0.127	0.0141	4
	2. Usage	0.118	0.0131	6	0.121	0.0134	6	0.122	0.0136	6
	3. No barrier	0.133	0.0148	3	0.132	0.0147	2	0.129	0.0143	1
Financial capability	1. Financial literacy	0.125	0.0139	4	0.128	0.0142	4	0.127	0.0141	4
	2. Financial planning	0.135	0.0150	2	0.132	0.0147	2	0.128	0.0142	3
	3. Consumer protection	0.106	0.0118	7	0.105	0.0117	7	0.109	0.0121	7
Financial wellbeing	1. Control over finance	0.136	0.0151	1	0.133	0.0148	1	0.129	0.0143	1
	2. Financial resilience	0.051	0.0057	9	0.050	0.0056	9	0.051	0.0057	9
	3. Financial situation	0.073	0.0081	8	0.074	0.0082	8	0.078	0.0087	8
	MFII		**0.325**			**0.311**			**0.279**	

Table 4.4. Rank robustness check

Domains of FI	**Indicator**	**Kendall Tau-b rank coefficient**	
		$f_k \geq 0.66$ vs $f_k \geq 0.55$	$f_k \geq 0.66$ vs $f_k \geq 0.77$
Financial participation	Access	0.9201	0.8830
	Usage	0.8903	0.8450
	No barrier	0.9284	0.9091
Financial capability	Financial literacy	0.9231	0.8893
	Financial planning	0.9011	0.9011
	Consumer protection	0.3381	0.2902
Financial wellbeing	Control over finance	0.3330	0.3660
	Financial resilience	0.3200	0.1290
	Financial situation	0.1897	0.1706

APPENDIX D:

Determinants of financial inclusion of rural households

Table 4.5. Determinants of financial inclusion of rural households

Variable	Coefficient	Wald	p-value	Odd ratio
Age	1.072***	2.97	0.003	1.227
Marital status	1.646***	6.55	0.000	2.035
Source of income	1.70***	7.53	0.000	2.049
Education level	2.226***	13.44	0.000	2.552
Sex	0.914	1.03	0.301	1.105
Membership association	0.363	-0.41	0.682	0.840
Access to land	0.962*	1.71	0.088	1.298
Ease of access to formal financial services	1.048**	2.46	0.014	1.263
Constant	0.027***	-12.49	0.000	0.044

*, **, ***Statistically significant at 10%, 5%, 1% respectively, R^2 = 12%